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JOHN C. CRUDEN
Acting Assistant Attorney General
Environment and Natural
Resources Division
NOËL WISE
Environmental Enforcement Section
U.S. Department of Justice
301 Howard St., Suite 1050
San Francisco, California 94105
Telephone: (415) 744-6471

JOHN S. GORDON
United States Attorney
LEON W. WEIDMAN
Chief, Civil Division
ROGER E. WEST
1st Assistant Chief, Civil Division
300 North Los Angeles Street, Suite 7516
Los Angeles, California 90012
Telephone: (213) 894-2461

NANCY J. MARVEL
HARRISON KARR
United States Environmental Protection
Agency, Region IX
75 Hawthorne Street
San Francisco, California 94105
Telephone: (415) 972-3939

BILL LOCKYER
Attorney General of the State of California
THEODORA BERGER
Assistant Attorney General
DENNIS A. RAGEN
Deputy Attorney General
110 West A Street, Suite 1100
San Diego, California 92101
Telephone: (619) 645-2016

Attorneys for Plaintiffs the United States and California

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CENTRAL DISTRICT OF CALIFORNIA

UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA
WESTERN DIVISION

UNITED STATES OF AMERICA, THE STATE OF CALIFORNIA, and THE CALIFORNIA HAZARDOUS SUBSTANCE ACCOUNT, Plaintiffs,	01-11162 MMM (JWJx)
V.	EIGHTH PARTIAL CONSENT DECREE
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY, TEXACO INC., ARCO, EXXON MOBIL CORPORATION, AMERICAN NATIONAL CAN, UNOCAL CORPORATION, THE BOEING COMPANY, SHELL OIL COMPANY, METALDYNE, LOCKHEED MARTIN CORPORATION, ACTIVE USA, INC., AK STEEL CORPORATION, ALCOA, INC., AMERICAN AIRLINES, INC., AMERICAN HOME PRODUCTS CORPORATION, AMERICAN PACIFIC INTERNATIONAL, AMERICAN PETROFINA HOLDING COMPANY, AMERIPRIDE SERVICES, INC., AMTRAK, ANACO, ANADARKO PETROLEUM CORPORATION, ANCHORLOK LEAR SIEGLER CORP., ARAMARK UNIFORM & CAREER APPAREL, INC., ATOFINA, BANDAG, INCORPORATED, BASF CORPORATION, BCI COCA-COLA BOTTLING COMPANY OF LOS ANGELES, BEHR PROCESS, BERWIND RAILWAY SERVICE CO., BETZDEARBORN INC., BEYLIK DRILLING, INC., BIRD, INC., BJ SERVICES COMPANY, BLACK & DECKER CORPORATION, BORDEN, INC., BP CHEMICALS, INC., BRENNTAG WEST, INC., BRIDGESTONE/FIRESTONE, INC., BUDGET UNIFORM RENTAL SUPPLY, INC., BURNS INTERNATIONAL SERVICES CORPORATION, CALMAT COMPANY, CHROME CHRANKSHAFT COMPANY, INC., CITY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS, CITY OF LOS ANGELES DEPARTMENT OF WATER & POWER, CLEAN STEEL, INC., CLOUGHERTY PACKING COMPANY, CNA HOLDINGS, INC., COCA-COLA COMPANY, COGNIS CORPORATION, COLTEC INDUSTRIES, CONOCO, INC., CONOPCO, INC., CONSOLIDATED DRUM RECONDITIONING CO., COOPER & BRAIN INC., CROSBY & OVERTON, INC., CROWLEY MARITIME CORPORATION, CROWN BEVERAGE PACKAGING, INC., CROWN CORK & SEAL CO., INC., DAIMLERCHRYSLER CORPORATION,	[OII EIGHTH PARTIAL CONSENT DECREE CAPTION -- REPLACEMENT PAGES]

[THE FOLLOWING SECTIONS HAVE BEEN OMITTED FOR BREVITY:
PAGES 223-406, Company signature pages
PAGES 639-733, Responsiveness Summary
PAGES 740-829, Transcript of Proceedings -Public Meeting on the Proposed Plan for the Final Remedy.]

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DE CALTA INTERNATIONAL CORP., DEFT INCORPORATED, DELTA AIR LINES, INC., DEUTSCH COMPANY, DRESSER INDUSTRIES, INC., DUNN-EDWARDS CORPORATION, FAIRCHILD HOLDING CORP., FEDERAL EXPRESS CORPORATION, FERRO CORPORATION, FLINT INK CORPORATION, FORD MOTOR COMPANY, GAYLORD CONTAINER CORPORATION, GC INERNATIONAL, INC., GEMINI INDUSTRIES, INC., GENERAL ELECTRIC, GENERAL LATEX & CHEMICAL CORPORATION, GENERAL MOTORS CORPORATION, GEORGIA PACIFIC CORPORATION, GOULD,INC., H & L TOOTH COMPANY, HELLMAN PROPERTIES LLC, HERBELL OIL EXPLORATION, WILLIAM F. HERDER, HONEYWELL INTERNATIONAL, HUNT-WESSON INC., HYDRIL COMPANY, IMC GLOBAL INC., INGERSOLL-RAND COMPANY, CITY OF INGLEWOOD, INLAND PAPERBOARD AND PACKAGING, INC., INTERNATIONAL PAPER COMPANY, INTERSTATE BRANDS CORPORATION, JEFFERSON SMURFIT CORPORATION (U.S.) AND STONE CONTAINER CORPORATION, JURA SERVICES INC., KERN FOODS SHAREHOLDERS LIQUIDATING TRUST, KERR MCGEE CORPORATION, KEYSOR-CENTURY CORPORATION, KINDER MORGAN ENERGY PARTNERS LLP, LIBERTY VEGETABLE OIL COMPANY, LONG BEACH OIL DEVELOPMENT, LONGVIEW FIBRE COMPANY, LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY, LUNDAY-THAGARD COMPANY, MASCO CORPORATION, MAYTAG CORPORATION, MCAULEY LCX CORPORATION, MCKESSON CORPORATION, MERCK & CO., INC., MICHELIN NORTH AMERICA, INC., MITCHELL ENERGY COMPANY L.P., MRC HOLDINGS, INC., MYDRIN INC., NESTLE USA, INC., NL INDUSTRIES, INC., NORTHROP GRUMMAN CORPORATION,

NORTON & SON OF CA, OCCIDENTAL PETROLEUM CO., OWENS-ILLINOIS, INC., PACIFIC TELESIS GROUP, PACIFIC TUBE CO., PAKTANK CORPORATION, PARKER-HANNIFIN CORPORATION, PERVO PAINT COMPANY, PETROMINERALS CORPORATION, PPG INDUSTRIES, INC., PRUDENTIAL OVERALL SUPPLY, PUREX INDUSTRIES, INC., QUEBECOR PRINTING, INC., RAYTHEON COMPANY, REICHHOLD, INC., RELIANCE UPHOLSTERY SUPPLY COMPANY, REVLON CONSUMER PRODUCTS CORPORATION, ROYAL ALUMINUM COMPANY, INC., ROYAL INDUSTRIES INTERNATIONAL, SAFEWAY INC., SARA LEE CORPORATION, SBC HOLDINGS, INC., SOULE LIQUIDATING AGENCY, SOUTHERN CALIFORNIA EDISON COMPANY, SOUTHERN CALIFORNIA GAS CO., SOUTHWEST PROCESSORS, INC., STAR-KIST FOODS, INC., STEELSCAPE, INC., SUPERIOR INDUSTRIES INTERNATIONAL, INC., SURFACE PROTECTION INDUSTRIES, INC., TDY INDUSTRIES, INC., TELEDYNE TECHNOLOGIES INCORPORATED, TEXTILE RUBBER & CHEMICAL CO., THE FLINTKOTE COMPANY, THE GLIDDEN COMPANY, THE HERTZ CORPORATION, THE MARQUARDT COMPANY, THE PILLSBURY COMPANY, THE PROCTER & GAMBLE MANUFACTURING COMPANY, THERMAL ENGINEERING INTERNATIONAL USA, INC., THUMS LONG BEACH COMPANY, TODD PACIFIC SHIPYARDS CORPORATION, TREE ISLAND STEEL, TRIBUNE COMPANY, LOS ANGELES TIMES COMMUNICATIONS LLC, TRICO INDUSTRIES, TRW INC., U.S. BORAX, INC., UNIFIED WESTERN GROCERS, INC., UNION PACIFIC RAILROAD COMPANY, UNITED AIRLINES, UNITED PARCEL SERVICE, INC., VEST, INC., VIACOM, INC., VIAD CORP., VOPAK USA INC.,

WASTE MANAGEMENT, INC., WATER PIK TECHNOLOGIES, INC., LAARS, INC., WATERFORD WEDGWOOD USA, INC., WILLAMETTE INDUSTRIES, INC., WITCO CORPORATION, WYMAN-GORDON COMPANY, XEROX CORPORATION, XTRA ENERGY CORPORATION,

Defendants.

Operating Industries, Inc. (OII) Superfund Site

EIGHTH PARTIAL CONSENT DECREE

TABLE OF CONTENTS

I.	Jurisdiction	12
II.	Parties Bound	13
III.	Denial of Liability	14
IV.	Site Background	15
V.	Definitions	19
VI.	General Provisions	35
VII.	Work to Be Performed	37
VIII.	Excluded Work	51
IX.	EPA Approval of Plans and Other Submissions	53
X.	Additional Work	55
XI.	Periodic Review to Assure Protection of Human Health and the Environment	57
XII.	Safety, Health and Emergency Response Plan	58
XIII.	Quality Assurance/Quality Control	58
XIV.	Project Coordinators	60
XV.	Access and Institutional Controls	63
XVI.	Data Exchange: Sampling and Analysis	72
XVII.	Retention of Records	78
XVIII.	Payment of Response Costs	81
XIX.	Escrow Account	96
XX.	Disbursement of OII Special Account Funds	108
XXI.	Disbursements from the State Site-Specific Sub-Account	118
XXII.	Priority of Claims	119

TABLE OF CONTENTS (Cont'd)

XXIII.	Indemnification and Insurance	120
XXIV.	Force Majeure	124
XXV.	Dispute Resolution	128
XXVI.	Stipulated Penalties	141
XXVII.	Certifications by Each Cash Defendant	153
XXVIII.	Covenants Not to Sue by the United States for the Work Defendants	153
XXIX.	De Minimis Covenants Not to Sue by the United States for the Cash-1 and the Cash-1/R Defendants ("Tier 1" Covenants)	157
XXX.	De Minimis Covenants by the United States for the Settling Federal Agency ("Tier 1" Covenants)	158
XXXI.	De Minimis Covenants Not to Sue by the United States for the Cash-2 and the Cash-2/R Defendants ("Tier 2" Covenants)	158
XXXII.	Covenants Not to Sue by the United States for Matters Addressed in the First and Third Decrees	162
XXXIII.	Covenants by the State of California	165
XXXIV.	Reservations of Rights	178
XXXV.	Covenants by the Defendants and the Settling Federal Agency	191
XXXVI.	Certification of Completion	199
XXXVII.	Form of Notice	203
XXXVIII.	Modification	205
XXXIX.	Admissibility of Data	207
XL.	Contribution Protection	207
XLI.	The Defendants' and Settling Federal Agency's Right of Contribution and Indemnity and Covenant Not to Sue Each Other	209
XLII.	Waiver of Claim-splitting Defense	210

TABLE OF CONTENTS (Cont'd)

XLIII.	Community Relations	210
XLIV.	Lodging and Public Participation	211
XLV.	State and Local Agency Participation	212
XLVI.	Notice to the State	213
XLVII.	Other Claims	213
XLVIII.	Continuing Jurisdiction	214
XLIX.	Representative Authority	214
L.	Effective Date	215
LI.	Severability	215
LII.	Termination and Satisfaction	216
LIII.	Section Headings	217
LIV.	Counterparts	218

EIGHTH PARTIAL CONSENT DECREE

WHEREAS, the United States of America ("United States"), on behalf of the Administrator of the United States Environmental Protection Agency ("EPA"); the State of California on behalf of the Department of Toxic Substances Control (the "State"); the California Hazardous Substance Account; the California Hazardous Waste Control Account; the California Toxic Substances Control Account; the California Site Remediation Account; and any predecessors and successors to those accounts, to the extent that funds have been or will be expended from those accounts on behalf of DTSC (collectively the "Plaintiffs"), have filed concurrently with this Eighth Partial Consent Decree a complaint in this matter pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601 et seq. ("CERCLA") and the Solid Waste Disposal Act, 42 U.S.C. §§ 6901 et seq. (also known as the Resource Conservation and Recovery Act). The complaint includes supplemental claims by the State pursuant to the Hazardous Substances Account Act, Health and Safety Code § 25300 et seq., and California Civil Code § 3494. The complaint seeks to compel the Defendants (as defined herein) to perform certain response actions and to recover from the Defendants certain response costs that have been and will be incurred by the United States and the State in response to alleged releases and threatened releases of hazardous substances from the facility known as the Operating Industries, Inc. site ("OII Site" or the "Site") located at 900 Potrero Grande Drive, Monterey Park, California;

WHEREAS, the Plaintiffs allege that the Operating Industries, Inc. landfill is a facility as defined in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9);

WHEREAS, the Plaintiffs allege that the Defendants are persons, as defined in Section 101(21) of CERCLA, 42 U.S.C. § 9601(21);

WHEREAS, the Plaintiffs allege that wastes, and constituents thereof, generated by the Defendants and sent to and disposed of at the Site, or arranged or accepted by the Defendants for transport and disposed of at the Site, are "hazardous substances," as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), and California Health and Safety Code §§ 25316 and 25317;

WHEREAS, the Plaintiffs allege that the past, present, and potential migrations of hazardous substances from the Site constitute actual and threatened releases, as defined in Section 101(22) of CERCLA, 42 U.S.C. § 9601(22), and California Health and Safety Code §§ 25320 and 25321, and further allege that the Defendants are liable under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), and California Health and Safety Code § 25360;

WHEREAS, EPA has notified the State of California pursuant to the requirements of Section 106(a) of CERCLA, 42 U.S.C. § 9606(a), and EPA has provided the State with an opportunity to participate in and to be a party to this settlement;

WHEREAS, pursuant to Sections 121 and 122 of CERCLA, 42 U.S.C. §§ 9621 and 9622, the Plaintiffs and the Defendants have each stipulated and agreed to the making and entry of this Eighth Partial Consent Decree ("Consent Decree" or "Eighth Partial

Consent Decree") prior to the taking of any testimony, and in full settlement of the claims raised in the complaint;

WHEREAS, the Regional Administrator of EPA Region IX, or his/her delegatee, has determined the following, for the purposes of CERCLA Section 122(g), 42 U.S.C. § 9622(g): (1) prompt settlement with each Cash Defendant and the Settling Federal Agency is practicable and in the public interest within the meaning of Section 122(g)(1) of CERCLA, 42 U.S.C. § 9622(g)(1); (2) the payment to be made by each Cash Defendant and the Settling Federal Agency under this Consent Decree involves only a minor portion of the response costs at the OII Site within the meaning of Section 122(g)(1) of CERCLA, 42 U.S.C. § 9622(g)(1), based upon EPA's estimate that the total response costs incurred and to be incurred at or in connection with the OII Site by the EPA Hazardous Substance Superfund and by private parties will exceed $600,000,000; (3) the amount of hazardous substances contributed to the OII Site by each Cash Defendant and the Settling Federal Agency and the toxic or other hazardous effects of the hazardous substances contributed to the Site by each Cash Defendant and the Settling Federal Agency are minimal in comparison to other hazardous substances at the Site within the meaning of Section 122(g)(1)(A) of CERCLA, 42 U.S.C. § 9622(g)(1)(A), because the amount of materials containing hazardous substances contributed to the Site by each Cash Defendant and the Settling Federal Agency, as shown on Exhibit F, attached, does not exceed five (5) million gallons, and the hazardous substances contributed by each Cash Defendant and the Settling Federal Agency to the OII Site are not significantly

more toxic or of significantly greater hazardous effect than other hazardous substances at the OII Site; and

WHEREAS, the Parties recognize, and the Court by entering this Consent Decree finds, that the Parties enter into this Consent Decree in good faith, in an effort to avoid expensive and protracted litigation, without any admission or finding of liability or fault as to any allegation or matter, and that this Consent Decree is fair, reasonable, and in the public interest;

NOW THEREFORE, it is ORDERED, ADJUDGED, AND DECREED as follows:

I. Jurisdiction

The Court has jurisdiction over the subject matter of this action and the signatories to this Consent Decree pursuant to 28 U.S.C. §§ 1331 and 1345, and Sections 106, 117, and 113(b) of CERCLA, 42 U.S.C. § 9606, 9607, and 9613(b), and supplemental jurisdiction over the claims arising under the laws of California pursuant to 28 U.S.C. § 1367. Solely for the purposes of this Consent Decree and the underlying complaint, each Defendant waives service of summons and agrees to submit to the jurisdiction of this Court and to venue in this District. The Defendants shall not challenge the Court's jurisdiction to enter and enforce this Consent Decree. The Defendants agree not to challenge or object to entry of this Consent Decree by the Court unless the United States has notified the Defendants in writing that it no longer supports entry of this Consent Decree or that it seeks to modify this Consent Decree.

II. Parties Bound

A. The Parties to this Consent Decree are the United States of America, the State, the State Accounts, and the Defendants.

B. This Consent Decree applies to and is binding upon the United States, the State, and the State Accounts, and upon the Defendants and the Defendants' agents, successors and assigns, and upon all Contractors or other persons acting under or for the Defendants. Any change in ownership, partnership status or corporate status of a Defendant including, but not limited to, any transfer of assets or real or personal property, shall in no way alter such Defendant's responsibilities under this Consent Decree. Each Defendant shall be responsible and shall remain responsible for carrying out all activities required of that Defendant under this Consent Decree. All actions taken by the State pursuant to this Consent Decree, including, but not limited to, all approvals, reservations of rights, and covenants not to sue, are solely those of the California Department of Toxic Substances Control ("DTSC") and of no other State agency except that the California Attorney General also covenants not to sue the Defendants as provided in Section XXXIII (Covenants by the State of California, page 165).

C. The Work Defendants shall provide a copy of this Consent Decree and shall provide all relevant additions to this Consent Decree to each person, including, but not limited to, all contractors and subcontractors retained to perform the Work required by this Consent Decree and to each person representing any Work Defendant with respect to the Site or the Work and shall

condition any contract for the Work upon compliance with this Consent Decree. The Work Defendants shall nonetheless be responsible for ensuring that their contractors and subcontractors perform the Work contemplated herein in accordance with this Consent Decree. With regard to the activities undertaken pursuant to this Consent Decree, each contractor and subcontractor shall be deemed to be in a contractual relationship with the Work Defendants within the meaning of Section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3).

D. The Work Defendants shall be jointly and severally responsible for the performance of the Work Defendants' obligations required by this Consent Decree. In the event of the inability to pay or insolvency of any one or more of the Work Defendants, regardless of whether or not that Work Defendant or those Work Defendants enter into formal bankruptcy proceedings, or in the event that, for any other reason, one or more of the Work Defendants do not participate in the implementation of the Work, the remaining Work Defendants agree and commit to complete the Work and activities provided for in this Consent Decree.

III. Denial of Liability

The Defendants and the Settling Federal Agency deny any and all legal or equitable liability under any federal, state, or local statute, regulation or ordinance, or under common law, for any response costs, damages or claims caused by or arising out of conditions at or arising from the Site. By entering into this Consent Decree, or by taking any action in accordance with it, the Defendants and the Settling Federal Agency do not admit any

allegations contained herein or in the complaint, nor do the Defendants or the Settling Federal Agency admit liability for any purpose or admit any issues of law or fact or any responsibility for the alleged release or threat of release of any hazardous substance into the environment. Nothing in this Section shall alter the Defendants' agreement not to challenge the Court's jurisdiction as set forth in Section I (Jurisdiction, page 12).

IV. Site Background

The following is a summary of the Site background as alleged by the United States and the State which, for the purposes of this Consent Decree, the Defendants neither admit nor deny:

A. The Operating Industries, Inc. landfill is a 190-acre facility located at 900 Potrero Grande Drive, Monterey Park, California. The Site operated from 1948 through 1984. Over the course of its operation, the landfill accepted industrial solid, liquid and hazardous wastes, as well as municipal solid waste. Wastes accepted by the landfill include hazardous substances as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), and California Health and Safety Code §§ 25316 and 25317.

B. The Site is located on the southwestern flank of the La Merced hills (also called the Montebello hills) and is divided by California Highway 60 (Pomona Freeway), which runs roughly east-west through the Site, dividing it into a 45-acre North Parcel and 145-acre South Parcel. The Site is located at the boundary between the San Gabriel groundwater basin to the north and the Los Angeles Central groundwater basin to the south. The important water-bearing units underlying the Los Angeles and San

Gabriel Basins, as well as the Site, are from oldest to youngest: upper Pliocene Pico Formation; lower Pleistocene San Pedro Formation; upper Pleistocene older alluvium (including "terrace gravels"); and the Recent Alluvium. The San Pedro Formation contains the five major aquifers of the Los Angeles Central Basin and the San Gabriel Basin: the Jackson, Hollydale, Lynwood, Silverado and Sunnyside aquifers. The lower Pliocene Repetto formation and older formations are found at depths greater than 1500 feet. The Site is approximately one mile west of the Whittier Narrows groundwater recharge area and the Rio Hondo River.

C. The Site was proposed for inclusion on the National Priorities List ("NPL") in October 1984 and was subsequently placed on the NPL in May 1986, in accordance with Section 105(a)(8) of CERCLA, 42 U.S.C. § 9605(a)(8), as set forth at 40 C.F.R. Part 300, Appendix B.

D. The contaminants found at the Site include hazardous substances as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), or California Health and Safety Code §§ 25316 and 25317.

E. There have been releases of hazardous substances from the Site, and the Site poses numerous threats to human health and the environment. The population in proximity to the Site includes the nearby residents of the City of Montebello and the City of Monterey Park, those who travel on the section of the Pomona Freeway that transects the Site, and workers in the several businesses located on or near the Site.

F. In response to a release or a substantial threat of a

release of hazardous substances at or from the Site, EPA has completed the Remedial Investigation ("RI"); the Feasibility Study ("FS"), the Proposed Plan, and the Final Record of Decision (the "Final ROD") for the Site, pursuant to 40 C.F.R. § 300.430.

G. EPA has identified three operable units to date: Site Control and Monitoring ("SCM"); Leachate Management ("LM"); and Gas Migration Control and Landfill Cover ("Gas Control and Cover"). The first two operable units (SCM and LM) were the subject of two interim Records of Decision ("RODs"). The work required by those interim RODs was the subject of two prior settlements, memorialized in two partial consent decrees. The first settlement is captioned United States et al. v. Chevron Chemical Company, et al., No. CV 88-7196-MRP(Kx), and was entered by the Court on May 11, 1989 (the "First Decree"). The second settlement is captioned United States, et al. v. American Petrofina Exploration Co., et al., No. CV 88-7196-MRP(Kx), and was entered on September 17, 1991 (the "Second Decree").

H. A third partial consent decree, captioned United States, et al. v. Chevron Chemical Company, et al., No. CV 91-6520-MRP(Kx), was entered by the court on March 30, 1992 (the "Third Decree"). The Third Decree addresses a portion of the work required by the Record of Decision for the Gas Control and Cover Operable Unit (the "Gas Control and Cover ROD"). The Gas Control and Cover ROD, unlike the previous two interim RODs, is a final ROD and represents a significant portion of the final remedy for the Site. Parties to the Third Decree are performing a major portion of the Gas Control and Cover ROD and some operation and maintenance as provided in that ROD. At the

termination of the Third Decree, additional operation and maintenance provided in that ROD will be performed under this Consent Decree.

I. On December 21, 1992, EPA, the State and the United States Department of the Navy ("Navy") entered into an Administrative Settlement (EPA CERCLA Docket No. 92-19), under which the Navy resolved its liability for matters addressed in the First Decree and the Third Decree.

J. On November 2, 1993, EPA issued a unilateral administrative order ("UAO 94-01") pursuant to Section 106 of CERCLA, 42 U.S.C. § 9606, requiring certain response activities at the Site in cooperation with EPA and the other persons performing work at the Site.

K. A fourth partial consent decree, resolving the alleged liability of certain municipalities and transporters and the California Department of Transportation for arranging for disposal or for transport for disposal of municipal solid waste, was entered on April 4, 1995, captioned United States, et al. v. City of Monterey Park, et al., No. CV 94-8685 WMB(GHKx) (the "Fourth Decree").

L. A fifth partial consent decree, addressing the same subject matter as the First Decree and the Third Decree, incorporating new defendants, including the recipients of UAO 94-01, was entered on July 10, 1996, captioned United States, et al. v. IT Corporation, et al., No. CV 96-1959 WMB(JRx) (the "Fifth Decree").

M. On March 7, 1997, EPA issued a unilateral administrative order ("UAO 97-02") pursuant to Section 106 of

O. "EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

P. "Escrow Account" shall mean, as indicated by context, either the Work Escrow Account to be established by the Work Defendants pursuant to Section XIX (Escrow Account, page 72) of this Consent Decree, or the Cash Escrow Account. The term "escrow account" (lower case) shall mean, as indicated by context, one or more of the escrow accounts established pursuant to a settlement with EPA (including this Consent Decree as well as prior and/or later settlements) for the OII Site.

Q. "Excluded Work" shall mean the response actions defined as Excluded Work in Section VII (Work to be Performed, page 37) and in the Scope of Work.

R. "Excluded Work Completion Report" shall mean the Report to be prepared by the Work Defendants and submitted to EPA pursuant to Sections 5.16, 6.2.13, and 7.14 of the Scope of Work.

S. "Excluded Work Oversight Costs" shall mean all costs including, but not limited to, direct and indirect costs, that the United States and the State incur in performing Oversight or otherwise overseeing the implementation of this Consent Decree relating to the performance of the Excluded Work by the Work Defendants including, but not limited to, payroll costs, contractor costs, travel costs, laboratory costs and Interest on such costs.

T. "Exhibit A" shall mean the Gas Control and Cover ROD, as defined below, for the Gas Control and Cover Operable Unit.

U. "Exhibit B" shall mean the Final Record of Decision, as defined below.

V. "Exhibit C" shall mean the Scope of Work, as defined below.

W. "Exhibit D" shall mean the list of the Cash Defendants and schedule of payments to be made by them, attached hereto.

X. "Exhibit E" shall mean the list of the Work Defendants attached hereto.

Y. "Exhibit F" shall mean the Eighth Partial Consent Decree Volumetric List attached hereto.

Z. "Exhibit G" shall mean the Contaminants List attached hereto.

AA. "Fifth Decree Escrow" shall mean the cash escrow account established pursuant to the Fifth Decree.

BB. "Final Record of Decision" or "Final ROD" shall mean the Final Record of Decision for the OII Site, signed by the Director of the Superfund Division for EPA Region IX on September 30, 1996, which is attached as Exhibit B.

CC. "Final Remedial Action Completion Report" shall mean the Report submitted by the Work Defendants pursuant to this Consent Decree and Sections 5.14, 6.2.11, and 7.12 of the Scope of Work, detailing the Remedial Action performed pursuant to this Consent Decree.

DD. "Final Remedy" shall mean the remedies selected in the Final ROD and the Gas Control and Cover ROD.

EE. "Final Work Completion Report" shall mean the Report submitted by the Work Defendants pursuant to this Consent Decree and Sections 5.15, 6.2.12, and 7.13 of the Scope of Work,

detailing the Work performed pursuant to this Consent Decree.

FF. "Future Response Costs" shall mean Work Oversight Costs, Excluded Work Oversight Costs, and all other costs, including, but not limited to, direct and indirect costs, that the United States and the State incur in reviewing or developing plans, reports and other items pursuant to this Consent Decree, verifying the Work, or otherwise implementing, overseeing, or enforcing this Consent Decree, including, but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to Section X (Additional Work, page 55), Section XV (Access and Institutional Controls, page 63) (including, but not limited to, the cost of attorney time and any monies paid to secure access and/or to secure or implement institutional controls, including, but not limited to, the amount of just compensation, if any), Paragraph XVIII.I (page 93) of Section XVIII (Payment of Response Costs), and Paragraph XXXIV.E (page 181) of Section XXXIV (Reservations of Rights), and the costs incurred in connection with formal or informal dispute resolution under this Consent Decree. Future Response Costs shall not include: (1) Interim Response Costs; (2) any costs defined as Future Oversight Costs in the Third Decree; (3) any costs incurred by the United States or the State in overseeing the work performed under UAO 97-02; or (4) any costs incurred by the United States, or any costs in excess of $50,000 (fifty thousand dollars) incurred by the State, in overseeing the Excluded Work (as defined in this Consent Decree) to the extent that such Excluded Work is performed by parties other than the Work Defendants.

GG. "Gas Control and Cover Operable Unit" shall mean the Gas Migration Control and Landfill Cover Operable Unit, as described in the Gas Control and Cover Record of Decision, as amended on September 28, 1990.

HH. "Gas Control and Cover Record of Decision" or "Gas Control and Cover ROD" shall mean the Record of Decision relating to the Gas Migration Control and Landfill Cover Operable Unit at the Site signed by the EPA Region IX Regional Administrator on September 30, 1988, as amended on September 28, 1990, which describes the Gas Control and Cover Operable Unit and is attached as Exhibit A.

II. "HSAA" shall mean the California Hazardous Substance Account Act, California Health and Safety Code Sections 25300 et seq.

JJ. "HWCL" shall mean the Hazardous Waste Control Law, California Health & Safety Code Section 25100 et seq.

KK. "Inflation Adjusted" shall mean the amount adjusted for inflation by the same percentage as the increase in the Consumer Price Index for all Urban Consumers (CPI-U) published by the Department of Labor, Bureau of Statistics, from the date of lodging of this Consent Decree. In the event the CPI-U is no longer available, an appropriate substitute index as determined by EPA shall be used.

LL. "Interest" shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established under Subchapter A of Chapter 98 of Title 26 of the U.S. Code, compounded on October 1 of each year, in accordance with 42 U.S.C. § 9607(a).

MM. "Interim Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, incurred by the United States prior to the lodging of this Consent Decree but paid after June 30, 1997. Interim Response Costs shall also include all Interest on the Past Response Costs that has accrued pursuant to 42 U.S.C. § 9607(a) during the period from September 30, 1997 to the date of lodging of this Consent Decree.

NN. "Matters Addressed in this Consent Decree" shall mean (1) Natural Resource Damages with respect to the Site and (2) the Work, the Excluded Work, Past Response Costs, Interim Response Costs, Excluded Work Oversight Costs, and Future Response Costs, as those terms are defined in this Consent Decree. "Matters Addressed in this Consent Decree" do not include those response costs or response actions as to which EPA or DTSC has reserved its rights under this Consent Decree, nor any response actions that may be implemented or response costs that may be incurred pursuant to any future decision document(s) issued pursuant to any rights reserved herein by the Plaintiffs, including, but not limited to, those reserved in Section XXVIII (Covenants Not to Sue by the United States for the Work Defendants, page 153), Section XXIX (De Minimis Covenants Not to Sue by the United States for the Cash-1 and the Cash-1/R Defendants ("Tier 1" Covenants), page 157), Section XXX (De Minimis Covenants by the United States for the Settling Federal Agency ("Tier 1" Covenants), page 158), Section XXXI (De Minimis Covenants Not to Sue by the United States for the Cash-2 and the Cash-2/R Defendants ("Tier 2" Covenants), page 158), Section XXXII

(Covenants Not to Sue for Matters Addressed in the First and Third Decrees, page 162), Section XXXIII (Covenants by the State of California, page 165), and Section XXXIV (Reservations of Rights, page 178).

OO. "Matters Addressed in the First Decree" shall mean: the implementation of the remedial alternative selected in the Site Control and Monitoring Record of Decision signed by the EPA Region IX Deputy Regional Administrator on July 31, 1987 ("SCM ROD"); the implementation of the remedial alternative selected in the Leachate Management Record of Decision signed by the EPA Region IX Deputy Regional Administrator on November 16, 1987 ("LM ROD"); oversight costs associated with the performance of that work; and all past response costs, including, but not limited to, interest and indirect costs, that the United States has incurred with regard to the Site up to June 1, 1988. Matters Addressed in the First Decree specifically do not include removal(s), remedial action(s) that will be implemented not as part of the First Decree, or any response action(s) for the OII Site that will be implemented pursuant to the Final ROD or any future decision document(s).

PP. "Matters Addressed in the Third Decree" shall mean the Work and the Excluded Work, as those terms are defined in the Third Decree; Future Oversight Costs, as that term is defined in the Third Decree; and Past Response Costs, as that term is defined in the Third Decree. Matters Addressed in the Third Decree specifically do not include removal(s), remedial action(s) that will be implemented not as part of the Third Decree, or any response action(s) for the OII Site that will be implemented

pursuant to the Final ROD or any future decision document(s).

QQ. "Municipal Sewage Sludge" or "MSS" shall mean any solid, semi-solid, or liquid residue removed during the treatment of municipal waste water or domestic sewage and may include residue removed, all or in part, during the treatment of wastewater from manufacturing or processing operations, provided that such residue has essentially the same characteristics as residue removed during the treatment of domestic sewage.

RR. "Municipal Solid Waste" or "MSW" shall mean household waste and solid waste collected from non-residential sources that is essentially the same as household waste. While the composition of such wastes may vary considerably, municipal solid waste generally is composed of large volumes of non-hazardous substances (e.g., yard waste, food waste, glass, and aluminum) and can contain small amounts of such other wastes as typically may be accepted in RCRA Subtitle D landfills.

SS. "National Contingency Plan" or "NCP" shall refer to the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300.

TT. "Natural Resources" shall have the meaning provided in Section 101(16) of CERCLA, 42 U.S.C. § 9601(16), and under any applicable provisions of state law.

UU. "Natural Resource Damages" shall mean damages, including the costs of damage assessment, recoverable under Section 107 of CERCLA, 42 U.S.C. § 9607, and any applicable provisions of state law, for injury to, destruction of, or loss of any and all Natural Resources.

VV. "OII Site" or the "Site" shall mean the "facility," as that term is defined at Section 101(9) of CERCLA, 42 U.S.C. § 9601(9), and shall mean the landfill located at 900 Potrero Grande Drive in Monterey Park, California.

WW. "OII Special Account" shall mean the special account(s) established for the Site by EPA pursuant to Section 122(b)(3) of CERCLA, 42 U.S.C. § 9622(b)(3), and under this Consent Decree or otherwise established by EPA in connection with prior settlements for the Site.

XX. "Operation and Maintenance" or "O&M" shall mean all activities, including, but not limited to, monitoring, required to evaluate and maintain the effectiveness of the Remedial Action, as required under any Operations Plans approved or developed by EPA pursuant to this Consent Decree and the Scope of Work, or pursuant to the Third Decree and the Scope of Work under the Third Decree.

YY. "Oversight" shall mean inspection by the EPA, the United States Army Corps of Engineers ("USACE"), or the State and its representatives and contractors, of remedial work and all other actions necessary to verify the adequacy of performance of activities and of the Plans, Reports and other items relating to the OII Site performed or submitted by the Work Defendants pursuant to this Consent Decree.

ZZ. "Paragraph" shall mean a portion of this Consent Decree identified by a capital letter.

AAA. "Parties" shall mean the United States, the State, the State Accounts, and the Defendants.

BBB. "Past Response Costs" shall mean: (1) all costs

including, but not limited to, direct and indirect costs, that the United States paid at or in connection with the Site through June 30, 1997, plus Interest on all such costs that has accrued pursuant to 42 U.S.C. § 9607(a) through such date, but excluding costs for which the United States has been reimbursed and excluding oversight expenses for the Third Decree paid or to be paid by the persons who are defendants under that Decree; and (2) all costs, including, but not limited to, direct costs, indirect costs, and interest, that the State, and the State Accounts paid at or in connection with the Site through the date of lodging of this Consent Decree, but excluding costs for which the State and said accounts have been reimbursed and excluding oversight expenses for the Third Decree paid or to be paid by the persons who are defendants under that Decree.

CCC. "Performance Standards" shall mean those cleanup standards and other measures of achievement of the goals of the Remedial Action, set forth in Exhibit A (Gas Control and Cover ROD), Exhibit B (Final ROD), Exhibit C (Scope of Work), and Section VII of this Consent Decree (Work to be Performed, page 37).

DDD. "Plaintiffs" shall mean the United States, the State, and the State Accounts.

EEE. "Plan(s)" shall mean the plans and designs developed by the Work Defendants that detail the elements of the Work to be conducted pursuant to this Consent Decree.

FFF. "Progress Report" shall mean the Report(s) prepared by the Work Defendants pursuant to Subparagraph VII.C.4.b (page 50) of Section VII (Work To Be Performed).

GGG. "RCRA" shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. § 6901 et seq. (also known as the Resource Conservation and Recovery Act).

HHH. "Remedial Action" shall mean those activities, except for Operation and Maintenance, to be undertaken by the Defendants to implement the Gas Control and Cover ROD and the Final ROD, in accordance with the SOW and the final Work Plan and other plans approved by EPA.

III. "Remedial Design" shall mean those activities, including, but not limited to, investigations, predesign, and interim monitoring, to be undertaken by the Work Defendants to develop the final plans and specifications for the Remedial Action.

JJJ. "Report(s)" shall mean the Reports developed by the Work Defendants in compliance with this Consent Decree, detailing the Work and the results of its implementation.

KKK. "Scope of Work" or "SOW" shall mean the scope of work for implementation of the Remedial Design, Remedial Action, monitoring, and Operation and Maintenance, as set forth in Exhibit C to this Consent Decree and any modifications thereto pursuant to this Consent Decree.

LLL. "Settling Federal Agency" shall mean the Department of the Navy, which is resolving any claims that have been or could be asserted against it with regard to the Matters Addressed in this Consent Decree as provided in this Consent Decree.

MMM. "State" shall mean the State of California on behalf of the Department of Toxic Substances Control.

NNN. "State Accounts" shall mean the California Hazardous

Substance Account, the California Hazardous Waste control Account, the California Toxic Substances Control Account and the California Site Remediation Account, and any predecessors and successors to those accounts, to the extent that funds have been or will be expended from those accounts on behalf of DTSC.

OOO. "State Site-Specific Sub-Account" shall mean the separate site specific sub-account created with respect to the Site under California Health and Safety Code Section 25330.4 pursuant to the terms of Section X.D of the Seventh Decree.

PPP. "Subparagraph" shall mean a portion of this Consent Decree identified by (as indicated by context) an Arabic numeral or a lowercase letter, or any outline/paragraph identifier other than a capital letter or a Roman numeral.

QQQ. "United States" shall mean the United States of America, including, but not limited to, all of its departments, agencies, and instrumentalities, and includes without limitation EPA, the Settling Federal Agency, and any federal Natural Resources trustee.

RRR. "USACE" shall mean the United States Army Corps of Engineers.

SSS. "Waste Material" shall mean (1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any "pollutant or contaminant" under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); (3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27); and (4) any "hazardous substance" under California Health and Safety Code §§ 25316 and 25317.

TTT. "Work" shall mean all activities the Work Defendants

are required to perform under this Consent Decree, except those required by Section XVII (Retention of Records, page 78).

UUU. "Work Defendants" shall mean those Defendants (including, but not limited to, the Work-Related Defendants) listed in Exhibit E; the Work Defendants have agreed to undertake the Work and other obligations set forth in this Consent Decree, including making payments as set forth in Exhibit E and elsewhere in this Consent Decree.

VVV. "Work-Related Defendants" shall mean those Work Defendants that are receiving covenants for matters addressed in the First and Third Decrees, as provided in Section XXXII (Covenants Not to Sue by the United States for Matters Addressed in the First and Third Decrees, page 162) and Paragraph XXXIII.E (page 174) of Section XXXIII (Covenants by the State of California), and as identified in Exhibit E; the Work-Related Defendants have agreed to pay the amounts specified in the Schedule(s) set forth in Exhibit E. Work-Related Defendants are Defendants that: (1) either declined to participate in one or more settlements for the OII Site that were previously offered to them, or did not receive such previous settlement offers; and (2) are related to a Defendant that elects to perform work under this Decree.

WWW. "Work Escrow Account" shall mean the work escrow account to be established by the Work Defendants pursuant to Paragraph XIX.A (page 96) of Section XIX (Escrow Account) of this Consent Decree.

XXX. "Working Day" shall mean a day other than a Saturday, Sunday or federal holiday.

YYY. "Work Oversight Costs" shall mean all costs including, but not limited to, direct and indirect costs, that the United States incurs in performing Oversight or otherwise overseeing the implementation of this Consent Decree relating to the performance of the Work including, but not limited to, payroll costs, contractor costs, travel costs, laboratory costs and Interest on such costs. Work Oversight Costs do not include (1) the costs of enforcing this Consent Decree; (2) the costs incurred in connection with formal or informal dispute resolution under this Consent Decree; (3) the costs incurred to implement Work including, but not limited to, Work performed under Subparagraph VII.C.5 (page 51) of Section VII (Work to be Performed); (4) costs incurred pursuant to Paragraph XV.C (page 68) of Section XV (Access and Institutional Controls); or (5) the costs incurred in performing Oversight of or otherwise overseeing the implementation of the Excluded Work regardless of whether the Work Defendants or a non-party performs such Excluded Work.

ZZZ. "Work Plan" shall mean the Work Plan developed pursuant to Sections 4.2.1, 6.2.1, and 7.2.1 of the Scope of Work and approved by EPA, and any amendments thereto.

VI. General Provisions

A. Objectives

The objectives of the Parties in entering into this Consent Decree are to protect public health or welfare or the environment at the Site by the funding, design and implementation of response actions at the Site by the Defendants, to reimburse the Plaintiffs' response costs, and to resolve the Plaintiffs' claims

against Defendants and the claims of the State and the Defendants that have been or could have been asserted against the United States with regard to the Matters Addressed in this Consent Decree, as provided in this Consent Decree.

B. Commitments by the Defendants

The Work Defendants shall finance and perform the Work in accordance with this Consent Decree, the Gas Control and Cover ROD, the Final ROD, the SOW, and all work plans and other plans, standards, specifications, and schedules set forth herein or developed by the Work Defendants and approved by EPA pursuant to this Consent Decree. The Defendants shall also reimburse the United States and the State for Past Response Costs, Interim Response Costs, and Future Response Costs as provided in this Consent Decree. The Settling Federal Agency shall reimburse the EPA Hazardous Substance Superfund for Past Response Costs, Interim Response Costs, and Future Response Costs, as provided in this Consent Decree.

C. Compliance with Applicable Law

All activities undertaken by the Defendants pursuant to this Consent Decree shall be performed in accordance with the requirements of all applicable federal, state and local laws and regulations, including the NCP. In performing the activities required by this Consent Decree, the Defendants also must comply with all applicable or relevant and appropriate requirements of all federal and state environmental laws as set forth in the Gas Control and Cover ROD, the Final ROD, and the SOW. The activities conducted pursuant to this Consent Decree, if conducted in accordance with the requirements of this Consent

Decree, shall be considered to be consistent with the NCP. All Parties agree and the Court hereby determines that the response actions selected by the Gas Control and Cover Record of Decision and the Final Record of Decision are consistent with each other and consistent with the NCP. The Work performed in the implementation of the Gas Control and Cover ROD and the Final ROD shall meet the Performance Standards as defined in this Consent Decree.

D. Conflicts

In the event of conflict between any provision in the body of this Consent Decree and any provision of the Scope of Work or any attachment to the SOW, the provision in the body of this Consent Decree shall control. In the event of any inconsistency between the SOW and the Plans, the SOW shall govern.

VII. Work to Be Performed

A. General Obligations Regarding the Work

1. The Work Defendants, consistent with the provisions of this Consent Decree, shall finance and perform, at their expense, the implementation of the Work as required by this Consent Decree and the Exhibits hereto.

2. The Defendants shall conduct no activities at the Site except:

a. response actions specifically authorized under this Consent Decree;

b. response actions required by and in furtherance of the Work under this Consent Decree;

c. response actions specifically authorized, in writing, by EPA; or

d. response actions that they are performing under the Third Decree or another enforcement document issued by EPA.

3. The Defendants shall not in any way impede the performance of the Work or the Excluded Work, any activities being performed by EPA or the State, or any activities being performed under the Third Decree or any other enforcement document issued by EPA. The Parties recognize that these activities may overlap and will require integration and coordination among all persons performing them. The Parties shall use best efforts to minimize conflicts and to coordinate their activities through the Project Coordinators, pursuant to Section 3.0 (Integration and Coordination) of the SOW.

4. Notwithstanding any approvals that may be granted by the United States or the State or other governmental entities, the Work Defendants shall not be relieved of any liability arising from or relating to their acts or omissions or the acts or omissions of any of their contractors, subcontractors, or any other person acting on their behalf in the performance of the Work or their failure to perform or complete the Work.

5. The Work Defendants shall perform the Work for the Site as described in: this Consent Decree; the Gas Control and Cover ROD, attached hereto as Exhibit A; the Final ROD, attached hereto as Exhibit B; and the Scope of Work attached hereto as Exhibit C and any modifications thereto pursuant to the terms of this Consent Decree. The Gas Control and Cover ROD, the Final

ROD, the SOW, and all modifications to the SOW are hereby incorporated by reference and made a part of this Consent Decree, to the extent not inconsistent with this Consent Decree. The Work shall be performed in accordance with all the provisions of this Consent Decree, the SOW, any modifications to the SOW, and all design specifications, Plans or schedules developed pursuant to this Consent Decree or approved by EPA.

6. The Parties acknowledge and agree that neither the SOW, the Plans, nor any approvals, permits or other permissions that may be granted by EPA related to this Consent Decree constitute a warranty or representation of any kind by the United States that the SOW or Plans will achieve the Performance Standards set forth in the Gas Control and Cover ROD, in the Final ROD, and in this Section VII (Work To Be Performed, page 37) and shall not foreclose the United States from seeking performance of all terms and conditions of this Consent Decree. Except as provided in Section XXVIII (Covenants Not to Sue by the United States for the Work Defendants, page 153), Section XXXII (Covenants Not to Sue by the United States for Matters Addressed in the First and Third Decrees, page 162), and Section XXXIII (Covenants by the State of California, page 165), nothing in this Consent Decree shall be construed to relieve the Work Defendants of their obligation to achieve all Performance Standards set forth in this Consent Decree.

7. While the Work Defendants may collect, treat, stage, and secure materials on-site, they shall not redeposit material back into the Site without the explicit approval of EPA.

8. The Work Defendants shall dispose of any materials

taken off-site in compliance with the EPA's Procedures for Planning and Implementing Off-Site Response Actions, September 22, 1993 ("Off-site Policy"), if applicable.

9. The Work Defendants shall, prior to any off-Site shipment of Waste Material from the Site to an out-of-state waste management facility, provide written notification to the appropriate state environmental official in the receiving facility's state and to the EPA Project Coordinator of such shipment of Waste Material. However, this notification requirement shall not apply to any off-Site shipments when the total volume of all such shipments during any three-month period does not exceed 15 cubic yards.

a. The Work Defendants shall include in the written notification the following information, where available: (1) the name and location of the facility to which the Waste Material is to be shipped; (2) the type and quantity of the Waste Material to be shipped; (3) the expected schedule for the shipment of the Waste Material; and (4) the method of transportation. The Work Defendants shall notify the state environmental official in which the planned receiving facility is located of a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

b. The identity of the receiving facility and state will be determined by the Work Defendants following the award of the contract for Remedial Action construction. The Work Defendants shall provide the information required by Subparagraph VII.A.9.a above as soon as practicable after the award of the

contract and before the Waste Material is actually shipped.

c. The Work Defendants shall renew the notification required by this Subparagraph VII.A.9 annually. However, notwithstanding the prior sentence, prior written notice, including the information required by Subparagraph VII.A.9.a, shall also be required whenever (1) Work Defendants change the identity of the receiving facility, or (2) if any off-Site shipment of Waste Material differs significantly, in quantity or composition, from that described in the most recent notification.

10. The Work Defendants shall submit all required Plans, Reports and items pursuant to the provisions of Exhibit B, this Section VII (Work To Be Performed, page 37), Section XVI (Data Exchange, page 72), Section X (Additional Work, page 55), Section XIX (Escrow Account, page 96), Section XI (Periodic Review, page 57), and other applicable sections of this Consent Decree.

11. Permits

a. As provided in Section 121(e) of CERCLA, 42 U.S.C. § 9621(e), and Section 300.400(e) of the NCP, no permit shall be required for any portion of the Work conducted entirely on-site (i.e., within the areal extent of contamination or in very close proximity to the contamination and necessary for implementation of the Work). In consideration of the specific actions that will be performed and the payments that will be made by the Defendants and the Settling Federal Agency under the terms of this Consent Decree, DTSC agrees that no post-closure permit will be required with respect to the interim status facility that

operated at the Site. Where any portion of the Work that is not on-site requires a federal, state or local permit or approval, the Work Defendants shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals.

b. The Work Defendants may seek relief under the provisions of Section XXIV (Force Majeure, page 124) of this Consent Decree for any delay in the performance of the Work resulting from a failure to obtain, or a delay in obtaining, any permit required for the Work.

c. This Consent Decree is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

12. Upon request, EPA will make available to the Work Defendants relevant EPA guidance documents.

13. The obligations of the Work Defendants under this Consent Decree are joint and several. Each Work Defendant shall participate in the Work and shall cooperate with other Work Defendants in performance of the Work, to the extent required by any agreement(s) among the Work Defendants for the sharing of responsibilities. Failure of any Work Defendant to comply with this Subparagraph VII.A.13 shall be considered a failure to comply with this Consent Decree and shall subject that Work Defendant to stipulated penalties as provided in Section XXVI (Stipulated Penalties, page 141) as well as other enforcement action, in EPA's unreviewable discretion.

B. Work Contractor Selection and Qualifications

1. All aspects of the Work to be performed by the

Work Defendants pursuant to this Consent Decree shall be under the direction and supervision of, and performed by, a qualified contractor(s) with expertise in investigation, analysis and remediation of hazardous waste problems, with particular expertise in groundwater contamination control and remediation, landfill gas collection and migration control, landfill gas thermal destruction, and landfill cover, as well as qualifications to design, construct, operate and maintain a groundwater migration control and treatment system. All Work performed by the Work Defendants shall be performed by a qualified contractor(s) or subcontractor(s) in accordance with the conditions and schedules specified in or developed pursuant to this Consent Decree.

2. Each contractor and subcontractor selected by the Work Defendants to perform Work under this Consent Decree shall be subject to disapproval by EPA after a reasonable opportunity for review and comment by the State. No contractor or subcontractor shall perform any work under this Consent Decree after disapproval of the contractor or subcontractor by EPA, under the provisions of this Paragraph VII.B; provided, however, that work may continue with EPA approval to provide for the transition of the work to any replacement contractor or subcontractor.

3. No later than ten (10) Days after the lodging of this Consent Decree and prior to the initiation of Work at the Site, the Work Defendants shall notify EPA and the State, in writing, of the name, title, and qualifications of the selected contractor(s) and the name and title of the contractor's(s') project manager. The Work Defendants shall notify EPA and DTSC,

in writing, of the names of any other contractor(s) and/or subcontractor(s) selected to carry out the Work pursuant to this Consent Decree, as such contractor(s) and/or subcontractor(s) are retained.

4. In the event that EPA disapproves of any selected contractor or subcontractor, EPA shall notify the Work Defendants in writing of its disapproval and the basis for its decision. If EPA disapproves of the selection of any contractor or subcontractor, within 28 Days of receipt of EPA's disapproval, the Work Defendants shall notify EPA of the name and qualifications of the selected replacement contractor. EPA shall provide written notice if it disapproves the replacement contractor. Nothing in this Subparagraph VII.B.4 shall limit the Work Defendants' right to invoke dispute resolution under Section XXV (Dispute Resolution, page 128).

5. If at any time the Work Defendants propose to change their prime contractor or any principal contractor or subcontractor, the Work Defendants shall give written notice to EPA and the State 28 Days prior to any change in contractor. The new proposed contractor or subcontractor shall be subject to the procedures set forth in the preceding Subparagraph VII.B.4.

C. Work To Be Undertaken

The Work shall be conducted pursuant to the SOW attached to this Consent Decree as Exhibit C. The Work and deliverables required by this Consent Decree and the SOW shall be conducted pursuant to the schedules set forth in this Consent Decree and the SOW.

1. Description of the Work

a. The Work includes all activities, not defined as Excluded Work, necessary for the implementation of the predesign, design, construction, operations, maintenance and monitoring of: a perimeter liquids control system in areas designated in the Final ROD and in other areas where contaminants exceed Performance Standards beyond the landfill perimeter, as determined by EPA; a system for conveyance of collected liquids to the on-site treatment plant; a system for treatment of Site-associated liquids, utilizing the on-site treatment plant; modifications to the existing treatment plant, discharge permits, and related systems and procedures to treat the new liquids; a system to convey the treated liquids to the County Sanitation Districts of Los Angeles County sanitary sewer system; and a monitoring system to evaluate the progress of natural attenuation of contaminated groundwater, to detect future releases of contaminants from the landfill and to ensure that Performance Standards for the perimeter liquids control system are being met. The Work includes establishment of institutional controls to ensure appropriate future use of the OII Site and to restrict human exposure to contaminated groundwater. In addition, the Work includes all activities necessary for O&M of existing Site-associated systems and activities to the extent they are not performed under the Third Decree. The Work also includes all activities necessary for O&M of all facilities and environmental control systems at the Site, including, but not limited to, the landfill gas control system, cover system, and surface water management system beginning when such activities cease under the

Third Decree, the North Parcel systems, and the systems designed, modified, and constructed under this Consent Decree. The Work includes the development of management Plans as well as communication, coordination and integration procedures. The overall objective for the performance of the Work is to construct, operate, maintain, and monitor functional facilities needed to meet all Performance Standards.

b. In the event that Work activities result in the alteration, destruction or abandonment of any Site facility not related to the Work but necessary for Site work, the Work Defendants shall either repair or replace, as necessary, such facility with one that provides the same level of control or function, as EPA deems appropriate.

2. Basic Elements of the Work

a. Final ROD Components. The Work includes implementation of all activities, not defined as Excluded Work, as set forth in Section 8 of the Final ROD and as required to meet the Performance Standards. These activities include but are not limited to interim and long-term groundwater monitoring, short-term and long-term O&M of all existing systems that are not to be abandoned, to the extent such activities are not performed under the Third Decree, and design, construction, and O&M of all new systems.

b. Gas Control and Cover ROD Components. The Work includes implementation of all activities required by the Gas Control and Cover ROD except: (1) those that are performed under the Third Decree; (2) those that are performed as Excluded Work as defined in the Third Decree; and (3) those that are

defined as Excluded Work in this Consent Decree. The Work under this Consent Decree includes, but is not limited to, long-term monitoring and O&M of all systems required by the Gas Control and Cover ROD, including the gas control system, gas thermal destruction system (also referred to as the Landfill Gas Treatment System), cover system (including the cover protection component for the North Slope of the South Parcel), surface water management system, and North Parcel systems, beginning when such activities cease under the Third Decree or the Seventh Decree.

3. Implementation of the Work

a. Except as provided in Section VIII (Excluded Work, page 51), the Work Defendants shall be responsible for furnishing, in accordance with the final design package, all labor, equipment, materials, utilities and support facilities for the design, construction, and O&M of all systems as required in this Consent Decree and shall ensure that all are complete and functional for the term of this Consent Decree.

b. The Work Defendants shall implement the Work detailed in this Consent Decree and the Plans as approved or modified by EPA pursuant to the terms of this Consent Decree. Noncompliance with any EPA-approved Reports, Plans, specifications, schedules, appendices, or attachments to the Plans shall be considered a failure to comply with this Consent Decree and shall subject the Work Defendant(s) to stipulated penalties as provided in Section XXVI (Stipulated Penalties, page 141).

c. After EPA approval of the Final Construction As-Built Report(s), the Work Defendants shall perform Compliance Testing Activities in accordance with Sections 5.6, 6.2.7, and

7.8 of the SOW for the perimeter liquids control systems and the Leachate Treatment System, modified as necessary, to treat liquids collected as a part of the activities required by the Final ROD.

d. Work Defendants shall continue compliance testing as required by the SOW until EPA notifies the Work Defendants that the compliance testing periods have been successfully completed. The O&M period shall begin retroactively at the beginning of the successful periods. After EPA provides the Work Defendants with notice that the Compliance Testing Activities have been successfully completed, the Work Defendants shall submit Construction Completion Reports pursuant to Section 5.5 of the SOW.

e. If EPA determines that failure to attain compliance is due to inadequate or untimely implementation of the Work, EPA may assess stipulated penalties as provided in Section XXVI (Stipulated Penalties, page 141).

f. If, at any time during the O&M Activities as described in Sections 2.2.6 and 5.10 of the SOW, the Work Defendants fail to meet any Performance Standard, the Work Defendants shall take all necessary steps to protect public health and the environment and shall submit a Noncompliance Notification within five (5) Days of receipt of the information indicating the noncompliance event. This Noncompliance Notification shall describe the noncompliance event as required by Section 5.10 of the SOW. A Compliance Action Plan shall be submitted fifteen (15) Days after receipt of the information indicating the noncompliance event and shall describe the corrective action(s)

to be undertaken pursuant to Section 5.10 of the SOW, with a schedule for those action(s).

g. In the event compliance is not attained after implementation of a Compliance Action Plan, EPA may assess a stipulated penalty as provided in Subparagraph XXVI.B.2.a (page 146) of Section XXVI (Stipulated Penalties). EPA may assess a stipulated penalty as provided in Subparagraph XXVI.B.2.c (page 146) of Section XXVI (Stipulated Penalties) for untimely, inadequate or incomplete implementation of a Compliance Action Plan(s).

h. In the event compliance is not attained after implementation of a Compliance Action Plan, the Work Defendants shall submit another Compliance Action Plan describing the additional activities that will be taken to meet all Performance Standards.

i. All Work shall be performed in accordance with the NCP, EPA guidance, and the requirements of this Consent Decree, including, but not limited to, the standards, specifications, and schedules established pursuant to this Consent Decree and its Exhibits.

4. Deliverables

a. As described more fully in the attached SOW, all Plans, specifications, schedules, Reports and other pertinent information shall be submitted to EPA in accordance with this Consent Decree and Exhibit C, including, but not limited to, the following: (1) the Management Plans; (2) the Predesign Report(s); (3) the Design Packages; (4) the Construction As-Built Report(s); (5) the Final Construction Completion Report(s); (6)

Noncompliance Notification Report(s), if applicable; (7) the Final Remedial Action Completion Report; and (8) the Final Work Completion Report. In addition, all deliverables designated as "significant" in Section 6.2 of the SOW shall be submitted to DTSC.

b. The Work Defendants shall provide written Progress Reports to EPA. These Progress Reports shall be provided monthly; however, one year after EPA approval of the Construction Completion Report, the Work Defendants may request that the Progress Reports be submitted quarterly. For purposes of these Progress Reports, the "reporting period" shall be one month if the Progress Reports are required monthly, or one quarter if required quarterly. The reporting period for the first Progress Report shall be from the date of lodging of this Consent Decree to the end of the first full month thereafter. These Progress Reports shall describe all actions taken to comply with this Consent Decree during the reporting period, including, but not limited to, a general description of Work and activities commenced or completed during the reporting period, Work and activities projected to be commenced or completed during the next reporting period, and any problems that have been encountered or are anticipated by the Work Defendants in commencing or completing the Work. These Progress Reports shall be submitted to EPA by the twenty-first (21st) Day of each month if required monthly, or by the twenty-first (21st) Day of January, April, July, and October, if required quarterly. The Progress Reports submitted in January, April, July and October (whether the reporting period is one month or one quarter) shall include a

quality assurance report, which shall contain information that demonstrates that the Work Defendants are complying with the requirements of Section XIII (Quality Assurance/Quality Control, page 58) and the QA/QC Plan established pursuant to this Consent Decree.

c. Subject to the provisions of this Consent Decree, if any deliverable or submitted Progress Report is inadequate or is disapproved by EPA, or if the Work Defendants fail to submit any deliverable or Progress Report in accordance with the schedule set forth in or developed pursuant to this Consent Decree, then the Work Defendants shall be considered to be in violation of this Consent Decree and subject to stipulated penalties as governed by Section XXVI (Stipulated Penalties, page 141).

5. Failure to Perform

In the event EPA, DTSC, or the designee of either of them performs all or portions of the Work pursuant to Paragraph XXXIV.E (page 181) of Section XXXIV (Reservation of Rights), the Work Defendants shall reimburse EPA or DTSC, respectively, for the costs of doing such work, pursuant to the provisions of Subparagraph XVIII.I.1 and Paragraph XVIII.J (page 93) of Section XVIII (Payment of Response Costs), plus all penalties set forth in Section XXVI (Stipulated Penalties, page 141).

VIII. Excluded Work

A. Definition of Excluded Work

For the purposes of this Consent Decree and its Exhibits, Excluded Work shall be defined, both individually and

collectively, as the following items. Items of Excluded Work are defined more specifically in the Scope of Work.

1. Groundwater monitoring well sampling, laboratory analyses, and reporting for each routine sampling event in each year for six consecutive calendar years starting with the first full calendar year after entry of this Consent Decree or January 1, 2003, whichever is later.

2. Site Access and Security activities for all areas of the Site except the Remediation Parcel and other areas in the North Parcel where remedial and commercial activities have been or are being undertaken by other parties outside the scope of this Consent Decree, for seven consecutive calendar years starting with the first full calendar year after entry of this Consent Decree or January 1, 2003, whichever is later. This item of the Excluded Work refers to Site Access and Security activities as described in Sections 2.3.2 and 5.9 (and elsewhere) in the Scope of Work. This item of the Excluded Work excludes activities described in Section XV (Access and Institutional Controls, page 63) of this Consent Decree.

B. In the event that any or all item(s) of the Excluded Work are performed entirely by person(s) other than the Work Defendants, the Work Defendants shall not be responsible for attaining performance standards for that item(s) of the Excluded Work during the period of such other person's(s') performance. Nothing in this Paragraph shall be deemed to modify or change the Work Defendants' obligations under the SOW or this Consent Decree, including, but not limited to, the obligation to attain Performance Standards or to comply with integration and

coordination requirements in this Consent Decree and the SOW.

C. In the event the Excluded Work is not performed by any other person, the Work Defendants shall perform any or all item(s) of the Excluded Work or any portion thereof, upon written request by EPA. EPA shall not request the Work Defendants to perform any or all item(s) of the Excluded Work or any portion thereof unless EPA determines that sufficient funds are available in the OII Special Account to provide payment to the Work Defendants for that item or portion of the Excluded Work pursuant to Section XX (Disbursement of OII Special Account Funds, page 108). The Work Defendants shall submit an Excluded Work Completion Report pursuant to Sections 5.16, 6.2.13, and 7.14 of the SOW for each item or portion of the Excluded Work performed by them.

D. Except as provided in Subparagraph XXVI.C.6 (page 152) of Section XXVI (Stipulated Penalties), Subparagraph XVIII.G.2 (Payment of Work Oversight Costs, page 87), and Subparagraph XVIII.G.3 (Payment of Excluded Work Oversight Costs, page 91), if the Work Defendants perform an item(s) or portion of the Excluded Work, all references in this Consent Decree to Work shall be read to apply to that item(s) or portion of the Excluded Work, and the Work Defendants shall be responsible for attaining Performance Standards pertaining to that item(s) or portion of the Excluded Work.

IX. EPA Approval of Plans and Other Submissions

A. After review of any plan, report or other item that is

required to be submitted for approval pursuant to this Consent Decree, EPA, after reasonable opportunity for review and comment by the State, shall: (a) approve, in whole or in part, the submission; (b) approve the submission upon specified conditions; (c) disapprove, in whole or in part, the submission, directing that the Work Defendants modify the submission; or (d) any combination of the above.

B. In the event of approval or approval upon conditions pursuant to Paragraph IX.A above, the Work Defendants shall proceed to take any action required by the plan, report, or other item, as approved by EPA subject only to their right to invoke the Dispute Resolution procedures set forth in Section XXV (Dispute Resolution, page 128) with respect to the modifications or conditions made by EPA.

C. Effect of Disapproval

1. Upon receipt of a notice of disapproval pursuant to Paragraph IX.A, the Work Defendants shall, within 10 (ten) Days or such longer time as specified by EPA in such notice, correct the inadequacies and resubmit the plan, report, or other item for approval.

2. Notwithstanding the receipt of a notice of disapproval pursuant to Paragraph IX.A, the Work Defendants shall proceed, at the direction of EPA, to take any action required by any non-deficient portion of the submission.

D. In the event that a resubmitted plan, report or other item, or portion thereof, is disapproved by EPA, EPA may again require the Work Defendants to correct the deficiencies, in accordance with the preceding Paragraphs. The Work Defendants

shall implement any such plan, report, or item to the extent it was approved by EPA, subject only to their right to invoke the procedures set forth in Section XXV (Dispute Resolution, page 128).

E. If upon resubmission, a plan, report, or item is disapproved by EPA due to a material inadequacy, the Work Defendants shall be deemed to have failed to submit such plan, report, or item timely and adequately unless the Work Defendants invoke the dispute resolution procedures set forth in Section XXV (Dispute Resolution, page 128) and EPA's action is overturned pursuant to that Section. The provisions of Section XXV (Dispute Resolution, page 128) and Section XXVI (Stipulated Penalties, page 141) shall govern the implementation of the Work and accrual and payment of any stipulated penalties during Dispute Resolution. If EPA's disapproval is upheld, stipulated penalties shall accrue for such violation from the date on which the second submission was required, as provided in Section XXVI (Stipulated Penalties, page 141).

F. All plans, reports, and other items required to be submitted to EPA under this Consent Decree shall, upon approval by EPA, be enforceable under this Consent Decree. In the event EPA approves a portion of a plan, report, or other item required to be submitted to EPA under this Consent Decree, the approved portion shall be enforceable under this Consent Decree.

X. Additional Work

A. In the event that EPA or the Work Defendants determine, before EPA's approval of the Work Defendants' Final Work

Completion Report, that additional response work is necessary to carry out the activities required by this Consent Decree or to meet the Performance Standards, notification of such additional work will be provided to the Project Coordinator for the other Party.

B. Unless another time period is agreed to by EPA and the Work Defendants, within thirty (30) Days of receipt of such notice by EPA or by the Work Defendants that additional work is necessary pursuant to this Section, the Work Defendants shall submit a revised or amended Work Plan or Technical Memorandum, as appropriate, to EPA for such additional work. The revised or amended Plan shall conform to the requirements in Section VII (Work To Be Performed, page 37). The Work Defendants shall implement the revised or amended Plan as approved or modified by EPA in accordance with the schedule developed pursuant to this Consent Decree. This Paragraph shall not apply to emergency response actions as determined by EPA.

C. Any additional work determined to be necessary by the Work Defendants is subject to approval by EPA.

D. Any additional work determined to be necessary by the Work Defendants and approved by EPA, or determined to be necessary by EPA to carry out the Work or to meet the Performance Standards, shall be completed by the Work Defendants in accordance with the standards, specifications, and schedules approved by EPA.

XI. Periodic Review to Assure Protection of Human Health and the Environment

A. In light of the fact that hazardous substances, pollutants or contaminants will remain at the OII Site, the Work Defendants shall conduct the requisite studies and investigations as determined necessary by EPA in order to permit EPA to conduct five year reviews as required by Section 121 of CERCLA, 42 U.S.C. § 9621, any applicable regulations, and relevant EPA guidance, including Structure and Components of Five-year Reviews, dated May 23, 1991 (OSWER Directive 9355.7-02). The schedules and contents of such studies and investigations shall be determined by EPA.

B. If EPA determines that information received, in whole or in part, during its review, indicates that the remedy is not protective of human health and the environment, EPA either may take administrative or judicial action or may perform any additional activities EPA has determined to be necessary. In the event that EPA makes a determination pursuant to this Paragraph that the remedy is not protective of human health and the environment, EPA shall notify the State of this determination, and the State reserves any right that it may have to seek appropriate relief in any resulting administrative or judicial proceedings. Except as provided in Paragraph X.A (page 63) of Section X (Additional Work), such activities identified in this Paragraph XI.B shall not be considered to be Work or Excluded Work.

XII. Safety, Health and Emergency Response Plan

A. The Worker Health and Safety Plan, which the Work Defendants shall submit pursuant to Section VII (Work to be Performed, page 37) and Exhibit C of this Consent Decree, shall be prepared in conformance with applicable Occupational Safety and Health Administration ("OSHA") and EPA requirements, including, but not limited to, OSHA regulations at 29 C.F.R. § 1910.120.

B. The Emergency Response Plan, which the Work Defendants shall submit pursuant to Section VII (Work to be Performed, page 37) and Exhibit C of this Consent Decree, shall set forth health, safety and emergency response procedures for the activities to be conducted by the Work Defendants. At a minimum, the Emergency Response Plan shall address both workers at the Site and public exposure to releases or spills at and from the Site.

C. The Work Defendants, EPA, and the State shall use best efforts to coordinate on-site activity plans.

XIII. Quality Assurance/Quality Control

A. The Quality Assurance/Quality Control (QA/QC) Plan, which the Work Defendants shall submit pursuant to Section VII (Work to be Performed, page 37) of this Consent Decree and Exhibit C, shall, where applicable, be prepared in accordance with EPA guidance, Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, QAMS-005/80, and other relevant EPA guidance. The QA/QC Plan shall include procedures necessary for the implementation of the Work and shall address Construction Quality Assurance procedures in accordance with EPA

guidance, Construction Quality Assurance for Hazardous Waste Land Disposal Facilities, EPA/530-SW-86-031. The QA/QC Plan shall include a description of the procedures used to verify that the processes are operating within acceptable limits. Upon approval by EPA to the Work Defendants, the Work Defendants shall implement the Plan.

B. The Work Defendants shall use QA/QC procedures in accordance with the QA/QC Plans submitted pursuant to this Consent Decree and shall utilize standard EPA chain of custody procedures, as documented in the National Enforcement Investigations Center Policies and Procedures Manual as revised in May 1986, and the National Enforcement Investigations Center Manual for the Evidence Audit, published in September 1981, for all sample collection and analysis activities, unless other procedures are approved by EPA. In order to provide quality assurance and maintain quality control regarding all samples collected pursuant to this Consent Decree, the Work Defendants shall, at a minimum, ensure that the following QA/QC measures are employed at laboratories utilized for analysis:

1. The Work Defendants shall assure that all laboratories utilized by the Work Defendants for analysis of samples taken pursuant to this Consent Decree shall provide for access of EPA personnel and EPA-authorized representatives to assure the accuracy of laboratory results related to the OII Site.

2. Any laboratory utilized by the Work Defendants for analysis of samples taken pursuant to this Consent Decree shall perform all analyses according to EPA methods or methods deemed

satisfactory to EPA and shall submit all protocols to be used for analysis to EPA in the Plans and documents required under this Consent Decree.

3. All laboratories utilized by the Work Defendants for analysis of samples taken pursuant to this Consent Decree shall participate in an EPA or EPA-equivalent QA/QC program. As part of the QA/QC program and upon request by EPA, such laboratories shall perform, at no expense to the Plaintiffs, analyses of samples provided by EPA to demonstrate the quality of each laboratory's data.

XIV. Project Coordinators

A. No later than ten (10) Days after the lodging of this Consent Decree, EPA, the State and the Work Defendants shall each designate a Project Coordinator to monitor the progress of the Work and the Excluded Work, to assure integration and coordination of the Work, the Excluded Work, and the work being performed under the Third Decree, to facilitate communication among the Parties, and to oversee the implementation of this Consent Decree. EPA may also designate an Alternate Project Coordinator. EPA, the State and the Work Defendants each have the right to change their respective Project Coordinator. Such a change shall be accomplished by notifying the other Parties in writing at least seven (7) Days prior to the change. To the maximum extent possible, communications between the Work Defendants, EPA and the State and all documents, including, but not limited to, Reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and

conditions of this Consent Decree, shall be directed through the Project Coordinators. The role of the State Project Coordinator shall be consistent with the provisions of Paragraphs XLV.A and XLV.D (pages 212 and 212) of Section XLV (State and Local Agency Participation), and EPA shall be the lead agency (as defined in the NCP).

B. The EPA Project Coordinator shall have the authority vested in the On-Scene Coordinator by 40 C.F.R. Part 300 as well as the authority to ensure that the Work is performed in accordance with all applicable statutes, regulations, and this Consent Decree. If the EPA On-Scene-Coordinator and the EPA Project Coordinator are two different individuals, EPA will make its best efforts to coordinate any direction given to the Work Defendants by the On-Scene-Coordinator and the EPA Project Coordinator.

C. The EPA Project Coordinator or On-Scene-Coordinator shall also have the authority to require a cessation of the performance of the Work or any other activity at the Site that s/he determines may present or contribute to an endangerment to public health, welfare, or the environment or cause or threaten to cause the release of Waste Materials from the Site. The absence of the EPA Project Coordinator from the Site shall not be cause for stoppage of work.

D. In the event the EPA Project Coordinator or On-Scene-Coordinator takes any action that results in the delay of the Work or any other activity required by this Consent Decree, the Parties may, if necessary, extend the compliance schedule of this Consent Decree for only that amount of time that EPA determines

is necessitated by the event. Should the Work Defendants desire to extend the compliance schedule pursuant to this Section, the Work Defendants shall propose an extension, and EPA shall determine the length of any extension. If the EPA Project Coordinator takes any action that results in the delay of the Work or any other activity required by this Consent Decree for any of the reasons set forth in the preceding Paragraph XIV.C and those reasons are due to the acts or omissions of the Work Defendants or the Contractor(s), then any extension of the compliance schedule shall be at EPA's discretion.

E. The Work Defendants' Project Coordinator shall be responsible for directing the daily activities of the Work Defendants and the Work Defendants' contractors in the performance of the Work. With advance notice to EPA and DTSC, the Work Defendants' Project Coordinator may assign other representatives, including, but not limited to, other contractors, to serve as a Site representative for oversight of performance of daily operations during remedial activities.

F. The Work Defendants' Project Coordinator and the EPA Project Coordinator shall also coordinate with the Project Coordinators for the Work Defendants and for EPA under the Third Decree, any Project Coordinator(s) for the Excluded Work, any Project Coordinators for parties to the Seventh Decree, and any Project Coordinator(s) for the Excluded Work under the Third Decree and shall include those Project Coordinators in all notices and communications required by this Consent Decree.

G. Prior to invocation of formal Dispute Resolution procedures, any unresolved disputes arising between the EPA Site

representative and the Work Defendants or their contractors shall be referred to the EPA and Work Defendants' Project Coordinators.

XV. Access and Institutional Controls

A. If the Site, or any other property where access and/or use restrictions are needed to implement this Consent Decree, is owned or controlled by any of the Defendants:

1. Commencing on the date of lodging of this Consent Decree, each Defendant shall provide the United States, the State, and their representatives, including, but not limited to, EPA and its contractors, with access at all reasonable times to the Site, or such other property, for the purpose of conducting any activity related to this Consent Decree including, but not limited to, the following activities:

a. Monitoring the Work;

b. Verifying any data or information submitted to the United States or the State;

c. Conducting investigations relating to contamination at or near the Site;

d. Obtaining samples;

e. Assessing the need for, planning, or implementing additional response actions at or near the Site;

f. Implementing the Work pursuant to Paragraph XXXIV.E (page 181) of Section XXXIV (Reservations of Rights);

g. Inspecting and copying records, operating logs, contracts, or other documents maintained or generated by the Defendants or their agents, consistent with Section XVI (Data Exchange: Sampling and Analysis, page 72);

h. Assessing the Defendants'('s) compliance with this Consent Decree; and

i. Determining whether the Site or other property is being used in a manner that is prohibited or restricted, or that may need to be prohibited or restricted, by or pursuant to this Consent Decree.

2. Commencing on the date of lodging of this Consent Decree, each Defendant shall refrain from using the Site, or such other property owned or controlled by such Defendant, in any manner that would interfere with or adversely affect the implementation, integrity or protectiveness of the remedial measures to be performed pursuant to this Consent Decree. EPA will endeavor to minimize restrictions on development of or use of Defendants' property and to minimize impairment of the value of Defendants' property.

3. If EPA determines that physical construction related to the Work Defendants' obligations under this Consent Decree will be conducted on land owned or controlled by any Defendant, that Defendant shall execute and record in the Recorder's Office of Los Angeles County, State of California, a covenant consistent with California Civil Code Section 1471, which covenant shall run with the land, that (i) grants a right of access for the purpose of conducting any activity related to this Consent Decree including, but not limited to, those activities listed in Subparagraph XV.A.1 of this Consent Decree, and (ii) grants the right to enforce the use restrictions listed in Paragraph XV.A of this Consent Decree or other restrictions that EPA determines are necessary to implement, ensure non-

interference with, or ensure the protectiveness of the remedial measures to be performed pursuant to this Consent Decree. Such Defendant shall grant the access rights and the rights to enforce the use restrictions to: (i) the United States, on behalf of EPA, and its representatives; (ii) the State and its representatives; (iii) the other Defendants and their representatives; and/or (iv) other appropriate grantees. EPA will endeavor to minimize adverse impacts to the Defendant's properties, including existing property uses and future development consistent with underlying zoning and/or general plans. Such Defendant shall, within forty-five (45) Days from the date of EPA's request, submit to EPA for review and approval with respect to such property:

a. A draft covenant that is enforceable under the laws of the State of California; and

b. Either (i) a current title insurance commitment, or some other evidence of title acceptable to EPA, or (ii) documentation consistent with commercial and customary standards under the laws of the State of California sufficient to effectuate the filing and enforcement of the covenant, as necessary to assure access and use restrictions as required in this Section XV (Access and Institutional Controls). Such documentation shall show title to the land described in the covenant to be free and clear of all prior liens and encumbrances that substantially impair such access or use restrictions (except when those liens or encumbrances are approved by EPA or when, despite best efforts, such Defendant is unable to obtain release or subordination of such prior liens or encumbrances).

Within fifteen (15) Days of EPA's approval and acceptance of the covenant and the title evidence, such Defendant shall update the title search and, if it is determined that nothing has occurred since the effective date of the commitment to affect the title adversely, record the covenant with the Recorder's Office of Los Angeles County. Within thirty (30) Days of recording the covenant, such Defendant shall provide EPA with final documentation as provided under this Subparagraph XV.A.3.b and a certified copy of the original recorded covenant showing the clerk's recording stamps. If the covenant is to be conveyed to the United States, the covenant and title evidence (including final title evidence) shall be prepared in accordance with the U.S. Department of Justice Title Standards 2001, and approval of the sufficiency of title must be obtained as required by 40 U.S.C. § 255.

B. If any property on which physical construction relating to the Work Defendants' obligations under this Consent Decree will be conducted is owned or controlled by persons other than any of the Defendants, the Work Defendants shall use best efforts to secure from such persons, no later than sixty (60) Days prior to the need for access, use restrictions, or a covenant:

1. An agreement to provide access thereto for the Work Defendants, as well as for the United States on behalf of EPA, and the State, as well as their representatives (including, but not limited to, contractors), for the purpose of conducting the Work under this Consent Decree to be performed on such property including, but not limited to, those activities listed in Subparagraph XV.A.1 (page 63) of this Section XV (Access and

Institutional Controls);

2. An agreement, enforceable by the Work Defendants, the United States, and the State, to refrain from using the Site, or such other property, in any manner that would interfere with or adversely affect the implementation, integrity, or protectiveness of the remedial measures to be performed pursuant to this Consent Decree; and

3. The execution and recordation in the Recorder's Office of Los Angeles County, State of California, of a covenant under California Civil Code Section 1471, running with the land, that is consistent with Paragraph XV.B of this Section XV (Access and Institutional Controls). The access rights and/or rights to enforce use restrictions shall be granted to: (i) the United States, on behalf of EPA, and its representatives; (ii) the State and its representatives; (iii) the Work Defendants and their representatives; and/or (iv) other appropriate grantees. At least ninety (90) Days prior to the need for such access or use restrictions, the Work Defendants shall submit to EPA and DTSC for review and approval with respect to such property:

a. A draft access agreement consistent with Subparagraph XV.B.1 (page 66) of this Section XV (Access and Institutional Controls) and a covenant consistent with California Civil Code Section 1471 that is enforceable under the laws of the State of California; and

b. Either (i) a current title insurance commitment or some other evidence of title acceptable to EPA, or (ii) documentation consistent with commercial and customary standards under the laws of the state of California sufficient to

effectuate the filing and enforcement of the covenant, as necessary to assure access and use restrictions as required in this Section XV (Access and Institutional Controls). Such documentation shall show title to the land described in the covenant to be free and clear of all prior liens and encumbrances that substantially impair such access or use restrictions (except when those liens or encumbrances are approved by EPA or when, despite best efforts, the Work Defendants are unable to obtain release or subordination of such prior liens or encumbrances).

Within fifteen (15) Days of EPA's approval and acceptance of the covenant and the title evidence, the Work Defendants shall update the title search and, if it is determined that nothing has occurred since the effective date of the commitment to affect the title adversely, the Work Defendants shall record the covenant with the Recorder's Office of Los Angeles County. Within thirty (30) Days of the recording of the covenant, the Work Defendants shall provide EPA with final documentation as provided under this Subparagraph XV.B.3.b and a certified copy of the original recorded covenant showing the clerk's recording stamps. If the covenant is to be conveyed to the United States, the covenant and title insurance (including final title evidence) shall be prepared in accordance with the U.S. Department of Justice title Standards 2001, and approval of the sufficiency of title must be obtained as required by 40 U.S.C. § 255.

C. For purposes of Paragraphs XV.A (page 63) and XV.B (page 66) of this Section XV (Access and Institutional Controls), "best efforts" include the payment of reasonable sums of money in consideration of access, covenants, use restrictions, and/or

documentation as necessary pursuant to Subparagraphs XV.A.3.b and XV.B.3.b (pages 65 and 67) of this Section XV (Access and Institutional Controls). If (a) any access or use restriction agreements required by Paragraph XV.B of this Consent Decree are not obtained at least sixty (60) Days prior to the need for such access or restrictions, (b) any access agreements or covenants required by Subparagraph XV.B.3 of this Consent Decree are not submitted to EPA in draft form at least fifteen (15) Days prior to the need for such access or covenants, or (c) the Work Defendants are unable to obtain an agreement pursuant to Subparagraph XV.A.3.a (page 65) or XV.B.3.a (page 67) (and, if necessary, documentation pursuant to Subparagraphs XV.A.3.b and XV.B.3.b, pages 65 and 67) of this Section XV (Access and Institutional Controls)) at least forty-five (45) Days prior to the need for such covenant, the Work Defendants shall promptly notify the United States and the State within five (5) Days thereafter, in writing, and shall include in that notification a summary of the steps that the Work Defendants have taken to attempt to comply with Paragraph XV.A (page 63) or XV.B (page 66) of this Consent Decree. The United States may, as it deems appropriate, assist the Work Defendants in obtaining access or use restrictions, either in the form of contractual agreements or in the form of covenants running with the land, or in obtaining the documentation pursuant to Subparagraphs XV.A.3.b and XV.B.3.b (pages 65 and 67) of this Section XV (Access and Institutional Controls). The Work Defendants shall reimburse the United States in accordance with the procedures in Section XVIII (Payment of Response Costs, page 81) for all costs, direct or indirect,

incurred by the United States in obtaining such access, use restrictions, and/or the documentation pursuant to Subparagraphs XV.A.3.b and XV.B.3.b (pages 65 and 67) of this Section XV (Access and Institutional Controls) including, but not limited to, the cost of attorney time and the amount of monetary consideration paid, if any is required.

D. If the Plaintiffs and the Work Defendants, through continued joint or individual efforts, are unable to obtain access or use restrictions pursuant to this Section XV (Access and Institutional Controls), or suitable alternative access, a force majeure event shall be deemed to have occurred, and the affected Work shall be modified, if necessary, by mutual agreement of the Work Defendants and the Plaintiffs, to take into account the lack of such access.

E. If EPA determines that use restrictions in the form of state or local laws, regulations, ordinances or other governmental controls are needed to implement the remedy selected in the ROD, ensure the integrity and protectiveness thereof, or ensure non-interference therewith, the Defendants shall cooperate with EPA's and the State's efforts to secure such governmental controls.

F. Notwithstanding any provision of this Section XV of this Consent Decree, the United States and the State retain all of their access authorities and rights, as well as all of their rights to require use restrictions, including, but not limited to, enforcement authorities related thereto, under CERCLA, RCRA and any other applicable statute or regulations.

G. To the extent EPA has control over access to portions

replicate samples to be taken, by EPA or the State and/or their authorized representatives, of any samples collected by the Work Defendants or anyone acting on the Work Defendants' behalf pursuant to the implementation of this Consent Decree. To the extent practicable, any such observation and sample collection shall be coordinated through the EPA Project Coordinator. At the request of the Work Defendants, the Plaintiffs and/or their authorized representatives shall allow the Work Defendants to split or replicate any samples collected by the Plaintiffs and/or their authorized representatives.

E. Any Party performing sampling for the purposes of this Consent Decree shall notify the other Parties, except the Cash Defendants, as soon as possible but no less than seven (7) Days prior to any sample collection activity, and any Party desiring to take split or replicate samples shall inform the other Parties at least three (3) Days prior to the scheduled sampling event. The Party performing the sampling activity shall inform the other Parties, except the Cash Defendants, at least twenty-four (24) hours in advance if the planned sampling schedule cannot be met, or if any changes are made to any sample collection activity. Notwithstanding the foregoing, within seven (7) Days after the approval of any sampling plan (including, but not limited to, the schedule for implementation), the Work Defendants shall notify EPA and DTSC of the intended date of commencement of the sampling activity. The Work Defendants shall notify EPA and DTSC at least thirty (30) Days prior to the disposal of any such samples and shall provide EPA and DTSC with an opportunity to take possession of all or a portion of such samples.

F. The Work Defendants need not provide EPA or DTSC with seven (7) Days' notice of routine sampling performed pursuant to the SOW; however, the Work Defendants shall provide EPA and DTSC with a schedule for all routine sampling. The Work Defendants shall notify EPA and DTSC at least seven (7) Days prior to any changes in the routine sampling schedule. The Work Defendants need not provide EPA or DTSC with advance notice of changes in routine sampling as a result of unexpected conditions. The Work Defendants shall, however, notify EPA and DTSC within forty-eight (48) hours of such occurrence and shall provide EPA with the results of analysis of such sampling when the results become available.

G. The Parties shall notify each other in a timely manner of any project that is likely to produce data or information of the types described in this Section XVI (Data Exchange: Sampling and Analysis).

H. The Defendants recognize that the data and reports generated under this Consent Decree are not subject to the protection of Section 1905 of Title 18 and 40 C.F.R. Part 2 as confidential information. Moreover, the Parties explicitly recognize that the provisions of Section 104(e)(7)(F) of CERCLA apply to data and information generated by the Defendants. The Work Defendants shall not assert a claim of confidentiality regarding any hydrogeological or chemical data, or any data relating to the Work. The Defendants reserve their rights to assert a confidentiality claim for all other information pursuant to Section 1905, Title 18 and 40 C.F.R. Part 2 and any applicable state laws and regulations. The provisions of this Section XVI

(Data Exchange: Sampling and Analysis) shall not constitute a waiver of any applicable claims of attorney work product or attorney-client privilege. The United States, EPA and the State reserve their rights with regard to information otherwise not subject to disclosure under applicable law. The State is not obligated to provide any materials pursuant to this Section that are subject to applicable attorney work product claims, attorney-client privilege, or that the State is not required to disclose under California Government Code Section 6254, except that Section 6254(b) shall not apply to the extent the State has made requested materials available to parties to any pending litigation.

I. All data, factual information, and documents submitted by the Defendants to EPA and the State pursuant to this Consent Decree, and determined by EPA or the State, as appropriate, not to be confidential, shall be subject to public inspection.

J. The Work Defendants shall develop and implement a data Management Information System pursuant to this Consent Decree and Exhibit C.

K. If any of the Cash Defendants wish to perform any sampling activity on or contiguous to the Site, they shall first provide notice to the Project Coordinators and obtain permission from EPA and the contiguous property owner. In such an event, the provisions of this Section XVI (Data Exchange: Sampling and Analysis) shall apply to that Cash Defendant.

L. Subject to Paragraph XVI.H above, any Cash Defendant shall, at its request in writing, have access to all data, factual information and documentation generated under this

Consent Decree or described in Section VII (Work To Be Performed, page 37) and the SOW. The cost of copying shall be borne by the Cash Defendant. Any such data, factual information or documents obtained by any Cash Defendant shall be subject to the provisions of this Section XVI (Data Exchange: Sampling and Analysis).

XVII. Retention of Records

A. Each Defendant shall preserve and retain all records and documents now in its possession or control or that come into the possession or control of the Defendants or of their divisions, subsidiaries, or parent corporations and their employees, agents, accountants, contractors or attorneys that relate to the performance of the Work or the Excluded Work or that fall within the scope of Section 104(e) of CERCLA, 42 U.S.C. § 9604(e), regardless of any corporate document retention policy to the contrary, during the Document Retention Period.

B. The United States acknowledges that the Settling Federal Agency (1) is subject to all applicable federal record retention laws, regulations, and policies and (2) has certified that to the best of its knowledge and belief it has fully complied with any and all EPA requests for information pursuant to Section 104(e) and Section 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927.

C. Each Defendant shall preserve and shall instruct all contractors, subcontractors and anyone else acting on the Defendants' behalf at the OII Site to preserve (in the form of originals or exact copies or, in the alternative, copies

preserved on microfiche or through similar technology) all documents, records, and information specified above during the Document Retention Period applicable to that Defendant. At the conclusion of this Document Retention Period, each Defendant shall notify the United States, EPA, and the State at least ninety (90) Days prior to the destruction of any such records or documents, and, upon request by the United States, EPA, or the State made within forty-five (45) Days of such notice, any Defendant proposing such destruction shall deliver or make available any such records or documents to EPA or the State, as appropriate. The Defendants are not obligated to provide any materials pursuant to this Section XVII (Retention of Records) that are subject to applicable attorney work product claims or attorney-client privilege, or both.

D. EPA shall preserve and retain all records and documents now in its possession or control, or in the possession or control of its divisions, employees, agents, accountants, contractors or attorneys, that relate to any field activities at the Site performed by EPA, that are received under the provisions of Section 104 of CERCLA, or that relate to the performance of the Work or the Excluded Work under this Consent Decree, as required by the EPA Office of Information Resources Management Document Number 2160, entitled Records Management Manual and the corresponding EPA Records Management Manual, Appendix B, Records Control Schedule.

E. The State shall preserve and retain all records and documents now in its possession or control, or in the possession or control of its divisions, employees, agents, accountants,

contractors or attorneys, that relate to the performance of the Work or the Excluded Work under this Consent Decree or that relate to activities performed or investigations or enforcement actions taken by the State at the OII Site, regardless of any document retention policy to the contrary, during the pendency of this Consent Decree and for ten (10) years after its termination. After such ten (10) year period, the State shall notify the Work Defendants at least ninety (90) Days prior to the destruction of any such documents. Upon request by any Defendant made within forty-five (45) Days of such notice, the State shall deliver or make available to the requesting Defendant originals or copies of any such records prior to their destruction. The State is not obligated to provide any materials pursuant to this Section XVII (Retention of Records) that are subject to applicable attorney work product claims, attorney-client privilege, or that the State is not required to disclose under California Government Code Section 6254, except that Section 6254(b) shall not apply to the extent the State has made requested materials available to parties to any pending litigation.

F. Each Defendant hereby affirms, individually, that the Defendant has not willfully, recklessly or with gross negligence altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents, or other information relating to any party's potential liability with regard to the Site since the notification of that Defendant's potential liability by the United States or the State, or the date of lodging of this Consent Decree, whichever is earliest.

G. The failure of any Defendant to preserve and retain all

records and documents as required by this Section XVII (Retention of Records) shall subject each such Defendant to the stipulated penalties set forth in Section XXVI (Stipulated Penalties, page 141).

H. This Section shall not apply to exact duplicates.

XVIII. Payment of Response Costs

A. United States' Past Response Costs

1. The Defendants agree to reimburse the EPA Hazardous Substance Superfund for certain response costs that have been incurred by the United States in responding to the conditions at the OII Site.

2. EPA will provide the Work Defendants with a copy of the EPA Itemized Cost Summary Report that provides an accounting of EPA's unreimbursed costs for the period up to and including June 30, 1997 and includes an accounting of EPA's indirect and interest cost calculations for this period.

3. The Department of Justice will provide the Work Defendants with a copy of the appropriate Department of Justice documentation that provides for an accounting of its unreimbursed costs for the period up to and including June 30, 1997.

4. Within thirty (30) Days of notice of entry of this Consent Decree, the Work Defendants shall pay into the EPA Hazardous Substance Superfund the amount of $15,000,000 (fifteen million dollars) toward United States' Past Response Costs. The Work Defendants shall make this payment pursuant to Paragraph XVIII.K (page 95) of this Section.

B. Payment Obligations of Cash Defendants and Work Defendants Pursuant to Exhibits D and E

1. Each Cash Defendant listed in Exhibit D shall make payments in the amounts and in the manner set forth in Exhibit D to this Consent Decree. Unless otherwise specified in Exhibit D, payment shall be due within thirty (30) Days of notice of entry of this Consent Decree. Payments shall be made by the Cash Defendants in the manner directed in the instructions that EPA will provide in the notice of entry of this Consent Decree. Checks shall reference the OII Site. Each Cash Defendant's monetary obligation under this Consent Decree shall be limited to the amounts set forth in Exhibit D, except as otherwise provided in this Consent Decree.

2. Each Work Defendant listed in Exhibit E shall make payments in the amounts and in the manner set forth in Exhibit E to this Consent Decree. Unless otherwise specified in Exhibit E, payment shall be due within thirty (30) Days of notice of entry of this Consent Decree. Payments shall be made by the Work Defendants in the manner directed in the instructions that EPA will provide in the notice of entry of this Consent Decree. Checks shall reference the OII Site. The payment obligations of Work Defendants set forth in this Subparagraph XVIII.B.2 shall be in addition to the payment obligations set forth elsewhere in this Consent Decree.

3. Payments made by the Work-Related Defendants, the Cash-1/R Defendants, and the Cash-2/R Defendants pursuant to this Paragraph XVIII.B shall accrue to the benefit of EPA, except as provided in Subparagraphs XXXIV.P.1.a.ii and XXXIV.P.1.b. Within

thirty (30) Days of the entry of this Consent Decree, EPA shall send instructions to the Work Defendants for payment of these amounts from the Cash Escrow Account to EPA. Any payments received by EPA pursuant to this Subparagraph XVIII.B.3 shall not be credited to the Work Defendants for purposes of the Work Defendants' funding limitations for Future Response Costs nor the Work Defendants' payment of the United States' Past, Interim or Future Response Costs.

C. United States' Interim Response Costs

Within thirty (30) Days of notice of entry of this Consent Decree, the Work Defendants shall pay into the EPA Hazardous Substance Superfund the amount of $2,000,000 (two million dollars) toward the United States' Interim Response Costs. Work Defendants shall make this payment pursuant to Paragraph XVIII.K (page 95) of this Section.

D. State Past Response Costs

1. The Work Defendants agree to reimburse the State and the State Accounts for certain past response costs that have been incurred by the State in responding to conditions at the OII Site.

2. The State will provide the Work Defendants with an accounting summary of its unreimbursed costs for the period up to and including the date of lodging of this Consent Decree. The Work Defendants shall pay these costs by certified check within thirty (30) Days of receipt of the accounting summary. The check shall be made payable to the California Department of Toxic Substances Control and shall reference the "Operating Industries Superfund Site." The Work Defendants shall forward the certified

check to:

California Department of Toxic Substances Control
Attn: Accounting/Cashier
P.O. Box 806
Sacramento, CA 95812-0806

3. A copy of the transmittal letter and a copy of the check shall be sent to the State Project Coordinator, as provided by Section XXXVII (Form of Notice, page 203) and to the California Attorney General at the address shown on the cover page of this Consent Decree.

E. United States' Past and Future Response Costs

Within thirty (30) Days of notice of entry of this Consent Decree, the Work Defendants shall pay into the OII Special Account within the EPA Hazardous Substance Superfund the amount of $10,225,000 (ten million two hundred twenty-five thousand dollars) toward the United States' Past Response Costs and/or Future Response Costs or other response costs for the OII Site, as determined by EPA. This payment is in addition to the payments to be made pursuant to Paragraphs XVIII.A, XVIII.C and XVIII.G of this Section. The Work Defendants shall make this payment from the escrow account established pursuant to the Fourth Decree. The Work Defendants shall make this payment pursuant to Paragraph XVIII.K of this Section.

F. Payment by the Settling Federal Agency

1. As soon as reasonably practicable after the effective date of this Consent Decree, and consistent with Subparagraph XVIII.F.2, the United States, on behalf of the Settling Federal Agency, shall pay to the OII Special Account within the EPA Hazardous Superfund the amount of $1,083,131 (one

million eighty-three thousand one hundred thirty-one dollars), in reimbursement of Past Response Costs, Interim Response Costs, and Future Response Costs, which payment includes a premium payment for Future Response Costs.

2. If the payment to the OII Special Account required by the preceding Subparagraph XVIII.F.1 is not made as soon as reasonably practicable, the appropriate EPA Regional Branch Chief may raise any issues relating to payment to the appropriate DOJ Assistant Section Chief for the Environmental Defense Section. In any event, if this payment is not made within one hundred twenty (120) Days after the effective date of this Consent Decree, EPA and DOJ have agreed to resolve the issue within thirty (30) Days in accordance with a letter agreement dated December 28, 1998.

3. A copy of the transmittal letter and a copy of the confirmation of payment shall be sent to the State Project Coordinator, as provided by Section XXXVII (Form of Notice, page 203).

4. In the event that payments required by Subparagraph XVIII.F.1 are not made within thirty (30) Days of notice of entry of this Consent Decree, Interest on the unpaid balance shall be paid at the rate established pursuant to Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), commencing on the effective date of this Consent Decree and accruing through the date of the payment.

5. The Parties to this Consent Decree recognize and acknowledge that the payment obligations of the Settling Federal Agency under this Consent Decree can only be paid from

appropriated funds legally available for such purpose. Nothing in this Consent Decree shall be interpreted or construed as a commitment or requirement that the Settling Federal Agency obligate or pay funds in contravention of the Anti-Deficiency Act, 31 U.S.C. § 1341, or any other applicable provision of law.

G. Payment of United States' Future Response Costs by Work Defendants

1. This Paragraph governs the reimbursement of Future Response Costs by Work Defendants. Subject to the limitations in Subparagraph XVIII.G.5, the Work Defendants shall reimburse the United States for Future Response Costs as follows: Work Defendants shall pay Future Response Costs that consist of the United States' Work Oversight Costs pursuant to Subparagraph XVIII.G.2 below; Work Defendants shall pay Future Response Costs that consist of the United States's Excluded Work Oversight Costs pursuant to Subparagraph XVIII.G.3 below; and Work Defendants shall pay all other Future Response Costs pursuant to Subparagraph XVIII.G.4 below. EPA will provide the Work Defendants with a copy of the EPA Itemized Cost Summary Report (or successor report that contains a like level of detail) ("Report") that provides an accounting of such costs being billed. If the Work Defendants make a written request within thirty (30) Days of receiving the Report, EPA will also provide the documentation that EPA lists in the Report and/or documentation provided to EPA by the USACE (or other federal agency billing costs through EPA's Report) in its cost documentation package as required by the Interagency Agreement between EPA and USACE (or other agency). EPA will work with the

USACE (or other agency) to assist in providing a cost documentation package that is comparable to that provided by EPA. EPA will provide such documentation subject to the requirements of 40 C.F.R. Part 2, and any amendments thereto, concerning the disclosure of confidential business information. The Work Defendants shall enter into a confidentiality agreement prescribed by EPA prior to obtaining any documentation that contains confidential business information. The Work Defendants shall pay these costs pursuant to Paragraph XVIII.K of this Section, within thirty (30) Days of receipt of the Report. The United States will bill for Future Response Costs on a periodic basis, no more frequently than annually. Nothing in this Paragraph shall affect EPA's right to reimbursement of its Future Response Costs from any other person not a signatory to this Consent Decree.

2. Payment of Work Oversight Costs

a. The Work Defendants' obligation to pay the subset of response costs known as Work Oversight Costs shall be governed by this Subparagraph XVIII.G.2. These provisions apply only to Work Oversight Costs and do not apply to the cost of Oversight of the Excluded Work or other costs associated with the Excluded Work, whether such Work is performed by the Work Defendants or a non-party, and other response costs that are not Work Oversight Costs. These provisions provide for certain limits on the reimbursement of Work Oversight Costs, with amounts that exceed the limits rolling forward to future periods. The Rollover Account tracks the unpaid Work Oversight Costs from prior periods. If positive, the Rollover Account accrues

Interest.

b. Within thirty (30) Days of notice of entry of this Consent Decree, the Work Defendants shall pay into the OII Special Account within the EPA Hazardous Substance Superfund the amount of $4,793,000 (four million seven hundred ninety-three thousand dollars) towards Work Oversight Costs. This payment is in addition to the payments to be made pursuant to Paragraphs XVIII.A and XVIII.C and pursuant to other Subparagraphs of this Paragraph XVIII.G of this Section. The Work Defendants shall make this payment pursuant to Paragraph XVIII.K of this Section. EPA will establish a sub-account within the OII Special Account (or a separate special account) with these funds that will be referred to as the "OII Work Oversight Special Account." Interest earned on the sub-account shall accrue to the benefit of the sub-account until the account is exhausted. The OII Work Oversight Special Account will be used by EPA to fund Work Oversight Costs until EPA has incurred Work Oversight Costs sufficient to deplete the Work Oversight Special Account.

c. The provisions of this Subparagraph XVIII.G.2.c apply only if the Work Oversight Costs incurred during the first eighty-four (84) months following the lodging of this Consent Decree exhaust the OII Work Oversight Special Account. The Work Defendants shall pay to EPA an "Overage Payment" equal to the amount, if any, by which the Rollover Account exceeds $958,600 (nine hundred fifty-eight thousand six hundred dollars) as a result of Work Oversight Costs incurred during the first eighty-four (84) months following the lodging of this Consent Decree. The Work Defendants shall pay these costs

pursuant to Paragraph XVIII.K of this Section, within thirty (30) Days of receipt of the cost summary. Once these costs are calculated and paid, the Rollover Account shall be set to the lesser of (i) $958,600 (nine hundred fifty-eight thousand six hundred dollars) and (ii) the balance of the Rollover Account after the first eighty-four (84) months of Work Oversight Costs are accounted for. For example, if Work Oversight Costs during the first eighty-four (84) months causes the Rollover Account to equal $1,000,000, the Work Defendants would pay an Overage Payment of $41,400 ($1,000,000 - 958,600) and the Rollover Account would equal $958,600. If, for example, the Rollover Account is equal to $300,000, no Overage Payment is due and the Rollover Account shall equal $300,000.

d. The provisions of this Subparagraph XVIII.G.2.d apply to Work Oversight Costs incurred after the later of (1) eighty-four (84) months from the date of Lodging of this Consent Decree or (2) the date EPA has incurred costs sufficient to deplete the OII Work Oversight Special Account. This Subparagraph XVIII.G.2.d refers to Inflation Adjusted limits of $500,000 (five hundred thousand dollars) and $600,000 (six hundred thousand dollars) that are based on a twelve (12) month billing cycle beginning on the date of lodging. If the EPA billing cycle exceeds twelve (12) months, the Inflation Adjusted $500,000 (five hundred thousand dollars) and $600,000 (six hundred thousand dollars) limits may, at the discretion of EPA, be increased proportionately to account for the longer billing cycle.

i. The provisions of this Subparagraph

XVIII.G.2.d.i apply if the Work Oversight Costs during the billing cycle exceed an Inflation Adjusted $500,000 (five hundred thousand dollars). The Work Defendants shall pay an Inflation Adjusted $500,000 (five hundred thousand dollars) plus an Overage Payment equal to the amount, if any, by which the Work Oversight Costs exceed an Inflation Adjusted $600,000 (six hundred thousand dollars). The Work Defendants shall pay these costs pursuant to Paragraph XVIII.K of this Section, within thirty (30) Days of receipt of the cost summary. The Rollover Account shall be increased by an amount equal to the Work Oversight Costs minus the payments required to be made pursuant to this Subparagraph XVIII.G.2.d.i (the sum of the Inflation Adjusted $500,000 and the Overage Payment (if any)). For example, assuming no inflation to simplify the example, if Work Oversight Costs during the twelve (12) month billing period equals $550,000, the Work Defendants would pay $500,000 ($500,000 plus zero Overage Payment) and the Rollover Amount would increase by $50,000 ($550,000 - $500,000).

ii. The provisions of this Subparagraph XVIII.G.2.d.ii apply if the Work Oversight Costs during the billing cycle do not exceed an Inflation Adjusted $500,000 (five hundred thousand dollars). If the Rollover Account is equal to zero, the Work Defendants shall pay Work Oversight Costs. If the sum of the Work Oversight Costs and the Rollover Account is less than or equal to an Inflation Adjusted $500,000 (five hundred thousand dollars), the Work Defendants shall pay the sum of the Work Oversight Costs and the Rollover Account, and the Rollover Account shall be reset to zero. If the sum of the Work Oversight Costs and the Rollover Account is greater than an Inflation

Adjusted $500,000 (five hundred thousand dollars), then the Work Defendants shall pay an Inflation Adjusted $500,000 (five hundred thousand dollars), and the Rollover Account shall be reduced by the difference between the Inflation Adjusted $500,000 (five hundred thousand dollars) and the Work Oversight Costs. The Work Defendants shall pay these costs pursuant to Paragraph XVIII.K of this Section, within thirty (30) Days of receipt of the cost summary.

3. Payment of Excluded Work Oversight Costs. If at the request of EPA, the Work Defendants perform an item or portion of an item of Excluded Work, the Work Defendants shall pay EPA and the State the Excluded Work Oversight Costs associated with that item or portion of an item of Excluded Work to the extent the Excluded Work Oversight Costs associated with that Excluded Work plus the Excluded Work disbursement made (or to be made) pursuant to Paragraph XX.C (page 109) of Section XX (Disbursement of OII Special Account Funds) is greater than one hundred eight point seven percent (108.7%) of the amount specified in Subparagraphs XX.C.1 (page 109) and XX.C.2 (page 110) of Section XX (Disbursement of OII Special Account Funds), as modified by Paragraph XX.B of that Section XX. The payment obligation of this Subparagraph XVIII.G.3 is not subject to the limitations contained in Subparagraph XVIII.G.2.

4. Payment of Other Future Response Costs. The Work Defendants shall reimburse the United States for all United States' Future Response Costs other than the Work Oversight Costs and the Excluded Work Oversight Costs. The limitations contained in Subparagraphs XVIII.G.2 (page 87) and XVIII.G.3 (page 91) of

this Section do not apply to payment of such costs.

5. Notwithstanding Subparagraphs XVIII.G.2 (page 87), XVIII.G.3 (page 91), and XVIII.G.4 (page 91) above, the Work Defendants shall not be obligated to reimburse the United States for (1) Future Response Costs incurred after the date of lodging of this Consent Decree for issuance or enforcement of unilateral administrative orders to, or pursuit of a cost recovery action by the United States against, any party that is not a Party to this Consent Decree, or (2) payments made by the United States to the Work Defendants pursuant to Section XX (Disbursement of OII Special Account Funds, page 108), except as provided in Paragraph XX.I (page 116) of that Section.

H. State's Future Response Costs

1. The Work Defendants shall reimburse the State, the State Accounts, and any successors to those accounts, for the Future Response Costs incurred by them under this Consent Decree. In addition, and without limiting the foregoing, the Work Defendants will reimburse the State for up to $50,000 (fifty thousand dollars) incurred by the State in overseeing the Excluded Work (as defined in this Consent Decree) that is performed by parties other than the Work Defendants. The State will provide the Work Defendants with an accounting of its costs. These response costs shall be paid by certified check within thirty (30) Days of receipt of the accounting documentation. The State will bill for such costs on a periodic basis, no more frequently than annually. Nothing in this Paragraph shall affect the State's right to reimbursement of its response costs from any other person not a signatory to this Consent Decree.

2. The check(s) shall be made payable to the California Department of Toxic Substances Control and shall reference the "Operating Industries, Inc. Superfund Site." The Work Defendants shall forward the certified check(s) to:

California Department of Toxic Substances Control
Attn: Accounting/Cashier
P.O. Box 806
Sacramento, CA 95812-0806

3. A copy of each transmittal letter and a copy of each check shall be sent to the State Project Coordinator, as provided by Section XXXVII (Form of Notice, page 203) and to the California Attorney General at the address shown on the cover page of this Consent Decree.

I. Future Costs of Work or Excluded Work

1. The Work Defendants shall reimburse the EPA Hazardous Substance Superfund and the State for the costs incurred for any activities outlined in Subparagraph VII.C.5 (page 51) of Section VII (Work To Be Performed) pursuant to the provisions of Paragraph XXXIV.E (page 181) of Section XXXIV (Reservation of Rights). The Work Defendants shall, within thirty (30) Days of receipt of demand for payment, remit a check for the amount of these costs made payable to the EPA Hazardous Substance Superfund or the Department of Toxic Substances Control, as appropriate. For such payments to the EPA Hazardous Substance Superfund, the Work Defendants shall make these payments pursuant to Paragraph XVIII.K of this Section.

2. For each item of the Excluded Work as described in Paragraph VIII.A (page 51) of Section VIII (Excluded Work), the Work Defendants shall pay all costs in excess of the amount

specified for such item in Paragraph XX.C (page 109) of Section XX (OII Special Account). The Work Defendants shall pay such amounts regardless of whether the Excluded Work item is implemented by the Work Defendants, EPA, USACE, or the State, or by contractors for any of them, pursuant to the provisions of Section VIII (Excluded Work, page 51). The Work Defendants shall remit payment within thirty (30) Days of receipt of demand for payment. Payment shall be made, as directed by EPA, to the EPA Hazardous Substance Superfund or the State. For such payments to the EPA Hazardous Substance Superfund, the Work Defendants shall make these payments pursuant to Paragraph XVIII.K of this Section.

J. Reimbursement shall also be required in the event EPA determines that: (1) the Work Defendants have failed to perform any material portion of the Work; (2) the Work Defendants have performed any portion of the Work in a substantially inadequate or substantially untimely manner; (3) there is an imminent and substantial endangerment to the public health or welfare or the environment resulting from the Work Defendants' performance of Work; or (4) there is an imminent and substantial endangerment to the public health or welfare or the environment resulting from the Work Defendants' failure to perform Work, and EPA or its designee, including the State, incurs costs due to the assumption of Work. If EPA or its designee assumes performance of any portion of the Work based on such a determination, the Work Defendants shall, within thirty (30) Days of receipt of demand for payment, make payment for the demanded amount of these costs made payable to the EPA Hazardous Substance Superfund or the

DTSC, as appropriate. For such payments to the EPA Hazardous Substance Superfund, the Work Defendants shall make these payments pursuant to Paragraph XVIII.K of this Section.

K. Payment Instructions for Payments by the Work Defendants to the United States

The Work Defendants shall make the payments referred to in Paragraphs/Subparagraphs XVIII.A.4 (page 81), XVIII.C (page 83), XVIII.E (page 84), XVIII.G (page 86), XVIII.I (page 93), XX.I (page 116), and XXVI.A (page 141) by FedWire Electronic Funds Transfer ("EFT" or wire transfer) to the U.S. Department of Justice account in accordance with current EFT procedures, referencing the USAO File Number, the Operating Industries, Inc. Superfund Site, SSID No. 0958 (or such other account number for the OII site as EPA may designate), and DOJ Case Number 90-11-2-156/4. Payment shall be made in accordance with instructions provided to the Work Defendants by the Financial Litigation Unit of the United States Attorney's Office for the Central District of California following lodging of this Consent Decree. At the time of payment, the Work Defendants shall send notice that such payment has been made to the United States, EPA, the State, and the Regional Superfund Accounting Program, as specified in Section XXXVII (Form of Notice, page 203). The total amount of each payment to be paid by the Work Defendants pursuant to this Paragraph shall be deposited in the OII Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or paid to or transferred by EPA to the EPA Hazardous Substance Superfund, as determined by EPA. Except for disputes

arising from disbursement requests made by Work Defendants pursuant to Section XX (Disbursement of OII Special Account Funds, page 108), determination of where to deposit or how to use the funds shall not be subject to challenge by the Work Defendants pursuant to the dispute resolution provisions of this Consent Decree or in any other forum.

L. Any payment made pursuant to this Section shall not constitute an admission by the Defendants of any liability to EPA, the State, or any other person or agency.

XIX. Escrow Account

A. The Work Defendants shall establish the "OII Eighth Partial Consent Decree Escrow Account" no later than ten (10) Working Days after the date of lodging of this Consent Decree. The Escrow Account shall have one interest-bearing account titled "Work". The Parties acknowledge that the Work Defendants may initiate the process of establishing the Escrow Account prior to the date of lodging of this Consent Decree and, subject to EPA review and approval, the Work Defendants may execute documents for that purpose.

B. A copy of a proposed Escrow Agreement shall be sent to EPA and the State within fifteen (15) Days after lodging of this Consent Decree, for approval primarily to ensure that the escrowed funds will be handled as set forth by this Consent Decree. Neither EPA nor the State, through its approval of the terms of the Escrow Account, guarantees the sufficiency of the Escrow Account established pursuant to this Section XIX (Escrow Account).

C. Work Defendants, at their option, may establish a trust, escrow, or other account to receive payments by Cash Defendants under this Consent Decree or other funds as provided in Paragraph XIX.F (page 98) of this Section XIX (Escrow Account). This account may be a sub-account of the OII Eighth Partial Consent Decree Escrow Account established pursuant to Paragraph XIX.A above, or may be a separate account, at the Work Defendants' option. This account shall be an interest bearing account titled "Cash". The terms and provisions of this trust or account shall be subject to review and approval by EPA. The Parties acknowledge that the Work Defendants may initiate the process of establishing this account prior to the date of lodging of this Consent Decree and, subject to EPA review and approval, the Work Defendants may execute documents for that purpose.

D. The Work Defendants shall deposit $1,000,000 (one million dollars) into the Work Escrow Account within thirty (30) Days of notice of entry of this Consent Decree. This deposit may be made with funds from the Cash Escrow Account, if sufficient funds are available. The Escrow Agreement shall instruct and authorize the Escrow Manager to disburse the money in the Work Escrow Account for the following:

1. To pay the Work Defendants' contractor(s) for the Work, including the Excluded Work if performed by the Work Defendants; and

2. To pay for other expenses, including fees, expenses, assessments, and any incurred penalties, required to be paid by the Work Defendants pursuant to this Consent Decree and Exhibits hereto.

E. The Escrow Agreement shall instruct and authorize the Escrow Manager to use the money in the Cash Escrow Account for the purposes and in the amounts requested by EPA. The purposes include the following: Work; reimbursement of EPA future response costs; Future Response Costs not paid by the Work Defendants under Paragraph XVIII.G (page 86) of Section XVIII (Payment of Response Costs); payment of fees, expenses and assessments incurred in administration and management of Site escrow accounts; Past Response Costs; Excluded Work; the costs of Excluded Work pursuant to Section VIII (Excluded Work, page 51); or other response costs for the Site. In the event funds are released from the Cash Escrow Account to the Work Defendants for Excluded Work, then reimbursement from the Special Account for such Excluded Work expenditures shall be subject to the requirements, expenditure limitations, and disbursement provisions set forth in Section XX (Disbursement of OII Special Account Funds, page 108).

F. Money received from the Cash Defendants pursuant to Paragraph XVIII.B (page 82) of Section XVIII (Payment of Response Costs) shall be deposited into the Cash Escrow Account. Other funds received pursuant to EPA's direction or from EPA, including, but not limited to, funds from other escrow accounts established for the Site, if any, may be placed into the Cash Escrow Account. Upon request of the Work Defendants, after EPA receives the payment referred to in Paragraph XVIII.E (on page 84), EPA will direct the transfer into the Cash Escrow Account of the remaining funds in the escrow account established pursuant to the Fourth Decree, and, if the Cash Escrow Account is not the

Fifth Decree Escrow, the Work Defendants' share of the funds in the Fifth Decree Escrow, as determined by EPA pursuant to Paragraph XIX.S (page 107) of this Section XIX (Escrow Account).

G. Pursuant to paragraph VIII.D.4 of the Fourth Decree, the Parties agree that all funds on deposit in the cash escrow account established pursuant to the Fourth Decree may be used for all purposes provided for the use of funds in the Cash Escrow Account, as set forth in Paragraph XIX.E (page 98) of this Section XIX. If any of the Settling Generators as defined in the Fourth Decree are not Parties to this Consent Decree, then the Work Defendants either: (1) shall establish a subaccount in the Cash Escrow Account for separate handling of the funds transferred from the cash escrow account established pursuant to the Fourth Decree, or shall otherwise separately account for such funds, and shall assure that such funds are expended in accordance with the funding limitations in paragraph VIII.D.4 of the Fourth Decree; or (2) shall obtain written agreement by such Settling Generators to use of the funds from the escrow account established pursuant to the Fourth Decree for the purposes provided in Paragraph XIX.E (on page 98) of this Section.

H. The Work Defendants and the Cash Defendants agree that in order to determine the share of the responsibility of each Work Defendant and Cash Defendant for amounts payable under this Consent Decree, including the matters identified in Paragraph XIX.E (on page 98) of this Section, each Cash Defendant's share of such responsibility shall be deemed to be the Work or expenses funded by the money paid or transferred (directly or indirectly) from such Cash Defendant into the Cash Escrow Account. The

Parties agree that the Work Defendants shall use the payments by the Cash Defendants to satisfy the Cash Defendants' share of responsibility for matters identified in Paragraph XIX.E of this Section XIX.

I. Interest received on each account in the Escrow Account shall be paid into the account on which it was received and may be used first to pay for the account fees, expenses, administrative costs, and assessments thereon, if any, provided that such fees, expenses, costs, and assessments are commercially reasonable, and then shall be used in the same manner and for the same purposes as the other funds in the account.

J. Payment of money by the Defendants to the Escrow Account is not a fine, penalty or monetary sanction.

K. The Escrow Agreement shall require that the Escrow Manager prepare and submit, to the Work Defendants, monthly statements on money received and disbursed in the prior thirty (30) Days for both the Work Escrow Account and the Cash Escrow Account, and the balances in the accounts as of the date of the statements. A copy of this monthly statement shall be sent promptly to EPA and the State. In addition, within sixty (60) Days after the establishment of the Escrow Account, and every ninety (90) Days thereafter, in conjunction with the issuance of the most recent monthly statement by the Escrow Manager, the Work Defendants shall submit a financial report to EPA and the State. The financial report shall include cash flow projections for the amount of money estimated to be necessary for the Work Escrow Account expenses described in Paragraph XIX.D above, for the following nine month period. If the amount of money in the Work

Escrow Account is less than the amount projected by the Work Defendants' report to be needed for the following nine months, the Work Defendants shall deposit in the Work Escrow Account, within thirty (30) Days, sufficient money to bring the level of the Work Escrow Account up to the amount projected to be needed for the following nine months. The Parties agree that the Work Defendants may use funds in the Cash Escrow Account to make this deposit, if such funds are available to Work Defendants for that purpose.

L. Assurance of Ability to Complete Work

1. Beginning on the tenth anniversary of the date of Entry of this Consent Decree, and thereafter no more frequently than annually, EPA may submit a written request to the Work Defendants for a financial assurance report. The Work Defendants shall submit a financial assurance report within thirty (30) Days of such request, providing information that establishes both of the following:

a. That at least ten (10) Work Defendants remain financially sound; and

b. That the combined shareholders' equity (the lesser of book value or market value) of the remaining Work Defendants, as demonstrated in their SEC annual reports or audited financial statements, is greater than the larger of (i) $20,000,000,000 (twenty billion dollars) or (ii) an Inflation Adjusted $15,000,000,000 (fifteen billion dollars).

2. If the Work Defendants either fail to meet the financial test in the preceding Subparagraph XIX.L.1, or fail to comply with the funding requirements of Paragraph XIX.K above,

and if EPA determines that the financial strength of the Work Defendants as a group has changed to a degree that additional financial assurance for the long-term remedial action is appropriate, then EPA may require the Work Defendants to establish and maintain financial security in the amount sufficient to assure completion of the Work. In determining the amount sufficient to assure completion of the Work, EPA shall consider the funds available from the Work Escrow Account and the Cash Escrow Account.

3. If EPA determines that financial assurances are required pursuant to Subparagraph XIX.L.1 above, EPA will provide written notice to the Work Defendants thirty (30) Days prior to the date such financial assurance is required. The Work Defendants shall provide such assurance in one or more of the following forms:

a. A surety bond guaranteeing performance of the Work;

b. One or more irrevocable letters of credit equaling the total estimated cost of the Work;

c. Deposits to the Cash Escrow Account, the Work Escrow Account or a trust fund;

d. A guarantee to perform the Work by one or more parent corporations or subsidiaries, or by one or more unrelated corporations that have a substantial business relationship with at least one of the Work Defendants;

e. A demonstration that one or more of the Work

Defendants satisfy the requirements of 40 C.F.R. Part 264.143(f). For purposes of this Subparagraph, references in 40 C.F.R. 264.143 (f) to the "sum of current closure and post-closure costs estimates and the current plugging and abandonment costs estimates" shall mean the amount of financial security specified above. If the Work Defendant(s) who seek(s) to provide a demonstration under 40 C.F.R. 264.143(f) provide a similar demonstration at other RCRA or CERCLA sites, the amount for which it (they) is (are) providing financial assurance at the Site should be the sum of the financial assurance at this Site and the costs subject to financial assurance at the other sites; or

f. Any other method acceptable to EPA in its discretion.

4. If the Work Defendants seek to demonstrate the ability to complete the Work through a guarantee by a third party pursuant to Subparagraph XIX.L.3.d above, Work Defendants shall demonstrate that the guarantor satisfies the requirements of 40 C.F.R. Part 264.143(f). If Work Defendants seek to demonstrate their ability to complete the Work by means of the financial test or the corporate guarantee pursuant to Subparagraph XIX.L.3.d or XIX.L.3.e above, they shall resubmit sworn statements conveying the information required by 40 C.F.R. Part 264.143(f) annually, on the anniversary of the Effective Date. In the event EPA,

after a reasonable opportunity for review and comment by the State, determines at any time that the financial assurances provided pursuant to this Paragraph XIX.L are inadequate, Work Defendants shall, within thirty (30) Days of receipt of notice of EPA's determination, obtain and present to EPA for approval one of the other forms of financial assurance listed in Subparagraph XIX.L.3 above. Work Defendants' inability to demonstrate financial ability to complete the Work shall not excuse performance of any activities required under this Consent Decree.

5. If Work Defendants can show that the estimated cost to complete the remaining Work has diminished below the amount established by EPA pursuant to Subparagraph XIX.L.3 above, Work Defendants may, on any anniversary date of entry of this Consent Decree, or at any other time agreed to by the EPA and the Work Defendants, reduce the amount of the financial security provided under this Paragraph XIX.L to the estimated cost of the remaining work to be performed. Work Defendants shall submit a proposal for such reduction to EPA, in accordance with the requirements of this Paragraph XIX.L, and may reduce the amount of the security upon approval by EPA. In the event of a dispute, Work Defendants may reduce the amount of the security only in accordance with the final administrative or judicial decision resolving the dispute.

6. Work Defendants may change the form of financial assurance provided under this Paragraph XIX.L at any time, upon notice to and approval by EPA, provided that the new form of assurance meets the requirements of this Paragraph XIX.L. In the

event of a dispute, Work Defendants may change the form of the financial assurance only in accordance with the final administrative or judicial decision resolving the dispute.

M. The Work Defendants shall submit an annual report to EPA and the State that shall include a summary of money received and disbursed in the preceding twelve (12) month period, for each Escrow Account.

N. Upon termination of the terms of this Consent Decree pursuant to Section LII (Termination and Satisfaction, page 216), any funds that remain in the Cash Escrow Account shall be paid into the EPA Hazardous Substance Superfund. Any funds that remain in the Work Escrow Account, that were transferred to the Work Escrow Account from the Cash Escrow Account (principal and any interest thereon), shall be transferred back to the Cash Escrow Account for payment into the EPA Hazardous Substance Superfund, and any other funds shall be distributed as directed by the Work Defendants.

O. The Work Defendants shall provide to EPA the documents and information needed by EPA for, and shall assist EPA in, the collection of all funds owing to the United States or the Work Defendants for response costs for the Site from the settlement in the proceedings in bankruptcy for Smith Tool. For any other bankruptcy settlement entered during the term of this Consent Decree in which the United States has filed a claim and for which a settlement is reached between the United States and the person in bankruptcy that provides for payments to be made to the Work Defendants for reimbursement for response costs for the Site, the Work Defendants shall collect when due and shall deposit such

payments in the Cash Escrow Account upon receipt. Funds collected pursuant to this Paragraph shall be paid to the EPA Hazardous Substance Superfund, paid to the OII Special Account, or used for payment of response costs, as requested by EPA, and except as otherwise provided in the bankruptcy settlement agreement, shall not be credited to the Work Defendants for purposes of the Work Defendants' funding limitations for Future Response Costs nor the Work Defendants' payment of the United States' Past, Interim or Future Response Costs.

P. Upon entry of this Consent Decree, Work Defendants shall submit to EPA a written request for payment from the Cash Escrow Account to the Work Escrow Account in the amount of $4,360,000 (four million three hundred sixty thousand dollars). Within forty-five (45) Days of the entry of this Consent Decree, EPA shall authorize the payment. The purpose of this payment is to remit to the Work Defendants and certain Cash Defendants certain costs incurred since March 1992 in helping EPA develop, refine and implement the Final ROD and other matters related to the Final Remedy. The Parties agree that all such costs incurred by the Work Defendants and these certain Cash Defendants are response costs that EPA otherwise might have incurred to implement the Final Remedy. Distribution of the reimbursed funds shall be pursuant to a separate agreement between and among the Work Defendants and these certain Cash Defendants.

Q. Upon entry of this Consent Decree, Work Defendants shall submit to EPA a written request for payment from the Cash Escrow Account to EPA in the amount of $21,793,000 (twenty-one million seven hundred ninety-three thousand dollars). Within

thirty (30) Days of the entry of this Consent Decree, EPA shall authorize the payment. These funds represent payment of the amounts specified in Paragraphs/Subparagraphs XVIII.A.4, XVIII.C and XVIII.G.2.b (pages 81, 83 and 88) of Section XVIII (Payment of Response Costs).

R. Upon entry of this Consent Decree, Work Defendants shall submit to EPA a written request for payment from the cash escrow account established pursuant to the Fourth Decree to EPA in the amount of $10,225,000 (ten million two hundred twenty-five thousand dollars). Within thirty (30) Days of the entry of this Consent Decree, EPA shall authorize the payment. These funds represent payment of the amount specified in Paragraph XVIII.E (page 84) of Section XVIII (Payment of Response Costs).

S. EPA currently is preparing an accounting of funds on deposit in the Fifth Decree Escrow as of July 1, 2001, as provided in this Paragraph XIX.S.

1. The Work Defendants shall assist EPA in the preparation of the accounting pursuant to this Paragraph XIX.S, including providing assistance in obtaining the relevant documents and information requested by EPA.

2. The following amounts shall accrue to the benefit of the Work Defendants: (1) the sum of $6,500,000 (six million five hundred thousand dollars), from the funds on deposit as of February 1, 1998; (2) the amounts deposited to the Fifth Decree Escrow between February 1, 1998 and June 30, 2001, pursuant to administrative settlements with *de minimis* parties each attributed with a volume of waste less than 110,000 gallons; and (3) the amounts deposited by parties to the Seventh Decree only

to the extent, if any, that EPA has agreed in writing to credit the Work Defendants with such funds.

3. Except as provided in the preceding Subparagraph XIX.S.2, all funds in the Fifth Decree Escrow shall accrue to the benefit of EPA.

4. Following completion of the accounting pursuant to this Paragraph XIX.S, EPA will determine the appropriate allocation of those funds between the Cash Escrow and EPA, and will send the accounting and the allocation to the Work Defendants. If the Work Defendants do not initiate a dispute challenging EPA's allocation with thirty (30) days of receipt of the accounting and allocation, EPA shall instruct the escrow agent for the Fifth Decree Escrow to transfer funds to EPA in accordance with the accounting and allocation.

5. Any payments received by EPA pursuant to this Paragraph XIX.S shall not be credited to the Work Defendants for purposes of the Work Defendants' funding limitations for Future Response Costs nor the Work Defendants' payment of the United States' Past, Interim or Future Response Costs.

XX. Disbursement of OII Special Account Funds

A. EPA shall disburse funds from the OII Special Account to the Work Defendants if they perform Excluded Work, in accordance with the procedures and milestones for phased disbursement set forth in this Section XX (Disbursement of OII Special Account Funds). The procedures in this Section also shall apply to disbursements to the Work Defendants from funds

available to EPA for such expenses in an OII escrow account (whether established pursuant to the Third Decree, this Consent Decree or a future OII settlement), in which case references in this Section to "OII Special Account" shall be read as referring to such escrow account.

B. In the event the Work Defendants perform any or all item(s) of the Excluded Work or any portion thereof pursuant to EPA authorization, the Work Defendants shall be entitled to disbursement from the OII Special Account under this Section XX (Disbursement of OII Special Account Funds), for costs incurred and paid by the Work Defendants for each such item of the Excluded Work, up to the amounts specified in Paragraph XX.C of this Section XX. The value toward completion of any work that EPA determines has been satisfactorily performed, or funds provided, by Plaintiffs, by EPA, or by any person not a signatory to this Consent Decree for each item of the Excluded Work shall correspondingly reduce the disbursement owing from the OII Special Account to the Work Defendants for that item of the Excluded Work.

C. The disbursement that EPA shall make to the Work Defendants shall occur after achievement of the following milestones and for each item of the Excluded Work shall not exceed the amounts specified in the following Subparagraphs XX.C.1 through XX.C.2.

1. For the groundwater monitoring item of the Excluded Work as defined in Subparagraph VIII.A.1 (page 52) of Section VIII (Excluded Work), reimbursement shall not exceed the lesser of (i) $488,750 (four hundred eighty-eight thousand seven

hundred fifty dollars) per six months, and (ii) $531,250 (five hundred thirty-one thousand two hundred fifty dollars) per six months reduced by the Excluded Work Oversight Costs associated with that item of the Excluded Work for that six months. Milestone: Completion by the Work Defendants of six months of activities for this item of the Excluded Work or, for the final six months of this Excluded Work item, completion of the groundwater monitoring Excluded Work activities and EPA approval of the Excluded Work Completion Report for this item. In addition, the aggregate disbursements to be made by EPA to the Work Defendants for the groundwater monitoring item of the Excluded Work shall not exceed the lesser of (i) $5,865,000 (five million eight hundred sixty-five thousand dollars) or (ii) $6,375,000 (six million three hundred seventy-five thousand dollars) reduced by the Excluded Work Oversight Costs associated with the groundwater monitoring item of Excluded Work.

2. For the Site Access and Security item of the Excluded Work as defined in Subparagraph VIII.A.2 (page 52) of Section VIII.A.2 (Excluded Work), reimbursement shall not exceed the lesser of (i) $253,000 (two hundred fifty-three thousand dollars) per six months, and (ii) $275,000 (two hundred seventy-five thousand dollars) per six months reduced by the Excluded Work Oversight Costs associated with that item of the Excluded Work for that six months. Milestone: Completion by the Work Defendants of six months of activities for this item of the Excluded Work or, for the final six months of this Excluded Work item, completion of the Site Access and Security Excluded Work activities and EPA approval of the Excluded Work Completion

Report for this item. In addition, the aggregate disbursements to be made by EPA to the Work Defendants for the Site Access and Security item of the Excluded Work shall not exceed the lesser of (i) $3,542,000 (three million five hundred forty-two thousand dollars) or (ii) $3,850,000 (three million eight hundred fifty thousand dollars) reduced by the Excluded Work Oversight Costs associated with the Site Access and Security item of Excluded Work.

D. The amounts set forth in Paragraph XX.C above also represent the maximum amount that the United States or the State, or their contractors, shall incur for performance of the listed Excluded Work items. As provided in Subparagraph XVIII.I.2 (page 93) of Section XVIII (Reimbursement of Response Costs), should the United States, the State, or their contractors, incur expenses in excess of the amounts set forth in Paragraph XX.C in performing any item of the Excluded Work, the Work Defendants shall reimburse such expenses.

E. Requests for Disbursement of Special Account Funds

Within sixty (60) Days of attainment of a milestone of the Excluded Work, as defined in Paragraph XX.C, the Work Defendants shall submit to EPA a Cost Summary and Certification, as defined in Subparagraph XX.E.1 below, covering the Excluded Work performed pursuant to this Consent Decree up to the date of completion of that milestone. The Work Defendants shall not include in any submission costs included in a previous Cost Summary and Certification following completion of an earlier milestone of the Excluded Work if those costs have been previously disbursed pursuant to Paragraph XX.G below.

1. Each Cost Summary and Certification shall include a complete and accurate written cost summary and certification of the necessary costs incurred and paid by the Work Defendants for the Excluded Work covered by the particular submission, excluding costs not eligible for disbursement under Paragraph XX.F. Each Cost Summary and Certification shall contain the following statement signed by a Work Defendant's designated financial agent acceptable to EPA, or an Independent Certified Public Accountant:

> To the best of my knowledge, after thorough investigation and review of the Work Defendants' documentation of costs incurred and paid for Excluded Work performed pursuant to this Consent Decree [insert, as appropriate, "up to the date of completion of milestone 1," "between the date of completion of milestone 1 and the date of completion of milestone 2," "for the preceding six (6) months," etc.] I certify that the information contained in or accompanying this submittal is true, accurate, and complete.

The Work Defendants and their representatives acknowledge that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment. The Work Defendants' designated financial agent or Independent Certified Public Accountant shall also provide EPA a list of the documents that he or she reviewed in support of the Cost Summary and Certification. Upon request by EPA, the Work Defendants shall submit to EPA any additional information that EPA deems necessary for its review and approval of a Cost Summary and Certification.

2. If EPA finds that a Cost Summary and Certification includes a mathematical accounting error, costs excluded under Paragraph XX.F, costs that are inadequately documented, or costs submitted in a prior Cost Summary and Certification, it will notify the Work Defendants and provide an opportunity to cure the deficiency by submitting a revised Cost Summary and Certification. If the Work Defendants fail to cure the deficiency within forty-five (45) Days after being notified of the deficiency and of the opportunity to cure it, EPA will recalculate the Work Defendants' costs eligible for disbursement for that submission and disburse the corrected amount to the Work Defendants in accordance with the procedures in Paragraph XX.G of this Section 108. The Work Defendants may dispute EPA's recalculation under this Subparagraph pursuant to Section XXV (Dispute Resolution, page 128). In no event shall the Work Defendants be disbursed funds from the OII Special Account in excess of amounts properly documented in a Cost Summary and Certification accepted or modified by EPA in accordance with the resolution of the dispute.

F. Costs Excluded from Disbursement

The following costs are excluded from, and shall not be sought by the Work Defendants for, disbursement from the OII Special Account: (1) response costs paid to EPA; (2) any other payments made by the Work Defendants to the State or the United States pursuant to this Consent Decree or due to noncompliance with this Consent Decree, including, but not limited to, any fines, interest or penalties paid pursuant to Section XXVI (Stipulated Penalties, page 141) or pursuant to any federal or

state laws; (3) attorneys' fees and costs, except for reasonable attorneys' fees and costs necessarily related to performance of the Excluded Work, such as obtaining access or institutional controls; (4) costs of any response activities the Work Defendants perform that are not required under, or approved by EPA pursuant to, the provisions of this Consent Decree related to the Excluded Work; (5) costs related to the Work Defendants' litigation, settlement, or development of claims or defenses, including, but not limited to, those for contribution claims, identification of defendants, personal injury, property damage, or other third party claims; (6) internal costs of the Work Defendants or the OII Steering Committee, including but not limited to, salaries, travel, or in-kind services, except for those costs that represent the work of employees or consultants of the Work Defendants or of the OII Steering Committee directly performing the Excluded Work; (7) any costs incurred by the Work Defendants prior to the effective date of this Consent Decree; (8) any costs incurred by the Work Defendants in judicial resolution of any disputes pursuant to Section XXV (Dispute Resolution, page 128), unless the Work Defendants prevail in the judicial resolution of the dispute; or (9) any costs that the Work Defendants would have incurred or paid under the provisions of this Consent Decree even had they not performed Excluded Work. Nothing in this Paragraph shall preclude the Work Defendants from asserting that such costs and expenditures, excluding fines or penalties, are response costs under CERCLA and the NCP.

G. Within sixty (60) Days of EPA's receipt of a Cost Summary and Certification meeting the requirements of

Subparagraph XX.E.1 above, or if EPA has requested additional information under Subparagraph XX.E.1 or a revised Cost Summary and Certification under Subparagraph XX.E.2, within sixty (60) Days of receipt of the additional information or revised Cost Summary and Certification, and subject to the conditions set forth in this Section and Section VIII (Excluded Work, page 51), EPA shall disburse funds from the OII Special Account to the Work Defendants. Such disbursements shall be made at the completion of the milestones set forth in Paragraph XX.C above and shall not exceed the amounts set forth in Paragraph XX.C above. EPA shall disburse the funds from the OII Special Account to the payee designated by the Work Defendants.

H. Termination of Disbursements from the Special Account

1. EPA's obligation to disburse funds from the OII Special Account under this Consent Decree shall terminate upon EPA's determination that the Work Defendants: (1) have knowingly submitted a materially false or misleading Cost Summary and Certification; or (2) have submitted a materially inaccurate or incomplete Cost Summary and Certification, and have failed to correct the materially inaccurate or incomplete Cost Summary and Certification within ninety (90) Days after being notified of, and given the opportunity to cure, the deficiency.

2. EPA's obligation to disburse funds from the OII Special Account under this Consent Decree shall also terminate as to a specific item of the Excluded Work as detailed in Subparagraphs XX.C.1 through XX.C.2 above, upon EPA's determination that the Work Defendants failed to submit a Cost Summary and Certification as required by Paragraph XX.E within

one hundred twenty (120) Days (or such longer period as to which EPA agrees) after being notified that EPA intends to terminate its obligation to make disbursements pursuant to this Section because of the Work Defendants' failure to submit the Cost Summary and Certification as required by Paragraph XX.E; however, if the Work Defendants later submit the missing Cost Summary and Certification, and the Cost Summary and Certification otherwise meets the requirements of this Section, then EPA may, in its discretion, disburse funds to the Work Defendants for costs reflected in that Cost Summary and Certification. Such disbursement shall not revive the obligation of EPA to disburse funds for later expenses incurred by the Work Defendants.

3. EPA's obligation to disburse funds from the OII Special Account shall also terminate as to a specific item of the Excluded Work as detailed in Subparagraphs XX.C.1 (page 109) and XX.C.2 (page 110) above, upon EPA's assumption of performance from the Work Defendants of that specific item of the Excluded Work pursuant to Paragraph XXXIV.E (page 181) in Section XXXIV (Reservations of Rights), when such assumption of performance of that specific item of the Excluded Work is not challenged by the Work Defendants or, if challenged, is upheld under Section XXV (Dispute Resolution, page 128).

4. The Work Defendants may dispute EPA's termination of special account disbursements under Section XXV (Dispute Resolution, page 128).

I. Recapture of Special Account Disbursements

Upon termination of disbursements from the OII Special Account under Paragraph XX.H, if EPA has previously disbursed

funds from the OII Special Account for activities specifically related to the reason for termination (e.g., discovery of a materially false or misleading submission after disbursement of funds based on that submission), EPA shall submit a bill to the Work Defendants for those amounts already disbursed from the OII Special Account specifically related to the reason for termination, plus Interest on that amount covering the period from the date of disbursement of the funds by EPA to the date of repayment of the funds by the Work Defendants. Within thirty (30) Days of receipt of EPA's bill, the Work Defendants shall reimburse the EPA Hazardous Substance Superfund for the total amount billed, pursuant to Paragraph XVIII.K (page 95) of this Consent Decree. The Work Defendants may dispute EPA's determination as to recapture of funds pursuant to Section XXV (Dispute Resolution, page 128).

J. Use of Special Account Funds

Funds held or deposited in the OII Special Account or the OII Work Oversight Special Account shall be retained and used to conduct or finance response actions at or in connection with the Site, including payment of direct and indirect costs, or shall be transferred by EPA to the EPA Hazardous Substance Superfund. After EPA determines that all or any portion of the funds in the Special Account will not be needed to perform or pay for Excluded Work pursuant to this Consent Decree, and will not be needed to make disbursement(s), if any, to the Work Defendants in accordance with this Section, EPA may transfer such funds remaining in the OII Special Account to the EPA Hazardous Substance Superfund. Neither any such transfer of funds nor any

EPA determination(s) under this Paragraph on which such transfer is based shall be subject to challenge by the Work Defendants pursuant to the dispute resolution provisions of this Consent Decree or in any other forum.

XXI. Disbursements from the State Site-Specific Sub-Account

Funds in the State Site-specific Sub-Account shall be disbursed as follows:

A. Reimbursement of Work Defendants' Costs Not Exceeding $200,000 (Two Hundred Thousand Dollars).

At any time following ninety (90) days after entry of this Consent Decree, Work Defendants may seek reimbursement from the State Site-Specific Sub-Account of no more than $200,000 (two hundred thousand dollars) in costs that they incur in implementing the Work pursuant to this Consent Decree.

B. Remaining Funds

The remaining funds in the State Site-Specific Sub-Account, including any interest thereon, shall be maintained in that sub-account for use at DTSC's discretion to pay for Site related response and/or oversight costs, in the amounts and at the times determined by DTSC. Upon termination of this Consent Decree pursuant to Section LII (Termination and Satisfaction, page 216), DTSC shall disburse any funds that remain in the State Site-Specific Sub-Account in the following order of priority: (1) First, to the State to reimburse any unreimbursed response costs that it has incurred with respect to the Site, whether or not pursuant to this Consent Decree; (2) Second, to the Work

Defendants to reimburse any unreimbursed costs of Work that they have incurred pursuant to this Consent Decree, and (3) Third, to the California Toxic Substances Control Account, or its successor, as provided by Health and Safety Code Section 25330.4(c).

C. Cost Summary and Certification

Prior to receiving any disbursement from the State Site-Specific Sub-Account, Work Defendants shall submit a written request for such disbursement to DTSC substantially in the form of the Cost Summary and Certification described in Subparagraph XX.E.1 (page 112) in Section XX (Disbursement of OII Special Account Funds) of this Consent Decree. Upon request by DTSC, the Work Defendants shall submit to DTSC any additional information that DTSC deems necessary for its review and approval of the Cost Summary and Certification.

XXII. Priority of Claims

The Defendants' claims against any other party for contribution or indemnification of all or a portion of the cost of their settlement herein shall be subordinate to any claim of the United States and the State against such other party relating to the OII Site as to any unreimbursed costs for the response actions taken or other costs incurred by the United States and the State related to the Site, as provided for by Section 113(f)(3)(C) of CERCLA, 42 U.S.C. § 9613(f)(3)(C). The United States and the State shall have priority over the Defendants in the collection of any judgment obtained against any nonsettling party. The Defendants shall notify EPA of any contribution

action with regard to the Site.

XXIII. Indemnification and Insurance

A. The United States, EPA, the State or other government agencies or departments do not assume any liability by entering into this Consent Decree. The Work Defendants shall indemnify, save and hold harmless the United States (with the exception of the Settling Federal Agency), and the State on behalf of DTSC, the State Accounts, and their agencies, departments, officials, agents, employees, contractors, subcontractors, and representatives from any and all claims or causes of action or costs including, but not limited to, the cost of attorney time and other expenses of litigation and settlement arising from, or on account of, acts or omissions of the Work Defendants, their agents, successors, assigns, contractors, subcontractors, or any persons acting on their behalf or under their control, in carrying out any activities pursuant to the terms of this Consent Decree. This indemnification does not extend to that portion of any such claim or cause of action attributable to the negligent, wanton, or willful acts or omissions of the United States with respect to EPA, USACE, or the U.S. Coast Guard, or the State or their contractors, subcontractors, or any other person acting on their behalf in carrying out activities at the Site. The United States and the State shall notify the Work Defendants of any such claim or action within thirty (30) Days of receiving notice that such a claim or action has been filed. The Work Defendants have the right to seek intervention under Section 113(i) of CERCLA, Rule 24 of the Federal Rules of Civil Procedure, and California

Code of Civil Procedure § 387.

B. The United States, EPA, USACE, the U.S. Coast Guard, the State, the State Accounts, and the Cash Defendants are not, and shall not be held out as, parties to any contract entered into by or on behalf of the Work Defendants in carrying out activities pursuant to this Consent Decree. Neither the Work Defendants nor any such contractor shall be considered an agent of the United States, EPA or the State.

C. The Defendants waive all claims against the United States and the State for damages or reimbursement or for setoff of any payments made or to be made to the United States or the State, arising from or on account of any contract, agreement, or arrangement between any one or more of the Defendants and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, the Work Defendants shall indemnify and hold harmless the United States and the State with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between any one or more Work Defendants and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

D. The Work Defendants agree to indemnify and hold the Settling Federal Agency and the Cash Defendants and their directors, officers and employees harmless from damages or claims arising as a result of negligent performance of the Work, or of negligent, willful, or wanton failure to perform the Work by the Work Defendants or their contractors or subcontractors. The Work

Defendants further agree to indemnify and hold the Settling Federal Agency and the Cash Defendants and their directors, officers and employees harmless from payment of fees, expenses and assessments incurred in administration and management of Site escrow accounts. This indemnity and hold harmless as to the Settling Federal Agency and the Cash Defendants shall not apply to any Settling Federal Agency or Cash Defendant that is not in compliance with the terms of this Consent Decree. Furthermore, this indemnity and hold harmless shall not include any damages or claims arising as a result of any negligent, willful or wanton act or omission of any Settling Federal Agency or Cash Defendant or its directors, officers or employees, nor shall it include any damages or claims that arise or result from conditions at the Site that are not the result of the Work performed under this Consent Decree by the Work Defendants or their contractors or subcontractors. Without limiting the foregoing, the Work Defendants' obligation as to the Cash Defendants shall not apply to any claim or cause of action arising prior to the date of lodging of this Consent Decree or to the extent of any liability attributable to any third party, including, but not limited to, EPA, the State or any Cash Defendant. Any Cash Defendant shall notify the Work Defendants of any such claim or action within thirty (30) Days of receiving notice that such a claim or action has been filed. The Work Defendants shall have the right to join in the defense of all claims or causes of action within the scope of this indemnification. Further, unless the Work Defendants refuse to join in the defense as herein provided, the Cash Defendants shall not prejudice the Work Defendants' rights,

privileges, defenses, or claims through any act or omission, and shall not settle any claim or cause of action within the scope of this indemnification without the consent of the Work Defendants. Nothing in this Paragraph XXIII.D shall be construed to affect or pertain to the indemnification of the United States or the State, as set forth in Paragraph XXIII.A of this Section.

E. No later than fifteen (15) Days after the date of lodging of this Consent Decree, the Work Defendants shall secure and shall maintain for the duration of this Consent Decree, the following insurance covering claims arising out of activities or events related to this Consent Decree or the Site: (1) comprehensive general liability insurance with limits of $1,000,000 (one million dollars) combined single limit, naming the United States as insured; (2) automobile insurance with limits of $1,000,000 (one million dollars) combined single limit, naming the United States as insured; and (3) employer's liability insurance with limits of at least $1,000,000 (one million dollars) per occurrence. Further, the Work Defendants shall use best efforts to secure and maintain professional liability insurance with limits of at least $1,000,000 (one million dollars) per occurrence. In addition, for the duration of this Consent Decree, the Work Defendants shall satisfy, and shall ensure that their contractors and subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing work on behalf of the Work Defendants in furtherance of this Consent Decree. Prior to commencement of the Work under this Consent Decree, the Work Defendants shall provide to EPA certificates of

such insurance and a copy of each insurance policy. The Work Defendants shall resubmit such certificates and shall provide notification of any significant changes in the policies, each year on the anniversary of the date of lodging of this Consent Decree. If the Work Defendants demonstrate by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering the same risks but in a lesser amount, then with respect to that contractor or subcontractor the Work Defendants need prove only that portion of the insurance described above that is not maintained by the contractor or subcontractor.

XXIV. Force Majeure

A. For purposes of this Consent Decree, "force majeure" is defined as any event arising from causes beyond the control of the Work Defendants, including, but not limited to, their contractors, subcontractors, agents or consultants, that delays or prevents the performance of any obligation under this Consent Decree despite the Work Defendants' best efforts to fulfill the obligation. Force majeure shall not include: (1) increased costs or expenses of any of the Work to be performed under this Consent Decree nor (2) the financial inability of any of the Work Defendants to perform such Work nor (3) normal inclement weather nor (4) the failure of the Work Defendants to make timely application for any required permits or approvals and to provide all information required therefor in a timely manner.

B. The requirement that the Work Defendants exercise "best

efforts to fulfill the obligation" includes using best efforts to identify any potential force majeure event and best efforts to address the effects of any potential force majeure event: (1) as it is occurring and (2) following the force majeure event, so that the delay is minimized to the greatest extent possible.

C. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Decree, and the Work Defendants intend to invoke the force majeure provisions of this Section, the Work Defendants shall orally notify EPA's Project Coordinator or, in his or her absence, EPA's Alternate Project Coordinator or, in the event both of EPA's Project Coordinators are unavailable, the Director of the Superfund Division, EPA Region IX, as soon as possible but no later than seventy-two (72) hours of when the Work Defendants first knew or should have known the event might cause a delay. Within five (5) Working Days of the oral notification, the Work Defendants shall provide in writing, to the EPA and DTSC Project Coordinators, a description of the cause of the delay and the anticipated duration of the delay and, to the extent possible at that time: all actions taken or to be taken to prevent or minimize the delay; the schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay and of any proposed modifications to the Work resulting from the force majeure event; the Work Defendants' rationale for attributing such delay to a force majeure event; and a statement as to whether, in the opinion of the Work Defendants, such event may cause or contribute to an endangerment to public health, welfare or the environment. The Work Defendants shall include

with any notice all available documentation supporting their claim that the delay was attributable to a force majeure event. Failure to comply with the above requirements of this Section shall preclude the Work Defendants from asserting a claim of force majeure for that event. The Work Defendants shall be deemed to have notice of any circumstances of which their contractors or subcontractors had or should have had notice.

D. If EPA agrees that the delay or anticipated delay is attributable to a force majeure event, the time for performance of the obligations under this Consent Decree that are affected by the force majeure event shall be extended by written agreement of EPA and the Work Defendants for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure event shall not, of itself, extend the time for performance of any subsequent obligation.

E. If EPA does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, or if EPA and the Work Defendants do not agree on the length of the extension for performance of the obligations affected by a force majeure event, EPA shall notify the Work Defendants in writing of its decision and the basis for its decision concerning whether the delay is attributable to a force majeure event or the length of the extension for performance of the obligations affected by a force majeure event. If EPA determines that the event did not constitute force majeure, then any delay caused by the event claimed to be force majeure by the Work Defendants shall constitute a violation of this Consent Decree and penalties shall

accrue from the date of violation.

F. Except as provided in this Consent Decree, no deadline shall be extended beyond that period of time that is necessary to complete the activities with the shortest possible delay and in no case beyond the actual delay attributable to the force majeure event. Use of the force majeure provision shall not relieve the Work Defendants of their duty to complete all other tasks not substantially affected in a timely manner in accordance with the schedules required by this Consent Decree and the Exhibits. The Work Defendants shall act to avoid or minimize delay.

G. If the Work Defendants elect to invoke the dispute resolution procedures set forth in Section XXV (Dispute Resolution, page 128), they shall do so no later than fifteen (15) Days after receipt of EPA's notice pursuant to Paragraph XXIV.E of this Section. In any such proceeding and to the extent the facts are not stipulated to by the Parties, the Work Defendants shall have the burden of demonstrating by a preponderance of the evidence that: the delay or anticipated delay has been or will be caused by a force majeure event; the duration of the delay was or will be warranted under the circumstances; best efforts were exercised to avoid and mitigate the effects of the delay; and the Work Defendants complied with the requirements of this Section. If it is determined that the Work Defendants have carried this burden, the delay at issue shall be deemed not to be a violation by the Work Defendants of the affected obligation of this Consent Decree identified to EPA and the Court, or as provided in Paragraph XXIV.D (page 126) of this Section.

H. The Cash Defendants shall not invoke the provisions of this Section.

XXV. Dispute Resolution

A. General Provisions

1. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree and shall apply to all provisions of this Consent Decree.

2. The dollar amounts specified for stipulated penalties under Section XXVI (Stipulated Penalties, page 141), are not subject to dispute resolution. Use of the dispute resolution provision will not relieve the Work Defendants of their duty to complete all other tasks that are not disputed nor substantially affected by the disputed issue in a timely manner in accordance with the schedules set forth in or developed pursuant to this Consent Decree.

3. Nothing herein shall be construed to allow the Work Defendants to dispute the validity of any provisions of the Gas Control and Cover ROD, the Final ROD, or any future decision documents for the OII Site. However, the Defendants reserve their right to submit comments pursuant to Section 300.825(c) of the NCP and have not waived the rights, if any, that they may have under CERCLA and the NCP to petition EPA to amend the RODs based on new information that may substantially support the need to significantly alter the response action. Although the Defendants may not dispute EPA's authority to issue a decision

document for the Site or to select a particular response action or contingency measure, Defendants do reserve their rights to dispute any determination by EPA that the response action, the contingency measure, or any activity required by a decision document: (1) is Work; (2) is Additional Work; or (3) may trigger a reopener event or a reservation of rights under this Consent Decree, including but not limited to the provisions of Section XXVIII (Covenants Not to Sue by the United States for Work Defendants, page 153), Section XXIX (De Minimis Covenants Not to Sue by the United States for Cash-1 and Cash-1/R Defendants ("Tier 1" Covenants), page 157), Section XXX (De Minimis Covenants by the United States for the Settling Federal Agency ("Tier 1" Covenants), page 158), Section XXXI (De Minimis Covenants Not to Sue by the United States for Cash-2 and Cash-2/R Defendants ("Tier 2" Covenants), page 158), Section XXXII (Covenants Not to Sue for Matters Addressed in the First and Third Decrees, page 162), Section XXXIII (Covenants by the State of California, page 165), and Section XXXIV (Reservations of Rights, page 178).

B. Informal Dispute Resolution

1. Any dispute that arises under or with respect to this Consent Decree shall in the first instance be the subject of informal negotiations between the parties to the dispute. The period for informal negotiations shall not exceed twenty (20) Days from the time the dispute arises, unless it is extended by written agreement of the parties to the dispute. The dispute shall be considered to have arisen when one party notifies the other parties in writing that there is a dispute. The State may

participate in these negotiations, consistent with the provisions of Section XLV (State and Local Agency Participation, page 212).

2. In the event the parties cannot resolve a dispute by informal negotiations under the preceding Subparagraph XXV.B.1, then the position advanced by EPA shall be considered binding unless, within ten (10) Days after the conclusion of the informal negotiation period, the Work Defendants either (1) invoke the formal dispute resolution provisions of this Section or (2) invoke the mediation provisions of this Section. The Work Defendants' decision to invoke the formal dispute resolution procedures or the mediation provisions of this Section XXV shall not in and of itself constitute a force majeure event under Section XXIV (Force Majeure, page 124). The Work Defendants reserve the right to dispute a determination regarding whether a force majeure event has occurred.

C. Formal Dispute Resolution Mechanism

1. Formal dispute resolution for disputes shall be conducted pursuant to the procedures set forth in this Paragraph XXV.C. If the Work Defendants invoke the formal dispute resolution process pursuant to Subparagraph XXV.B.2 (page 130) of this Section XXV (Dispute Resolution), they shall simultaneously serve on the United States and the State a written statement of position on the matter in dispute, including, but not limited to, any factual data, analysis or opinion supporting that position and any documentation relied upon by the Work Defendants.

2. The administrative record of the dispute shall be maintained by EPA and shall include all statements of position, including supporting documentation, submitted pursuant to this

Paragraph XXV.C.

3. Within twenty-one (21) Days after receipt of the Work Defendants' statement of position submitted pursuant to Subparagraph XXV.C.1, EPA shall serve on the Work Defendants and the State its statement of position, including, but not limited to, any factual data, analysis, or opinion supporting that position and all supporting documentation relied upon by EPA, in response to the Work Defendants' statement of position. DTSC may submit its own statement of position and supporting documents that shall be served on EPA and the Work Defendants within twenty-one (21) Days after DTSC's receipt of the Work Defendants' statement of position submitted pursuant to Subparagraph XXV.C.1. Where appropriate, EPA shall allow submission of supplemental statements of position by the parties to the dispute, such as where new information has been provided in another party's submittals.

4. The Director of the Superfund Division, EPA Region IX or his or her designee, but not the Project Coordinator designated pursuant to Section XIV (Project Coordinators, page 60), shall issue a final administrative decision resolving the dispute that shall be based on the administrative record compiled pursuant to this Section. This decision shall be binding upon the Work Defendants, subject only to the right to seek judicial review pursuant to Subparagraphs XXV.C.5 and XXV.C.6 below.

5. Except as provided in Paragraph XXXIV.O of Section XXXIV of this Consent Decree, any administrative decision by EPA pursuant to Subparagraph XXV.C.4 above shall be reviewable by this Court, provided that a motion for judicial review is filed

by the Work Defendants with the Court and served on all parties within fifteen (15) Days of receipt of EPA's decision. The motion for judicial review shall include a description of the matter in dispute, the efforts made by the parties to resolve it, and the relief requested. Within thirty (30) Days of receipt by EPA of such notice or within the schedule set forth by the Court, the United States or the State may file a response to the Work Defendants' motion for judicial review. In proceedings on any dispute relating to the selection, technique, cost effectiveness or adequacy of any aspect of the Work and in any other dispute subject to CERCLA Sections 113(j)(1) and (2), 42 U.S.C. §§ 9613(j)(1) and (2), in considering the Work Defendants' objections, the Court shall uphold EPA's decision unless the Work Defendants can demonstrate, on the administrative record compiled pursuant to this Section, that EPA's decision was arbitrary and capricious or otherwise not in accordance with law. In other disputes, except as specified in this Section and in Paragraph XXIV.G (page 127) of Section XXIV (Force Majeure), the appropriate standard of judicial review and scope of materials to be considered by the Court shall be determined by the Court.

6. The Work Defendants shall have the burden of persuasion on factual issues.

D. Mediation

1. Following entry of this Consent Decree and at future times, as set forth below, EPA and the Work Defendants will select a mediator to assist in resolving disputes that may arise under this Consent Decree, any such assistance to be consistent with this Section XXV (Dispute Resolution).

2. EPA and the Work Defendants agree to select a mediator in accordance with the following procedures:

a. Within ninety (90) Days of entry of this Consent Decree, the parties will identify the criteria to be used to select a mediator for disputes under this Consent Decree.

b. Within twenty-one (21) Days after identification of the criteria established by Subparagraph XXV.D.2.a, EPA will forward to the Work Defendants a list of mediators ("Mediation Selection List"), including, but not limited to, any mediators available through the Dispute Resolution Support Services Contract, or successor contract, managed by EPA.

c. Within twenty-one (21) Days of receipt of the Mediation Selection List, the Work Defendants shall nominate seven (7) persons from the Mediation Selection List and list them in order of preference ("Mediation Nomination List") to serve as mediators for the matter in dispute. The Work Defendants shall contact all mediators on the Mediation Nomination List and shall: (1) provide each mediator with a copy of this Consent Decree; (2) ask each mediator to identify conflicts of interest, including, but not limited to, any past, present, or planned future business relationships with any of the parties, other than for mediation activities; and (3) ask each mediator to consent to the terms and conditions for mediation provided in this Consent Decree. Any conflicts of interest or refusal on the part of a mediator to comply with the terms set forth in this Section XXV shall automatically result in rejection of such nominee.

d. Within fourteen (14) Days of EPA's receipt of

the Mediation Nomination List, EPA shall select three mediators from that List. When mediation is requested under Subparagraph XXV.B.2 (page 130) of this Section, EPA will enter into an agreement for mediation services with one of the three selected mediators.

e. The Work Defendants shall review the Mediation Nomination List annually to insure that the selected mediators are still available to assist with disputes arising pursuant to this Consent Decree. If one of the three mediators does not remain on the List, the Work Defendants shall notify EPA in writing and the parties shall follow the procedures set forth in this Subparagraph XXV.D.2 to select additional mediators until there are at least three available mediators on the Mediation Nomination List. The parties shall begin the process to select additional mediators set forth in this Subparagraph XXV.D.2 as of the date EPA receives notification that any of the selected mediators is unavailable.

f. In the event a dispute arises under Section XXV and the mediation process is selected under Subparagraph XXV.B.2 prior to the completion of the selection process under this Subparagraph XXV.D.2, EPA and the Work Defendants agree to shorten the time periods set forth in this Subparagraph XXV.D.2 to a total time not to exceed forty-five (45) Days from selection of the mediation process.

3. Mediation shall be conducted pursuant to the procedures set forth in this Paragraph XXV.D. If the Work Defendants invoke the mediation process pursuant to Subparagraph XXV.B.2 (on page 130), they shall simultaneously serve on the

United States and the State a written statement of position on the matter in dispute, including, but not limited to, any factual data, analysis or opinion supporting that position, and any supporting documentation relied upon by the Work Defendants.

4. Within ten (10) Days of receipt of the Work Defendants' statement of position, EPA will provide written notification to the Work Defendants of EPA's acceptance or rejection of mediation. EPA's decision to reject the Work Defendants' request for mediation shall not be subject to dispute resolution or judicial review. If EPA rejects mediation, the Work Defendants shall have the opportunity to invoke the formal dispute resolution procedures of this Section within five (5) Days of receipt of EPA's notice of its rejection of mediation. If the Work Defendants invoke formal dispute resolution, the statement of position submitted by the Work Defendants for mediation shall be the Work Defendants' statement of position for formal dispute resolution, and EPA shall have twenty-one (21) Days after receipt of the Work Defendants' election of formal dispute resolution in which to serve on the Work Defendants its statement of position for formal dispute resolution.

5. If EPA accepts mediation, then within twenty-one (21) Days of receipt of the Work Defendants' statement of position for mediation, EPA will forward to the Work Defendants EPA's statement of position for mediation including, but not limited to, any factual data, analysis, or opinion supporting that position and all supporting documentation relied upon by EPA. Subject to Subparagraph XXV.D.7 (on page 136), if the Work Defendants elect to mediate a dispute, and EPA agrees to

participate in the mediation, and EPA submits its statement of position, then the Work Defendants shall be deemed to have waived their right to institute formal dispute resolution procedures pursuant to Paragraph XXV.C as to that dispute, except as provided in Subparagraph XXV.D.11 of this Section.

6. The Work Defendants shall bear the total costs of the mediation. Costs incurred by EPA will be reimbursed by the Work Defendants as Future Response Costs pursuant to Subparagraph XVIII.G.4 (page 91) of Section XVIII (Payment of Response Costs).

7. If for any reason the parties are unable to select a mediator or are unable to approve and execute an agreement for mediation services within the time periods for those activities specified in Subparagraph XXV.D.2 above, the Work Defendants shall have the opportunity to invoke the formal dispute resolution procedures of this Section within five (5) Days of receipt of EPA's notice of its inability to approve and execute an agreement for mediation services. In the event that the formal dispute resolution procedures are not invoked within five (5) Days of EPA's notice, as set forth above, then the Work Defendants shall be deemed to have waived their dispute and the position advanced by EPA during informal negotiations shall be binding and shall be incorporated into and shall become an enforceable element of this Consent Decree.

8. Mediation sessions shall not be recorded verbatim and no formal minutes or transcripts shall be maintained. The mediator shall make no written findings or recommendations; however, upon request by any party to the mediation, the mediator may provide to all parties to the mediation an advisory opinion

about the potential outcome of the dispute. The mediator shall not issue any written decision, nor shall any comment or opinion of the mediator be binding upon the parties. The State may participate in mediation sessions conducted pursuant to this Paragraph XXV.D.

9. Meetings or conferences with the mediator shall be treated as settlement negotiations. Statements made by any person during any such meetings or conferences shall be deemed to have been made in compromise negotiations within the meaning of Rule 408 of the Federal Rules of Evidence and applicable state rules of evidence and shall not be offered in evidence in any proceeding by any person. However, either of the parties may waive confidentiality as to its own statement of position, provided that such party does not violate any other party's confidentiality rights. The mediator will be disqualified as a witness, consultant or expert in any pending or future action relating to the subject matter of the mediation, including, but not limited to, those between persons not a party to the mediation. The mediator's contract for services shall contain the language found in this Subparagraph XXV.D.9 concerning confidentiality. If the Work Defendants fail to comply with the mediation negotiation requirements of this Subparagraph XXV.D.9, then the Work Defendants will forfeit their rights, if any remain, under this Consent Decree to request future mediation, and the Work Defendants shall pay stipulated penalties pursuant to Subparagraph XXVI.C.7 (page 152). If EPA or the State fails to comply with the mediation negotiation requirements of this Subparagraph XXV.D.9, sanctions, if any, will be determined by

the court, not inconsistent with applicable law.

10. As soon as possible after the parties' acceptance of the agreement for mediation services, the mediator shall conduct a one-Day session to review the issues in dispute and assist EPA and the Work Defendants in resolving the dispute. If EPA and the Work Defendants agree, the session with the mediator may be continued from Day-to-Day until the disputed issue(s) are resolved. The mediation shall not continue for more than ninety (90) Days after all parties' acceptance of the agreement for mediation services, unless the mediation period is extended by written consent of the parties.

11. Any agreement reached by the parties regarding the matter in dispute pursuant to this Paragraph XXV.D shall be in writing and shall be signed by both parties. Upon signature by both parties, and upon approval by the Court if required by Section XXXVIII (Modification, page 205), the agreement shall be incorporated into and become enforceable under this Consent Decree. If the parties do not reach agreement through mediation, then EPA shall issue a final decision pursuant to Subparagraph XXV.C.4 (page 131), and the procedures of Subparagraphs XXV.C.4 to XXV.C.6 shall govern review of such decision by the Court.

E. Obligations After Resolution of Dispute

Unless the agreement, EPA decision, or court order resolving the dispute specifically relieves the Work Defendants of the obligation to pay stipulated penalties assessed by EPA related to the dispute, the Work Defendants shall remit payment of all penalties that have accrued during the dispute, plus interest at the rate established by the Department of the Treasury under 31

U.S.C. § 3717 and 4 C.F.R. § 102.13, to the EPA Hazardous Substance Superfund, within fifteen (15) Working Days of the execution of the agreement, issuance of the EPA decision, or the Court's entry of the order or decision resolving the dispute. The Work Defendants shall then implement the disputed matter as resolved and perform the work that was the subject of the dispute, if required. The appropriate Plans should be amended to reflect the resolution of the dispute. In any dispute in which the Work Defendants prevail: (1) the deadlines for any affected deliverables shall be extended to account fully for any delays attributable to the dispute resolution procedures; and (2) any penalties that would otherwise accrue for violations of any affected deliverable shall be void.

F. Disputes Between EPA and the State

1. This Paragraph XXV.F pertains to disputes solely between EPA and the State arising out of implementation of this Consent Decree. EPA and the State intend to consult informally, through the Operating Industries, Inc. Interagency Committee ("IAC") process (see Paragraph XLV.B, page 212 and Sections 3.4.2, 6.1 and 6.2 of the Scope of Work) or otherwise, to discuss any issues between them regarding implementation of this Consent Decree, prior to EPA taking formal action on significant deliverables. If a dispute concerning implementation of this Consent Decree cannot be resolved through informal consultation, the State shall notify the United States, EPA, and the Work Defendants, in writing, of the existence of the dispute, within twenty (20) Days of the State's receipt of notice by EPA of the action that the State wishes to dispute. The State's

notification shall include a written statement of the issue at hand, as well as the State's position. The Work Defendants may submit a statement of position to EPA and the State, at the Work Defendants' option. The Work Defendants may participate in the dispute resolution discussions under this Subparagraph XXV.F.1, upon consent of both EPA and the State. The State and EPA shall attempt to resolve the dispute within twenty (20) Days following EPA's receipt of the State's notification of the dispute. If no resolution has been reached within the twenty-Day period, the dispute shall be raised to the State Director of DTSC and the Director of the Superfund Division, EPA Region IX, for resolution. After consideration of the State's position, EPA will make a final administrative decision on the issue and will prepare, within twenty (20) Days of that decision, a written statement of the decision.

2. Unless otherwise directed by EPA, or unless otherwise provided in this Consent Decree, no Work under this Consent Decree shall be delayed as a result of any dispute between EPA and the State. Either the State or the Work Defendants may submit a written request to EPA to delay or suspend any Work activities impacted by a dispute between EPA and the State during consideration of the dispute. EPA shall delay the subject Work activities, or a portion of them, unless the Director of the Superfund Division, EPA Region IX, concludes that delay or suspension of such activities may cause a significant adverse impact to other aspects of the Work or may present an imminent and substantial endangerment to the public health or welfare or the environment, in which case EPA may require the

Work Defendants to continue with such Work activities despite the dispute. EPA's decision(s) pursuant to this Subparagraph XXV.F.2 shall not be subject to dispute resolution or judicial review by any Party.

3. This Paragraph XXV.F does not confer upon the State any right to initiate any action in court for review of EPA's decision, for resolution of the dispute, or for a delay or suspension of any Work activities, nor does this Paragraph XXV.F waive any such right that the State otherwise may have.

XXVI. Stipulated Penalties

A. General Provisions

1. The Work Defendants shall be liable for stipulated penalties where EPA determines that there has been: (1) late or inadequate submittal or resubmittal of a document or deliverable required by this Consent Decree; (2) late or inadequate payment; (3) untimely or inadequate Work; (4) unauthorized activity at the Site; (5) violation of Section XVII (Retention of Records, page 78); (6) failure to achieve a Performance Standard after EPA approval of the Construction Completion Report; or (7) failure to achieve any other requirement under, or to comply with the terms of this Consent Decree.

2. For an inadequate submittal or inadequate Work, EPA shall provide to the Work Defendants, as soon as possible, oral notification of the occurrence of an event that triggers stipulated penalties, with written confirmation within seven (7) Days of the occurrence of the event. For purposes of this Subparagraph XXVI.A.2, stipulated penalties shall accrue from the

date on which the Work Defendants receive such written confirmation. Notification shall not be required for late or untimely submittals.

3. Each Cash Defendant shall be liable for stipulated penalties for: (1) late or inadequate payment by that Cash Defendant pursuant to Subparagraph XVIII.B.1 (Payments by the Cash Defendants, page 82) of Section XVIII (Payment of Response Costs) and Exhibit D to this Consent Decree; or (2) a violation by that Cash Defendant of Section XVII (Retention of Records, page 78).

4. The stipulated penalty for any late payment or payment of less than the full amount due under this Consent Decree shall be $5,000 (five thousand dollars) per Day for the first ten (10) Days, $10,000 (ten thousand dollars) per Day thereafter until ten (10) Days after EPA sends notice of delinquency to the party, and $25,000 (twenty-five thousand dollars) per Day thereafter.

5. Except as provided in Subparagraph XXVI.A.2, penalties shall accrue from the date on which a violation of this Consent Decree occurs and shall continue to accrue through the final Day of the noncompliance. However, stipulated penalties will not accrue with respect to judicial review by the Court of any dispute under Section XXV (Dispute Resolution, page 128), during the period, if any, beginning on the thirty-first Day after the Court's receipt of the final submission regarding the dispute until the date that the Court issues a final decision regarding the dispute.

6. Stipulated penalties under this Paragraph XXVI.A

shall be paid within thirty (30) Days of receipt of the written demand for payment of stipulated penalties. Failure to pay a stipulated penalty on time also constitutes an event subject to stipulated penalties. Payment shall be made pursuant to Paragraph XVIII.K (page 95) of Section XVIII (Payment of Response Costs) of this Consent Decree.

7. The Defendants shall pay Interest on all stipulated penalties, which shall accrue from the date payment is due.

8. All stipulated penalties provided for in the schedules set out in this Section shall be Inflation Adjusted.

9. Notwithstanding the stipulated penalties specified in the provisions of this Section, and to the extent authorized by law, EPA or the State may elect to assess civil penalties or bring an action in District Court to enforce the provisions of this Consent Decree. Payment of stipulated penalties shall not preclude EPA or the State from electing to pursue any other remedy or sanction against any Defendant to enforce this Consent Decree, and nothing shall preclude EPA or the State from seeking statutory penalties against the Work Defendants for violations of statutory or regulatory requirements relating to the performance of the Work under this Consent Decree, provided that the total shall not exceed the CERCLA statutory maximum per Day per violation.

10. In the event EPA or its designee assumes the performance of a portion or all of the Work, pursuant to Subparagraph VII.C.5 (page 51) of Section VII (Work To Be Performed) and Section XXXIV (Reservation of Rights, page 178),

the Work Defendants shall be liable for stipulated penalties pursuant to this Section. If EPA or its designee performs all or a portion of the Work because of the Work Defendants' failure to comply with their obligations under this Consent Decree, the Work Defendants shall reimburse EPA for the costs of doing such work, plus penalties pursuant to this Section, within thirty (30) Days of receipt of demand for payment of such costs.

11. The Work Defendants are jointly and severally liable for any stipulated penalties pursuant to the provisions of this Section provided, however, that the total amount due and payable for each Day of each violation shall not exceed those limits specified in this Section. The dollar amounts specified for penalties are not subject to Section XXV (Dispute Resolution, page 128). In the event the Work Defendants invoke dispute resolution under Section XXV (Dispute Resolution, page 128), the dispute resolution process shall not toll or suspend the accrual of stipulated penalties or accrual of interest thereon except as provided in Subparagraphs XXVI.A.5 and XXVI.A.14 of this Section.

12. Separate penalties shall accrue simultaneously for separate violations of this Consent Decree.

13. Except as provided in Section XXV (Dispute Resolution, page 128), neither the invocation of dispute resolution procedures under Section XXV (Dispute Resolution, page 128) nor the payment of penalties shall alter in any way the Work Defendants' obligation to complete the performance of the Work required under this Consent Decree.

14. Notwithstanding any other provision of this Section, the United States may, in its unreviewable discretion,

waive any portion of stipulated penalties that have accrued pursuant to this Consent Decree.

B. Deliverables Required Pursuant to this Consent Decree

Any Reports, Plans, specifications, schedules, amendments, revisions, and appendices required by this Consent Decree are, upon approval by EPA, incorporated into this Consent Decree, but only to the extent not inconsistent with this Consent Decree. EPA reserves the right to disapprove any such documents pursuant to Section IX (EPA Approval of Plans and Other Submissions, page 53). Any noncompliance with such EPA-approved Reports, Plans, specifications, schedules, amendments, revisions, and appendices shall be considered a violation of this Consent Decree and subject to stipulated penalties as governed by this Section. The Work Defendants shall pay the following stipulated penalties for each failure to comply with the requirements of this Consent Decree, including, but not limited to, all implementation schedules and performance and submission dates:

1. Progress Reports. If EPA determines that a Progress Report is inadequate, or if the Work Defendants fail to submit any required Progress Report according to schedule, then the Work Defendants shall be considered to be in violation of this Consent Decree and the Work Defendants shall pay stipulated penalties of $1,000 (one thousand dollars) per Day for each such violation.

2. Amount of Stipulated Penalties by Class. For purposes of the amount of stipulated penalties, each deliverable other than Progress Reports shall be designated by a Class as set forth below.

a. Class I Requirements

Period of Failure to Comply	Penalty per Day per Event
1st through 30th Day	$ 2,500
31st through 45th Day	$ 8,000
46th Day and beyond	$10,000

b. Class II Requirements

Period of Failure to Comply	Penalty per Day per Event
1st through 15th Day	$ 3,000
16th through 30th Day	$ 7,000
31st through 45th Day	$10,000
46th Day and beyond	$15,000

c. Class III Requirements

Period of Failure to Comply	Penalty per Day per Event
1st through 15th Day	$ 5,000
16th through 30th Day	$10,000
31st through 45th Day	$15,000
46th Day and beyond	$20,000

3. Deliverable Class List. Classification of deliverables for purposes of the amount of Stipulated Penalties shall be as follows.

a. Management Plans

Work Plan	
Outline	I
Prefinal	I
Final	III
Amended	II

Final Remedy SHERP (Safety, Health and Emergency Response Plan)	
Prefinal	I
Final	III
Amended	I

Quality Assurance/Quality Control (QA/QC) Plan	
Outline	I
Prefinal	I
Final	III
Amended	I

Final Operations Plan	
Outline	I
Prefinal	I
Final	III
Revised Final	I
Amended Final	I

Sampling Plans	
Proposed	I
Final	III

Progress Reports	
Progress Report	I
Amended Progress Report	III

b. Documents for Environmental/Groundwater Monitoring Activities

Long-Term Groundwater Monitoring Plan	
Preliminary Draft	I
Draft	I
Final	III

Groundwater Data Report	
Final	II

Annual Groundwater Monitoring and Evaluation Report	
Draft	I
Final	III

c. Documents for Remedial Design Investigation Activities

Area-Specific Evaluations (After First ASE, Performed as Early Work)	
Draft Report	I
Final Report	III

Remedial Design Investigation Work Plan (RDIWP)	
Draft RDIWP(s)	I
Final RDIWPs	III

Remedial Design Investigation Report	
Draft Report (if required)	I
Final Report	III

Focused Groundwater Pumping Remedial Design Investigation Work Plan(s), if required by EPA	
Draft Report (if required)	I
Final Report	III

d. Design Deliverables

Preliminary Design Report(s)	
Prefinal	I
Final	III

Design Package(s)	
Intermediate (if required)	I
Prefinal	I
Final	III

e. Construction Period

Contractor Selection and Construction Start	I

Construction Schedule	I

Construction As-Built Reports	
Draft	I
Final	II

Construction Completion Report	
Draft	I
Final	II

f. Implementation of Institutional Controls

Institutional Controls Program Plan	
Plan Outline	I
Prefinal Program Plan	II
Final Program Plan	III

Institutional Controls Implementation Annual Update	
Draft Annual Report	I
Final Annual Report	III

g. Compliance Testing Period

Compliance Testing Plans	
Draft	I
Final	II

Compliance Testing Reports	
All	I

h. Operation and Maintenance Period

Noncompliance Notifications	
All	III

Compliance Action Plans	
All	II

Noncompliance Correction Reports	
All	I

i. Completion Reports

Completion Reports	
Final Remedial Action Completion Report	III
Final Work Completion Report	III
Other Work Completion Reports, including Excluded Work Completion Reports, if applicable	I

j. Project Proposals/Technical Memoranda

Project Proposals/Technical Memoranda	
Prefinal Technical Memorandum	I
Final Technical Memorandum	III

4. Other Deliverables

Other Deliverables	
Quarterly Escrow Reports	II
All other deliverables not otherwise identified in this Section	II

C. Other Stipulated Penalties

1. If EPA determines that the Work or any portion of the Work has not been timely commenced, the Work Defendants shall be deemed to be in violation of this Consent Decree and Class II stipulated penalties shall accrue from the date on which EPA determines such Work should have commenced to the actual commencement date.

2. If EPA determines that the Work Defendants have failed to comply with any Integration requirements as defined in the Scope of Work, Class II stipulated penalties shall accrue during the period of such noncompliance.

3. If EPA determines that Work Defendants have failed to perform any material portion of the Work, or have performed any portion of the Work in a substantially inadequate or substantially untimely manner, or have suspended performance of all or a portion of the Work, unless otherwise allowed by the terms of this Consent Decree, they shall be deemed to be in violation of this Consent Decree and shall pay a stipulated penalty of $2,000,000 (two million dollars). This penalty shall be in lieu of any other stipulated penalties for that specific violation, but shall be in addition to the costs of work pursuant to Subparagraph VII.C.5 (on page 51) of Section VII (Work to Be

Performed) and Paragraph XXXIV.E (on page 181) of Section XXXIV (Reservation of Rights).

4. In the event of an imminent and substantial endangerment to public health or welfare or the environment resulting from the performance of, or the failure to perform Work by Work Defendants, Work Defendants shall pay a stipulated penalty of $6,000,000 (six million dollars). This penalty shall be in lieu of any other stipulated penalties for that specific violation, but shall be in addition to the costs of work pursuant to Subparagraph VII.C.5 (on page 51) of Section VII (Work to Be Performed) and Paragraph XXXIV.E (on page 181) of Section XXXIV (Reservation of Rights).

5. The Defendants' obligations under Section XVII (Retention of Records, page 78) shall be considered Class II requirements as set forth in this Section, and any Defendant failing to comply with such obligations shall be subject to penalties applicable to Class II requirements.

6. The dollar amount specified for a stipulated penalty under this Section shall be reduced by thirty-five percent (35%) for any violation of this Consent Decree by the Work Defendants that EPA determines relates exclusively to an item of the Excluded Work being performed by the Work Defendants under Section VIII (Excluded Work, page 51).

7. If EPA determines that any Work Defendant has violated the provisions of Subparagraph XXV.D.9 relating to mediation settlement discussions, the Work Defendants shall be liable for a stipulated penalty in the amount of $500,000 (five hundred thousand dollars), in addition to any other penalties

relating to the disputed matter.

XXVII. Certifications by Each Cash Defendant

By signing this Consent Decree, each Cash Defendant individually certifies, to the best of its knowledge and belief, that: (i) it has conducted a thorough, comprehensive, good-faith search for documents and has fully and accurately disclosed to EPA all information currently in its possession, or in the possession of its officers, directors, employees, contractors or agents, that relates in any way to the ownership, operation, or control of the Site, or to the ownership, possession, generation, treatment, transportation, storage or disposal of a hazardous substance, pollutant, or contaminant at or in connection with the Site; (ii) it did not contribute any hazardous substances that are significantly more toxic or of significantly greater hazardous effect than those listed in Exhibit G, Contaminants List; (iii) it has not altered, mutilated, discarded, destroyed, or otherwise disposed of any records, documents, or other information relating to its potential liability regarding the Site after notification of potential liability or the filing of a suit against it regarding the Site; and (iv) it has fully complied with any and all EPA requests for information regarding the Site pursuant to Sections 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e).

XXVIII. Covenants Not to Sue by the United States for the Work Defendants

A. In consideration of the actions that will be performed

and the payments that will be made by the Work Defendants under the terms of this Consent Decree, and except as specifically provided in Paragraphs XXVIII.B, XXVIII.C, and XXVIII.D of this Section and in Section XXXIV (Reservations of Rights, page 178), the United States covenants not to sue or to take administrative action against the Work Defendants pursuant to Sections 106 and 107(a) of CERCLA and Section 7003 of RCRA relating to the Matters Addressed in this Consent Decree. Except with respect to future liability, these covenants not to sue shall take effect upon the receipt by EPA of the payments required by Paragraph XVIII.E (page 84) of Section XVIII (Payment of Response Costs). With respect to future liability, these covenants not to sue shall take effect upon Certification of Completion of the Remedial Action by EPA pursuant to Paragraph XXXVI.A (page 199) of Section XXXVI (Certification of Completion). These covenants not to sue are conditioned upon the satisfactory performance by the Work Defendants of their obligations under this Consent Decree. These covenants not to sue extend only to the Work Defendants and do not extend to any other person.

B. United States' Pre-certification Reservations as to the Work Defendants.

Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new action, or to issue an administrative order seeking to compel the Work Defendants (1) to perform further response actions relating to the Site or (2) to reimburse the United States for additional costs of response if, prior to

Certification of Completion of the Remedial Action:

(i) conditions at the Site, previously unknown to EPA, are discovered, or

(ii) information, previously unknown to EPA, is received, in whole or in part,

and these previously unknown conditions or information together with any other relevant information indicates that the Remedial Action is not protective of human health or the environment.

C. United States' Post-certification Reservations as to the Work Defendants.

Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new action, or to issue an administrative order seeking to compel the Work Defendants (1) to perform further response actions relating to the Site or (2) to reimburse the United States for additional costs of response if, subsequent to Certification of Completion of the Remedial Action:

(i) conditions at the Site, previously unknown to EPA, are discovered, or

(ii) information, previously unknown to EPA, is received, in whole or in part,

and these previously unknown conditions or this information together with other relevant information indicates that the Remedial Action is not protective of human health or the environment.

D. The United States' Reservations with Respect to Natural Resource Damages as to the Work Defendants.

Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings against the Work Defendants in this action or in a new action to seek relief for injury to, destruction of, or loss of Natural Resources, if:

(i) conditions at the Site, previously unknown to EPA, are discovered, or

(ii) information, previously unknown to EPA, is received, in whole or in part,

and these previously unknown conditions or information together with any other relevant information indicates that the damages to Natural Resources resulting from the contamination of the Site are significantly greater than those previously known to EPA.

E. For purposes of Paragraphs XXVIII.B and XXVIII.D, the information and the conditions known to EPA shall include only that information and those conditions known to EPA as of the date the Final ROD was signed and set forth in the Final ROD for the Site and the administrative record supporting the Final ROD. For purposes of Paragraph XXVIII.C, the information and the conditions known to EPA shall include only that information and those conditions known to EPA as of the date of Certification of Completion of the Remedial Action and set forth in the Final ROD, the administrative record supporting the Final ROD, the post-ROD administrative record (if any), or in any information received by EPA pursuant to the requirements of the Third Decree or of this Consent Decree prior to Certification of Completion of the

Remedial Action.

XXIX. De Minimis Covenants Not to Sue by the United States for the Cash-1 and the Cash-1/R Defendants ("Tier 1" Covenants)

In consideration of the actions that will be performed and the payments that will be made by the Cash-1 Defendants and the Cash-1/R Defendants under the terms of this Consent Decree, and except as specifically provided in Section XXXIV (Reservations of Rights, page 178), the United States covenants not to sue or to take administrative action against the Cash-1 Defendants and the Cash-1/R Defendants pursuant to Sections 106 and 107(a) of CERCLA and Section 7003 of RCRA relating to the Matters Addressed in this Consent Decree. With respect to present and future liability, these covenants not to sue shall take effect as to each Cash-1 Defendant or Cash-1/R Defendant upon the receipt by EPA of the entire payment required of that Cash-1 Defendant or Cash-1/R Defendant under Subparagraph XVIII.B.1 (page 82) of Section XVIII (Payment of Response Costs). With respect to each Cash-1 Defendant or Cash-1/R Defendant, individually, these covenants not to sue are conditioned upon: (1) the satisfactory performance by that Defendant of all of its obligations under this Consent Decree; and (2) the veracity of the information provided to EPA by that Defendant relating to that Defendant's involvement with the Site. These covenants not to sue extend only to the Cash-1 Defendants and the Cash-1/R Defendants and do not extend to any other person.

XXX. De Minimis Covenants by the United States for the Settling Federal Agency ("Tier 1" Covenants)

In consideration of the payments that will be made by the Settling Federal Agency under the terms of this Consent Decree, and except as specifically provided in Section XXXIV (Reservations of Rights, page 178), EPA covenants not to take administrative action against the Settling Federal Agency pursuant to Sections 106 and 107(a) of CERCLA and Section 7003 of RCRA for Matters Addressed in this Consent Decree. EPA's covenant shall take effect upon the receipt of the payments required by Paragraph XVIII.F (page 84) of Section XVIII. EPA's covenant is conditioned upon the satisfactory performance by the Settling Federal Agency of its obligations under this Consent Decree. EPA's covenant extends only to the Settling Federal Agency and does not extend to any other person.

XXXI. De Minimis Covenants Not to Sue by the United States for the Cash-2 and the Cash-2/R Defendants ("Tier 2" Covenants)

A. In consideration of the actions that will be performed and the payments that will be made by the Cash-2 Defendants and the Cash-2/R Defendants under the terms of this Consent Decree, and except as specifically provided in Paragraphs XXXI.B, XXXI.C, and XXXI.D of this Section and in Section XXXIV (Reservations of Rights, page 178), the United States covenants not to sue or to take administrative action against the Cash-2 Defendants and the Cash-2/R Defendants pursuant to Sections 106 and 107(a) of CERCLA

and Section 7003 of RCRA relating to the Matters Addressed in this Consent Decree. With respect to present and future liability, these covenants not to sue shall take effect as to each Cash-2 Defendant or Cash-2/R Defendant upon the receipt by EPA of the entire payment required of that Cash-2 Defendant or Cash-2/R Defendant under Subparagraph XVIII.B.1 (page 82) of Section XVIII, (Payment of Response Costs). With respect to each Cash-2 Defendant or Cash-2/R Defendant, individually, these covenants not to sue are conditioned upon (1) the satisfactory performance by that Defendant of all of its obligations under this Consent Decree; and (2) the veracity of the information provided to EPA by that Defendant relating to that Defendant's involvement with the Site. These covenants not to sue extend only to the Cash-2 Defendants and the Cash-2/R Defendants and do not extend to any other person.

B. United States' Pre-certification Reservations as to the Cash-2 and the Cash-2/R Defendants

Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new action, or to issue an administrative order, seeking to compel the Cash-2 Defendants and the Cash-2/R Defendants (1) to perform further response actions relating to the Site or (2) to reimburse the United States for additional costs of response if, prior to Certification of Completion of the Remedial Action:

(i) conditions at the Site, previously unknown to EPA, are discovered, or

(ii) information, previously unknown to EPA, is

received, in whole or in part,

and these previously unknown conditions or information together with any other relevant information indicates that the Remedial Action is not protective of human health or the environment.

C. United States' Post-certification Reservations as to the Cash-2 and the Cash-2/R Defendants

Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new action, or to issue an administrative order seeking to compel the Cash-2 Defendants and the Cash-2/R Defendants (1) to perform further response actions relating to the Site or (2) to reimburse the United States for additional costs of response if, subsequent to Certification of Completion of the Remedial Action:

(i) conditions at the Site, previously unknown to EPA, are discovered, or

(ii) information, previously unknown to EPA, is received, in whole or in part,

and these previously unknown conditions or this information together with other relevant information indicates that the Remedial Action is not protective of human health or the environment.

D. The United States' Reservations with Respect to Natural Resource Damages as to the Cash-2 and the Cash-2/R Defendants

Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without

prejudice to, the right to institute proceedings against the Cash-2 Defendants and the Cash-2/R Defendants in this action or in a new action to seek relief for injury to, destruction of, or loss of Natural Resources, if:

(i) conditions at the Site, previously unknown to EPA, are discovered, or

(ii) information, previously unknown to EPA, is received, in whole or in part,

and these previously unknown conditions or information together with any other relevant information indicates that the damages to Natural Resources resulting from the contamination of the Site are significantly greater than those previously known to EPA.

E. For purposes of Paragraphs XXXI.B and XXXI.D, the information and the conditions known to EPA shall include only that information and those conditions known to EPA as of the date the Final ROD was signed and set forth in the Final ROD for the Site and the administrative record supporting the Final ROD. For purposes of Paragraph XXXI.C, the information and the conditions known to EPA shall include only that information and those conditions known to EPA as of the date of Certification of Completion of the Remedial Action and set forth in the Final ROD, the administrative record supporting the Final ROD, the post-ROD administrative record (if any), or in any information received by EPA pursuant to the requirements of the Third Decree or of this Consent Decree prior to Certification of Completion of the Remedial Action.

XXXII. Covenants Not to Sue by the United States for Matters Addressed in the First and Third Decrees

A. In consideration of the actions that will be performed and the payments that will be made by the Work-Related Defendants, the Cash-1/R Defendants, and the Cash-2/R Defendants under the terms of this Consent Decree, and except as specifically provided for in Paragraphs XXXII.C and XXXII.D of this Section and in Section XXXIV (Reservations of Rights, page 178), the United States covenants not to sue or to take administrative action against the Work-Related Defendants, the Cash-1/R Defendants, and the Cash-2/R Defendants pursuant to Sections 106 and 107(a) of CERCLA and Section 7003 of RCRA for the Matters Addressed in the First Decree and for the Matters Addressed in the Third Decree.

B. As to each Work-Related Defendant, these covenants not to sue shall take effect upon the receipt by EPA of the entire payment required of that Work-Related Defendant under Subparagraph XVIII.B.2 (page 82) of Section XVIII (Payment of Response Costs). As to each Cash-1/R Defendant and each Cash-2/R Defendant, these covenants not to sue shall take effect upon the receipt by EPA of the entire payment required of that Cash-1/R Defendant or Cash-2/R Defendant under Subparagraph XVIII.B.1 (page 82) of Section XVIII (Payment of Response Costs). With respect to each Defendant individually, these covenants not to sue are conditioned upon: (1) the satisfactory performance by that Defendant of all of its obligations under this Consent Decree; and (2) the veracity of the information provided to EPA

by that Defendant relating to that Defendant's involvement with the Site. These covenants not to sue extend only to the Work-Related Defendants, the Cash-1/R Defendants, and the Cash-2/R Defendants and do not extend to any other person.

C. United States' Pre-certification Reservations as to the Matters Addressed in the Third Decree

Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new action, or to issue an administrative order seeking to compel the Work-Related Defendants, the Cash-1/R Defendants, and the Cash-2/R Defendants: (1) to perform further response actions relating to the Remedial Action as that term is defined in Section XXV of the Third Decree (Certificate of Completion, page 91 of the Third Decree), or (2) to reimburse the United States for additional costs of response if, prior to certification of completion of the Remedial Action under the Third Decree:

(i) conditions at the Site, previously unknown to the United States, are discovered after the entry of this Consent Decree, or

(ii) information is received, in whole or in part, after the entry of this Consent Decree,

and these previously unknown conditions or this information together with any other relevant information indicates that the Remedial Action as defined in the Third Decree is not protective of human health or the environment.

D. United States' Post-certification Reservations as to the Matters Addressed in the Third Decree

Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new action, or to issue an administrative order seeking to compel the Work-Related Defendants, the Cash-1/R Defendants, and the Cash-2/R Defendants: (1) to perform further response actions relating to the Remedial Action as that term is defined in Section XXV of the Third Decree (Certificate of Completion, page 91 of the Third Decree), or (2) to reimburse the United States for additional costs of response if, subsequent to certification of completion of the Remedial Action under the Third Decree:

(i) conditions at the Site, previously unknown to the United States, are discovered after the certification of completion, or

(ii) information is received, in whole or in part, after the certification of completion,

and these previously unknown conditions or this information together with other relevant information indicates that the Remedial Action as defined in the Third Decree is not protective of human health or the environment.

E. For the purposes of Paragraph XXXII.C of this Consent Decree, the information previously received by and the conditions known to the United States shall include only that information and those conditions set forth in: (1) the Gas ROD; (2) the administrative record supporting the Gas ROD; and (3) information

received by EPA pursuant to the Remedial Investigation after the completion of the administrative record supporting the Gas ROD, prior to the entry of the Third Decree. For the purposes of Paragraph XXXII.D of this Consent Decree, the information previously received by and the conditions known to the United States shall include only that information and those conditions set forth in: (1) the Gas ROD, (2) the administrative record supporting the Gas ROD, (3) information submitted to EPA pursuant to the requirements of the Third Decree or submitted to EPA pursuant to any other action implementing the Excluded Work under the Third Decree prior to the certification of completion of the Remedial Action as defined in the Third Decree, and (4) information received by EPA pursuant to the Remedial Investigation after completion of the administrative record supporting the Gas ROD, prior to the certification of completion of the Remedial Action as defined in the Third Decree.

F. This Section is not, and shall not be construed as, a covenant not to sue any Defendant that does not fulfill its obligations arising out of this Consent Decree, or any other person or entity not a Party to this Consent Decree.

XXXIII. Covenants by the State of California

The State, the State Accounts and the Attorney General of California with respect to his Authority under Government Code Sections 12660 through 12612 (collectively the "State Covenant Providers") provide the following covenants not to sue:

A. The State's Covenant Not to Sue the Work Defendants

1. In consideration of the actions that will be

performed and the payments that will be made by the Work Defendants under the terms of this Consent Decree, and except as specifically provided in Subparagraphs XXXIII.A.2, XXXIII.A.3, and XXXIII.A.4 of this Section and in Section XXXIV (Reservations of Rights, page 178), the State Covenant Providers covenant not to sue or to take administrative action against the Work Defendants pursuant to Section 107 of CERCLA, Section 7003 of RCRA, California Civil Code Section 3494, the HSAA, or the HWCL, relating to the Matters Addressed in this Consent Decree. Except with respect to future liability, these covenants not to sue shall take effect upon the receipt by EPA and the State of the payments required by Paragraph XVIII.D (page 83) of Section XVIII (Payment of Response Costs). With respect to future liability, these covenants not to sue shall take effect upon Certification of Completion of the Remedial Action by EPA pursuant to Paragraph XXXVI.A (page 199) of Section XXXVI (Certification of Completion). These covenants not to sue are conditioned upon the satisfactory performance by the Work Defendants of their obligations under this Consent Decree. These covenants not to sue extend only to the Work Defendants and do not extend to any other person.

2. The State's Pre-certification Reservations as to the Work Defendants. Notwithstanding any other provision of this Consent Decree, the State Covenant Providers reserve, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new civil or administrative action, in order to seek relief from the Work Defendants pursuant to the HSAA, HWCL (including relief with respect to the interim

status facility that operated at the Site), Civil Code Section 3494 or Government Code Sections 12600 through 12612, if prior to Certification of Completion of the Remedial Action:

(i) conditions at the Site, previously unknown to EPA or the State, are discovered, or

(ii) information, previously unknown to EPA or the State, is received, in whole or in part,

and these previously unknown conditions or information together with any other relevant information indicates that the Remedial Action is not protective of human health or the environment.

3. The State's Post-certification Reservations as to the Work Defendants. Notwithstanding any other provision of this Consent Decree, the State Covenant Providers reserve, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new civil or administrative action, in order to seek relief from the Work Defendants pursuant to the HSAA, HWCL (including relief with respect to the interim status facility that operated at the Site), Civil Code Section 3494 or Government Code Sections 12600 through 12612, if subsequent to Certification of Completion of the Remedial Action:

(i) conditions at the Site, previously unknown to EPA or the State, are discovered, or

(ii) information, previously unknown to EPA or the State, is received, in whole or in part,

and these previously unknown conditions or this information together with other relevant information indicates that the Remedial Action is not protective of human health or the environment.

4. The State's Reservations with Respect to Natural Resource Damages. Notwithstanding any other provision of this Consent Decree, the State Covenant Providers reserve, and this Consent Decree is without prejudice to, the right to institute proceedings against the Work Defendants in this action or in a new action, to seek relief for injury to, destruction of, or loss of Natural Resources, if:

(i) conditions at the Site, previously unknown to EPA or the State, are discovered, or

(ii) information, previously unknown to EPA or the State, is received, in whole or in part,

and these previously unknown conditions or information together with any other relevant information indicates that the damages to Natural Resources resulting from the contamination of the Site are significantly greater than those previously known to EPA or the State.

5. For purposes of Subparagraphs XXXIII.A.2 and XXXIII.A.4, the information and the conditions known to EPA or the State shall include only that information and those conditions known to EPA or the State as of the date the Final ROD was signed and set forth in the Final ROD for the Site and the administrative record supporting the Final ROD. For purposes of Subparagraph XXXIII.A.3, the information and the conditions known to EPA or the State shall include only that information and those conditions known to EPA or the State as of the date of Certification of Completion of the Remedial Action and set forth in the Final ROD, the administrative record supporting the Final ROD, the post-ROD administrative record (if any), or in any

information received by EPA or the State pursuant to the requirements of the Third Decree or of this Consent Decree prior to Certification of Completion of the Remedial Action.

B. De Minimis Covenants Not to Sue by the State for the Cash-1 and the Cash-1/R Defendants ("Tier 1" Covenants)

In consideration of the actions that will be performed and the payments that will be made by the Cash-1 Defendants and the Cash-1/R Defendants under the terms of this Consent Decree, and except as specifically provided in Section XXXIV (Reservations of Rights, page 178), the State Covenant Providers covenant not to sue or to take administrative action against the Cash-1 Defendants and the Cash-1/R Defendants pursuant to Section 107 of CERCLA, Section 7003 of RCRA, California Civil Code Section 3494, HWCL, or the HSAA, relating to the Matters Addressed in this Consent Decree. With respect to present and future liability, these covenants not to sue shall take effect as to each Cash-1 Defendant or Cash-1/R Defendant upon the receipt by EPA of the entire payment required of that Cash-1 Defendant or Cash-1/R Defendant under Subparagraph XVIII.B.1 (page 82) of Section XVIII (Payment of Response Costs). With respect to each Cash-1 Defendant or Cash-1/R Defendant, individually, these covenants not to sue are conditioned upon: (1) the satisfactory performance by that Defendant of all of its obligations under this Consent Decree; and (2) the veracity of the information provided to EPA by that Defendant relating to that Defendant's involvement with the Site. These covenants not to sue extend only to the Cash-1 Defendants and the Cash-1/R Defendants and do not extend to any other person.

C. De Minimis Covenants by the State for the Settling Federal Agency ("Tier 1" Covenants)

In consideration of the payments that will be made by the Settling Federal Agency under the terms of this Consent Decree, and except as specifically provided in Section XXXIV (Reservations of Rights, page 178), the State Covenant Providers covenant not to sue or take administrative action against the Settling Federal Agency pursuant to Section 107 of CERCLA, Section 7003 of RCRA, California Civil Code Section 3494, HWCL, or the HSAA for Matters Addressed in this Consent Decree. This covenant shall take effect upon the receipt of the payments required by Paragraph XVIII.F (page 84) of Section XVIII (Payment of Response Costs). This covenant is conditioned upon the satisfactory performance by the Settling Federal Agency of its obligations under this Consent Decree. This covenant extends only to the Settling Federal Agency and does not extend to any other person.

D. De Minimis Covenants Not to Sue by the State for the Cash-2 and the Cash-2/R Defendants ("Tier 2" Covenants)

1. In consideration of the actions that will be performed and the payments that will be made by the Cash-2 Defendants and the Cash-2/R Defendants under the terms of this Consent Decree, and except as specifically provided in Subparagraphs XXXIII.D.2, XXXIII.D.3, and XXXIII.D.4 of this Section and in Section XXXIV (Reservations of Rights, page 178), the State Covenant Providers covenant not to sue or to take administrative action against the Cash-2 Defendants and the Cash-2/R Defendants pursuant to Section 107 of CERCLA, Section 7003 of

RCRA, California Civil Code Section 3494, HWCL, or the HSAA for Matters Addressed in this Consent Decree. With respect to present and future liability, these covenants not to sue shall take effect as to each Cash-2 Defendant or Cash-2/R Defendant upon the receipt by EPA of the entire payment required of that Cash-2 Defendant or Cash-2/R Defendant under Subparagraph XVIII.B.1 (page 82) of Section XVIII (Payment of Response Costs). With respect to each Cash-2 Defendant or Cash-2/R Defendant, individually, these covenants not to sue are conditioned upon (1) the satisfactory performance by that Defendant of all of its obligations under this Consent Decree and (2) the veracity of the information provided to EPA by that Defendant relating to that Defendant's involvement with the Site. These covenants not to sue extend only to the Cash-2 Defendants and the Cash-2/R Defendants and do not extend to any other person.

2. The State's Pre-certification Reservations as to the Cash-2 and the Cash-2/R Defendants. Notwithstanding any other provision of this Consent Decree, the State Covenant Providers reserve, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new civil or administrative action, in order to seek relief from the Cash-2 and the Cash-2/R Defendants pursuant to the HSAA, HWCL (including relief with respect to the interim status facility that operated at the Site), Civil Code Section 3494 or Government Code Sections 12600 through 12612, if prior to Certification of Completion of the Remedial Action:

(i) conditions at the Site, previously unknown to EPA or the State, are discovered, or

(ii) information, previously unknown to EPA or the State, is received, in whole or in part,

and these previously unknown conditions or information together with any other relevant information indicates that the Remedial Action is not protective of human health or the environment.

3. The State's Post-certification Reservations as to the Cash-2 and the Cash-2/R Defendants. Notwithstanding any other provision of this Consent Decree, the State Covenant Providers reserve, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new civil or administrative action, in order to seek relief from the Cash-2 and the Cash-2/R Defendants pursuant to the HSAA, HWCL (including relief with respect to the interim status facility that operated at the Site), Civil Code Section 3494 or Government Code Sections 12600 through 12612, if subsequent to Certification of Completion of the Remedial Action:

(i) conditions at the Site, previously unknown to EPA or the State, are discovered, or

(ii) information, previously unknown to EPA or the State, is received, in whole or in part,

and these previously unknown conditions or this information together with other relevant information indicate that the Remedial Action is not protective of human health or the environment.

4. The State's Reservations with Respect to Natural Resource Damages. Notwithstanding any other provision of this Consent Decree, the State Covenant Providers reserve, and this Consent Decree is without prejudice to, the right to institute

proceedings against the Cash-2 Defendants and the Cash-2/R Defendants in this action or in a new action, to seek relief for injury to, destruction of, or loss of Natural Resources, if:

(i) conditions at the Site, previously unknown to EPA or the State, are discovered, or

(ii) information, previously unknown to EPA or the State, is received, in whole or in part,

and these previously unknown conditions or information together with any other relevant information indicates that the damages to Natural Resources resulting from the contamination of the Site are significantly greater than those previously known to EPA or the State.

5. For purposes of Subparagraphs XXXIII.D.2 and XXXIII.D.4 of this Section, information and the conditions known to EPA or the State shall include only that information and those conditions known to EPA or the State as of the date the Final ROD was signed and set forth in the Final ROD for the Site and the administrative record supporting the Final ROD. For purposes of Subparagraph XXXIII.D.3 of this Section, the information and the conditions known to EPA or the State shall include only that information and those conditions known to EPA or the State as of the date of Certification of Completion of the Remedial Action and set forth in the Final ROD, the administrative record supporting the Final ROD, the post-ROD administrative record (if any), or in any information received by EPA or the State pursuant to the requirements of the Third Decree or of this Consent Decree prior to Certification of Completion of the Remedial Action.

E. Covenants Not to Sue by the State for Matters Addressed in the First and Third Decrees

1. In consideration of the actions that will be performed and the payments that will be made by the Work-Related Defendants, the Cash-1/R Defendants, and the Cash-2/R Defendants under the terms of this Consent Decree, and except as specifically provided for in Subparagraphs XXXIII.E.3 and XXXIII.E.4 of this Section and in Section XXXIV (Reservations of Rights, page 178), the State Covenant Providers covenant not to sue or to take administrative action against the Work-Related Defendants, the Cash-1/R Defendants, and the Cash-2/R Defendants pursuant to Section 107 of CERCLA, Section 7003 of RCRA, California Civil Code Section 3494 or the HSAA for the Matters Addressed in the First Decree and for the Matters Addressed in the Third Decree.

2. As to the Work-Related Defendants, these covenants not to sue shall take effect upon the receipt of the payments required by Section XVIII (Payment of Response Costs, page 81). As to the Cash-1/R and the Cash-2/R Defendants, these covenants not to sue shall take effect as to each Cash-1/R Defendant or Cash-2/R Defendant upon the receipt by EPA of the entire payment required of that Cash-1/R Defendant or Cash-2/R Defendant under Subparagraph XVIII.B.1 (page 82) of Section XVIII (Payment of Response Costs). With respect to each Defendant individually, these covenants not to sue are conditioned upon: (1) the satisfactory performance by that Defendant of all of its obligations under this Consent Decree; and (2) the veracity of the information provided to EPA by that Defendant relating to

that Defendant's involvement with the Site. These covenants not to sue extend only to the Work-Related Defendants, the Cash-1/R Defendants, and the Cash-2/R Defendants and do not extend to any other person.

3. The State's Pre-certification Reservations as to the Matters Addressed in the Third Decree. Notwithstanding any other provision of this Consent Decree, the State Covenant Providers reserve, and this Consent Decree is without prejudice to, the right to seek relief pursuant to the HSAA, Civil Code Section 3494 or Government Code Sections 12600 through 12612, in this action or in a new civil or administrative action, in order to compel the Work-Related Defendants, the Cash-1/R Defendants, and the Cash-2/R Defendants: (1) to perform further response actions relating to the Remedial Action as that term is defined in Section XXV of the Third Decree (Certificate of Completion, page 91 of the Third Decree), or (2) to reimburse the State Covenant Providers for additional costs of response, if prior to certification of completion of the Remedial Action under the Third Decree:

(i) conditions at the Site, previously unknown to the United States or the State, are discovered after the entry of this Consent Decree, or

(ii) information is received, in whole or in part, after the entry of this Consent Decree,

and these previously unknown conditions or this information together with any other relevant information indicates that the Remedial Action as defined in the Third Decree is not protective of human health or the environment.

4. The State's Post-certification Reservations as to the Matters Addressed in the Third Decree. Notwithstanding any other provision of this Consent Decree, the State Covenant Providers reserve, and this Consent Decree is without prejudice to, the right to seek relief pursuant to the HSAA, Civil Code Section 3494 or Government Code Sections 12600 through 12612, in this action or in a new civil or administrative action, in order to compel the Work-Related Defendants, the Cash-1/R Defendants, and the Cash-2/R Defendants: (1) to perform further response actions relating to the Remedial Action as that term is defined in Section XXV of the Third Decree (Certificate of Completion, page 91 of the Third Decree), or (2) to reimburse the State Covenant Providers for additional costs of response if subsequent to certification of completion of the Remedial Action under the Third Decree:

(i) conditions at the Site, previously unknown to the United States or the State, are discovered after the certification of completion, or

(ii) information is received, in whole or in part, after the certification of completion,

and these previously unknown conditions or this information together with other relevant information indicate that the Remedial Action as defined in the Third Decree is not protective of human health or the environment.

5. For the purposes of Subparagraph XXXIII.E.3 of this Consent Decree, the information previously received by and the conditions known to the United States or the State shall include only that information and those conditions set forth in:

(1) the Gas ROD; (2) the administrative record supporting the Gas ROD; and (3) information received by EPA pursuant to the Remedial Investigation after the completion of the administrative record supporting the Gas ROD, prior to the entry of the Third Decree. For the purposes of Subparagraph XXXIII.E.4 of this Consent Decree, the information previously received by and the conditions known to the United States or the State shall include only that information and those conditions set forth in: (1) the Gas ROD, (2) the administrative record supporting the Gas ROD, (3) information submitted to EPA pursuant to the requirements of the Third Decree or submitted to EPA pursuant to any other action implementing the Excluded Work under the Third Decree prior to the certification of completion of the Remedial Action as defined in the Third Decree, and (4) information received by EPA pursuant to the Remedial Investigation after completion of the administrative record supporting the Gas ROD, prior to the certification of completion of the Remedial Action as defined in the Third Decree.

F. This Section XXXIII is not, and shall not be construed as, a covenant not to sue any Defendant that does not fulfill its obligations arising out of this Consent Decree, or any other person or entity not a Party to this Consent Decree.

G. State Assertion of Reserved Rights

Notwithstanding the other provisions of this Section XXXIII, the State reserves the following rights:

1. In the event that the State is designated the lead agency at the Site pursuant to a cooperative agreement with EPA or pursuant to any provision of federal law, the State may assert

the rights reserved by the United States in Paragraphs XXVIII.B, XXVIII.C, XXXI.B, XXXI.C, XXXII.C and XXXII.D, in accordance with applicable law.

2. In the event that the United States institutes proceedings or an administrative action pursuant to its reservation of rights in Paragraphs XXVIII.B, XXVIII.C, XXXI.B, XXXI.C, XXXII.C and XXXII.D, the State reserves the right (i) to participate in those proceedings to the extent allowed by law and (ii) to seek relief and cost recovery subject to the conditions and limitations set forth in Paragraphs XXVIII.C, XXVIII.B, XXXI.B, XXXI.C, XXXII.C and XXXII.D.

XXXIV. Reservations of Rights

A. United States' Reservations of Rights

The covenants not to sue by the United States in Section XXVIII (Covenants Not to Sue by the United States for the Work Defendants, page 153), Section XXIX (Covenants Not to Sue by the United States for the Cash-1 and Cash-1/R Defendants ("Tier 1" Covenants), page 157), Section XXX (Covenants by the United States for the Settling Federal Agency, ("Tier 1" Covenants), page 158), Section XXXI (Covenants Not to Sue by the United States for the Cash-2 and Cash-2/R Defendants ("Tier 2" Covenants), page 158), and Section XXXII (Covenants Not to Sue for Matters Addressed in the First and Third Decrees, page 162) do not pertain to any matters other than those expressly specified therein. The United States reserves, and this Consent Decree is without prejudice to, all rights against the Defendants, and EPA reserves the right to issue an administrative

order against the Settling Federal Agency, with respect to all other matters, including, but not limited to, the following:

(1) claims based on a failure by the Defendants to meet a requirement of this Consent Decree;

(2) liability arising from the past, present, or future disposal, release, or threat of release of Waste Materials outside of the Site (except as such disposal, release, or threat of release is addressed by this Consent Decree);

(3) liability for future disposal of Waste Material at the Site, other than as provided in the ROD, the Work, or otherwise ordered by EPA;

(4) criminal liability;

(5) liability for violations of federal or state law that occur during or after implementation of the Remedial Action; and

(6) except as provided in the Third Decree, in Administrative Settlement Docket No. 92-19 (relating to the Settling Federal Agency), and in this Consent Decree, liability for the Matters Addressed in the Third Decree.

B. The United States reserves all its rights to take response actions at the Site, including the right to take response action in the event of a breach of the terms of this Consent Decree and to seek recovery of costs that: (1) result from such a breach; (2) relate to any portion of the Work funded or performed by the United States; or (3) are enforcement costs incurred by the United States associated with the Site.

C. The State's General Reservations of Rights

The State's covenants not to sue set forth in this Consent Decree do not pertain to any matters other than those expressly specified therein. The State reserves, and this Consent Decree is without prejudice to, all rights against the Defendants with respect to all other matters, including, but not limited to, the following:

(1) claims based on a failure by the Defendants to meet a requirement of this Consent Decree;

(2) liability arising from the past, present, or future disposal, release, or threat of release of Waste Materials outside of the Site (except as such disposal, release, or threat of release is addressed by this Consent Decree);

(3) liability for future disposal of Waste Material at the Site, other than as provided in the ROD, the Work, or otherwise ordered by EPA;

(4) criminal liability;

(5) liability for violations of federal or state law that occur during or after implementation of the Remedial Action; and

(6) except as provided in the Third Decree, in Administrative Settlement Docket No. 92-19 (relating to the Settling Federal Agency), and in this Consent Decree, liability for the Matters Addressed in the Third Decree.

In addition, the State of California reserves, and this Consent Decree is without prejudice to, all rights against the Defendants

with respect to claims by any agency or agent of the State of California other than DTSC or the State Accounts, except to the extent that another agency of the State of California becomes DTSC's successor-in-interest with respect to the Matters Addressed in this Consent Decree.

D. The State reserves all its rights to take response actions at the Site, including the right to take response action in the event of a breach of the terms of this Consent Decree and to seek recovery of costs that: (1) result from such a breach; (2) relate to any portion of the Work funded or performed by the State; or (3) are enforcement costs incurred by the State associated with the Site.

E. In the event EPA determines that the Work Defendants have failed to implement any provisions of the Work in an adequate or timely manner, or in the event EPA determines any Site condition constitutes an imminent or substantial endangerment to the public health or welfare or the environment, EPA or its designee may perform any and all portions of the Work as it determines necessary. Costs incurred by the United States in performing the Work pursuant to this Paragraph shall be considered Future Response Costs that the Work Defendants shall pay pursuant to Section XVIII (Payment of Response Costs, page 81). If EPA decides to perform work that is the subject of this Consent Decree or to have its designee perform such work, EPA will, to the extent practicable, provide the Work Defendants' and the State's Project Coordinators with advance notice thereof and the opportunity for consultation regarding EPA's intention to perform all or a portion of the Work. EPA and the State may

agree that the State may perform work pursuant to the provisions of this Paragraph.

F. The United States further reserves the right to require the Work Defendants to perform tasks in addition to those detailed in this Consent Decree, if EPA determines after EPA's approval of the Defendants' Final Remedial Action Completion Report that additional response work is necessary to carry out the activities required by this Consent Decree or to meet the Performance Standards.

G. Except as otherwise provided in this Consent Decree, the United States expressly reserves all rights and defenses that it may have, including, but not limited to, the right to disapprove of Work performed by the Work Defendants, to require the Work Defendants to correct inadequate performance of Work, and to request, pursuant to Section X (Additional Work, page 55), that the Work Defendants perform tasks in addition to those detailed in the Plans prepared pursuant to this Consent Decree.

H. Nothing in this Consent Decree constitutes a covenant not to sue or to take action or otherwise limits the ability of the United States, including, but not limited to, EPA, or the State of California, including, but not limited to, DTSC and the State Accounts, to seek or obtain further relief from any Cash Defendant if information not currently known to EPA or the State is discovered that indicates such Cash Defendant no longer qualifies as a *de minimis* party at the Site because the Cash Defendant contributed five (5) million gallons or more of materials containing hazardous substances at the Site, or contributed wastes that are significantly more toxic or are of

significantly greater hazardous effect than other hazardous substances at the Site.

I. Notwithstanding any other provision in this Consent Decree, this covenant not to sue shall extend only to the signatory Defendant and shall not extend to any subsidiary, division, or affiliated entity whose volume is not currently included in the volume attributed to that signatory Defendant as set forth in Exhibit F, Eighth Partial Consent Decree Volumetric List.

1. The name of each subsidiary, division, and affiliated entity on whose behalf the Defendant(s) have elected to settle is set forth in Exhibit D or E hereto, together with the category of covenants applicable thereto (i.e., Work, Work-Related, Cash-1, Cash-1/R, Cash-2, Cash-2/R).

2. The payments listed in Exhibits D and E include the amounts to be paid by each Cash Defendant or Work Defendant for listed subsidiaries, divisions, and affiliated entities on whose behalf that Defendant has elected to settle. Payments made by a Work Defendant on behalf of any subsidiary, division, or affiliated entity under this Subparagraph shall not offset the Work Defendants' guarantee of payment of past costs pursuant to Section XVIII (Payment of Response Costs, page 81).

3. For the purposes of the implementation of this Consent Decree, upon receipt of payment of the amounts set forth in Exhibits D and E, each identified subsidiary, division or affiliated entity listed in Exhibit D or E shall have the same rights and obligations as a Defendant under this Consent Decree of the category designated in Exhibit D or E (Work, Cash-1, Cash-

1/R, Cash-2, or Cash-2/R).

4. Nothing in this Paragraph XXXIV.I shall be deemed to grant a covenant not to sue to any person or entity that is not listed on Exhibit D or E.

J. The Defendants waive any right they might have to initiate a challenge to the dollar amount specified for stipulated penalties set out in Section XXVI (Stipulated Penalties, page 141) of this Consent Decree.

K. In no case shall any Defendant be entitled to a refund or to assert a claim against the Superfund under Sections 106(b)(2), 111, 112 or 113 of CERCLA for any amount paid, or work performed, under this Consent Decree.

L. Except as provided in this Consent Decree, the Defendants expressly reserve all legal and equitable rights and defenses that they may have under this Consent Decree, CERCLA, or any other legal authority, including, but not limited to, all arguments concerning compliance with the specific tasks and requirements of this Consent Decree. Except as provided by this Consent Decree and Section 113(f)(2) of CERCLA, this reservation of rights applies to all claims, actions and defenses of the Defendants against nonsettlors, the United States, the State of California, EPA or any others and to those assertable between and among the individual Defendants. Except as provided in Paragraph XXXV.G (page 197 of Section XXXV, Covenants by the Defendants and the Settling Federal Agency), Section XLI (The Defendants' Right of Contribution and Indemnity and Covenant Not to Sue Each Other, page 209), and Section XLVII (Other Claims, page 213) or otherwise in this Consent Decree, these rights include, but are

not limited to, the right to seek reimbursement for response actions taken and response costs paid by any of the Defendants at any time.

M. The Work Defendants under this Consent Decree intend to assume performance of all operations, maintenance, and monitoring work under the Third Decree, as described in the Third Decree and the scope of work for the Third Decree, upon successful completion of Third Decree compliance-testing activities or lodging of this Consent Decree, whichever is later. The Third Decree requires the work defendants under the Third Decree to perform those activities. The Parties agree that the performance of those activities by the Work Defendants under this Consent Decree does not modify any of the rights or obligations of any party under the Third Decree. Those activities are not Work under this Consent Decree except as otherwise provided herein, but may be integrated with the Work under this Consent Decree for efficiency and to avoid duplication of effort.

N. Except as expressly provided in this Consent Decree, the Defendants reserve any and all rights of contribution from any or all persons who are not Defendants as defined herein for all costs incurred by the Defendants under this Consent Decree or otherwise in complying with the requirements of this Consent Decree.

O. It is the policy of the United States to identify potentially responsible parties who do not participate in CERCLA settlements and, subject to its non-reviewable prosecutorial discretion, to seek performance of remedial action not recovered by settlement and/or to seek reimbursement of response costs not

covered by settlement, against such nonsettling parties pursuant to the provisions of CERCLA. The Parties intend to pursue liable parties who have not settled in this Consent Decree, or in another settlement document, for the liabilities associated with this Consent Decree. The Parties may, as appropriate, confer prior to the initiation of any enforcement or contribution action, in order to coordinate their approaches.

P. <u>Allocation of Funds Received from Future Enforcement Efforts</u>

1. <u>Allocation of Future De Minimis Settlement Proceeds</u>

a. EPA will allocate between EPA and the Cash Escrow Account proceeds from the following settlements:

i. Amounts paid after July 1, 2001 under an administrative settlement with EPA, by any party alleged to have generated materials containing hazardous substances sent to and disposed of at the Site, or to have arranged or accepted such materials for transport and disposal at the Site ("generator"), that is attributed less than 110,000 gallons of waste under EPA's volumetric list as of July 1, 2001, provided that such generator has not failed or declined to participate in a previous OII Site

consent decree settlement offered by EPA; and

ii. Amounts paid under this Consent Decree by, or on behalf of, any party that is attributed less than 110,000 gallons of waste under EPA's volumetric list as of July 1, 2001, provided that the party has not failed or declined to participate in a previous OII Site consent decree settlement offered by EPA, and provided that the party is listed in Exhibit D or E to this Consent Decree as related to a settling party with volume greater than 110,000 gallons.

b. Unless EPA and the Work Defendants otherwise agree in writing, EPA will allocate proceeds from settlements under the preceding Subparagraph XXXIV.P.1.a as follows:

i. Any portion of the settlement proceeds representing penalties under Section 106 of CERCLA, 42 U.S.C. § 9606, or recalcitrant premiums, shall accrue to the benefit of EPA.

ii. The next $2,000,000 (two million dollars) shall accrue to the benefit of EPA.

iii. The balance shall be split equally

between EPA and the Cash Escrow Account.

2. Allocation of Other Future Proceeds of EPA Enforcement Efforts. Notwithstanding the provisions of the preceding Subparagraph XXXIV.P.1, unless EPA and the Work Defendants otherwise agree in writing, the following funds and value received after July 1, 2001 and derived from settlements and other EPA enforcement efforts shall not be subject to allocation between EPA and the Cash Escrow Account, but shall accrue entirely to EPA:

a. Funds or value received from any party that is not listed in EPA's volumetric database as of July 1, 2001;

b. Funds or value received from any settlement with or enforcement action against a party that is named either in a judicial complaint that is issued after the lodging of this Consent Decree or in a unilateral administrative order; and

c. Funds or value received from any settlement with or enforcement action against a generator that is listed on Exhibit F that declines or fails to participate in this Consent Decree.

3. Any payments received by EPA pursuant to this Paragraph XXXIV.P shall not be credited to the Work Defendants for purposes of the Work Defendants' funding limitations for Future Response Costs or the Work Defendants' payment of the United States' Past, Interim or Future Response Costs.

Q. The Work Defendants contemplate entering into contracts with one or more third parties to implement some or all of the Work Defendants' responsibilities under this Consent Decree and SOW. The Work Defendants may, at some future date, seek to have such a third party or parties assume some or all of the responsibilities of the Work Defendants to perform response actions under this Consent Decree and may ask EPA to acknowledge that assumption of responsibilities and to release the Work Defendants from the obligations under this Consent Decree to be assumed by such third party or parties. Such request shall be made by written notice to Plaintiffs as provided in Section XXXVII (Form of Notice, page 203). EPA may approve the request, disapprove it, or approve it on such terms and conditions as EPA may impose, including, if applicable, compliance with the provisions of Section XXXVIII (Modification, page 205). The exercise of EPA's discretion to disapprove of the Work Defendants' request under this Paragraph, or to impose conditions upon its approval, shall be subject to the provisions of Paragraph XXV.B and Subparagraphs XXV.C.2, XXV.C.3, and XXV.C.6 of Section XXV (Dispute Resolution, page 128), but shall not be subject to review by the Court under Subparagraph XXV.C.5 of Section XXV. In exercising its discretion under this Paragraph XXXIV.Q, EPA shall consider any relevant law or regulation then in effect.

R. Section XII.E. of the Seventh Decree provides in part as follows:

> Upon entry of the Final Remedy Consent Decree, those members of the Generator Group whose liability is

> resolved by the Final Remedy Consent Decree pursuant to CERCLA § 122(g)(4), 42 U.S.C. § 9622(g)(4), shall no longer be considered to be members of the Generator Group under this Consent Decree, and shall have no further obligations under this Consent Decree.

As provided therein, upon entry of this Consent Decree:

1. The Cash Defendants listed on Exhibit D to this Consent Decree shall be considered to have resolved their liability, as provided in this Consent Decree, pursuant to CERCLA § 122(g)(4);

2. The Cash Defendants listed on Exhibit D to this Consent Decree shall no longer be considered to be members of the Generator Group under the Seventh Partial Consent Decree, pursuant to paragraph XXXIII.B. of the Seventh Decree; and

3. The Generator Group under the Seventh Partial Consent Decree shall consist of the members of that group that are listed in Exhibit E to this Consent Decree, together with any other members of the Generator Group under the Seventh Partial Consent Decree who are not listed on either Exhibit D or Exhibit E to this Consent Decree.

This Paragraph is not intended to supercede any provisions of the Seventh Decree nor to subsume them into this Consent Decree. This Paragraph is not intended to affect any obligation under the Seventh Partial Consent Decree of any Cash Defendants listed on Exhibit D to this Consent Decree other than those obligations that apply solely to their membership in the Generator Group under the Seventh Partial Consent Decree. This Paragraph applies only to the Parties' rights and obligations under the Seventh Decree and does not limit or affect the right

or obligations of any Party under this Consent Decree.

XXXV. Covenants by the Defendants and the Settling Federal Agency

A. The Defendants' Covenant Not to Sue the United States

Subject to the reservations in Paragraph XXXV.D of this Section, the Defendants hereby covenant not to sue and agree not to assert any claims or causes of action against the United States with respect to the Matters Addressed in this Consent Decree, or this Consent Decree, including, but not limited to:

1. any direct or indirect claim for reimbursement from the EPA Hazardous Substance Superfund (established pursuant to the Internal Revenue Code, 26 U.S.C. § 9507) through CERCLA Sections 106(b)(2), 107, 111, 112, 113 or any other provision of law;

2. any claims against the United States, including any department, agency or instrumentality of the United States under CERCLA Sections 107 or 113 related to the Site;

3. any claims arising out of response activities at the Site, including claims based on EPA's selection of response actions, oversight of response activities or approval of plans for such activities;

4. any claims arising under paragraph H of Section XVIII (Reservation of Rights) of the First Decree, including, but not limited to, claims for reduction, credit, offset, or reimbursement;

5. any direct or indirect claim for disbursement from the OII Special Account or the OII Disbursement Special Account,

except as provided in Section XX (Disbursement of OII Special Account Funds).

B. The Defendants' Covenant Not to Sue the State

Subject to the reservations in Paragraph XXXV.D of this Section, the Defendants hereby covenant not to sue and agree not to assert any claims or causes of action against the State Covenant Providers with respect to the Matters Addressed in this Consent Decree, or this Consent Decree, including, but not limited to:

1. any direct or indirect claim for reimbursement from the State Accounts;

2. any claims against the State Covenant Providers under CERCLA Sections 107 or 113 or Health and Safety Code Sections 25300 et seq. related to the Site; or

3. any claims arising out of response activities at the Site, including claims based on the selection of response actions, oversight of response activities or review or approval of plans for such activities.

C. The Settling Federal Agency's Covenant

1. Subject to the reservations in Paragraph XXXV.E, the Settling Federal Agency hereby covenants not to sue and agrees not to assert any claims or causes of action against the State Covenant Providers with respect to the Matters Addressed in this Consent Decree, or this Consent Decree, including, but not limited to:

a. any direct or indirect claim for reimbursement from the State Accounts;

b. any claims against the State Covenant

Providers under CERCLA Sections 107 or 113 or Health and Safety Code Sections 25300 et seq. related to the Site; or

c. any claims arising out of response activities at the Site, including claims based on the selection of response actions, oversight of response activities or review or approval of plans for such activities.

2. The Settling Federal Agency hereby agrees not to assert any direct or indirect claim for reimbursement from the EPA Hazardous Substance Superfund (established pursuant to the Internal Revenue Code, 26 U.S.C. §9507) through CERCLA Sections 106(b)(2), 107, 111, 112, 113, or any other provision of law with respect to the Matters Addressed in this Consent Decree or this Consent Decree. This covenant does not preclude demand for reimbursement from the Superfund of costs incurred by the Settling Federal Agency in the performance of its duties (other than pursuant to this Consent Decree) as lead or support agency under the NCP (40 C.F.R. Part 300).

D. Reservations by Defendants

The Defendants reserve, and this Consent Decree is without prejudice to:

1. Claims against the United States, subject to the provisions of Chapter 171 of Title 28 of the United States Code, for money damages for injury or loss of property or personal injury or death caused by the negligent or wrongful act or omission of any employee of the United States while acting within the scope of his office or employment under circumstances where the United States, if a private person, would be liable to the claimant in accordance with the law of the place where the act or

omission occurred. However, any such claim shall not include a claim for any damages caused, in whole or in part, by the act or omission of any person, including, but not limited to, any contractor, who is not a federal employee as that term is defined in 28 U.S.C. § 2671, nor shall any such claim include a claim based on EPA's selection of response actions, or the oversight or approval of the Defendants' plans or activities. The foregoing applies only to claims that are brought pursuant to any statute other than CERCLA and for which the waiver of sovereign immunity is found in a statute other than CERCLA; and

2. Contribution claims against the Settling Federal Agency in the event any claim is asserted by the United States or the State against the Defendants under the authority of or under Paragraphs XXVIII.B, XXVIII.C, or XXVIII.D of Section XXVIII (Covenants Not to Sue by the United States for the Work Defendants), Paragraphs XXXI.B, XXXI.C, or XXXI.D of Section XXXI (De Minimis Covenants Not to Sue by the United States for the Cash-2 and the Cash-2/R Defendants ("Tier 2" Covenants)), or Subparagraphs XXXIV.A(2), XXXIV.A(3), XXXIV.C(2), or XXXIV.C(3) of Section XXXIV (Reservations of Rights), but only to the same extent and for the same matters, transactions, or occurrences as are raised in the claim of the United States or the State against the Defendants.

3. Claims against the State for money damages for injury or loss of property or personal injury or death caused by the negligent or wrongful act or omission of any employee of the State of California while acting within the scope of his office or employment under circumstances where the State of California,

if a private person, would be liable to the claimant in accordance with the law of the place where the act or omission occurred. However, any such claim shall not include a claim for any damages caused, in whole or in part, by the act or omission of any person, including, but not limited to, any contractor, who is not an employee of the State of California, nor shall any such claim include a claim based on the State of California's selection of response actions, or the oversight or approval of the Defendants' plans or activities. The foregoing applies only to claims which are brought pursuant to any statute other than CERCLA or the Hazardous Substance Account Act, Health and Safety Code Section 25300 et seq. Nothing herein shall be construed to limit, impair, or prejudice any tort, governmental or sovereign immunities available to the State of California under applicable state or federal law, or pursuant to the Constitution of the United States, with respect (1) to any claim that may be asserted against the State or (2) to any response, oversight or other activities that the State of California takes with respect to the OII Site.

E. Reservation by the Settling Federal Agency

The Settling Federal Agency reserves, and this Consent Decree is without prejudice to:

1. Contribution claims against the Defendants in the event any claim is asserted by the United States or the State against the Settling Federal Agency under the authority of or under Subparagraphs XXXIV.A(2), XXXIV.A(3), XXXIV.C(2) or XXXIV.C(3) of Section XXXIV (Reservations of Rights), but only to the same extent and for the same matters, transactions, or

occurrences as are raised in the claim of the United States or the State against the Settling Federal Agency.

2. Claims against the State for money damages for injury or loss of property or personal injury or death caused by the negligent or wrongful act or omission of any employee of the State of California while acting within the scope of his office or employment under circumstances where the State of California, if a private person, would be liable to the claimant in accordance with the law of the place where the act or omission occurred. However, any such claim shall not include a claim for any damages caused, in whole or in part, by the act or omission of any person, including, but not limited to, any contractor, who is not an employee of the State of California; nor shall any such claim include a claim based on the State of California's selection of response actions, or the oversight or approval of the Defendants' plans or activities. The foregoing applies only to claims which are brought pursuant to any statute other than CERCLA or the Hazardous Substance Account Act, Health and Safety Code Section 25300, et seq. Nothing herein shall be construed to limit, impair, or prejudice any tort, governmental or sovereign immunities available to the State of California under applicable state or federal law, or pursuant to the Constitution of the United States, with respect (i) to any claim that may be asserted against the State or (ii) to any response, oversight or other activities that the State of California takes with respect to the OII Site.

F. Nothing in this Consent Decree shall be deemed to constitute preauthorization of a claim within the meaning of

Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

G. The Defendants agree not to assert any claims and to waive all claims or causes of action they may have for all matters relating to the Site, including, but not limited to, for contribution, against any person where the person's liability to the Defendants with respect to the Site is based solely on having arranged for disposal or treatment, or for transport for disposal or treatment, of hazardous substances at the Site, or having accepted for transport for disposal or treatment of hazardous substances at the Site, if EPA determines that: (i) any materials contributed by such person to the Site constituting MSW or MSS did not exceed 0.2% of the total volume of waste at the Site; and (ii) any materials contributed by such person to the Site containing hazardous substances, but not constituting MSW or MSS, did not exceed 2,100 gallons of liquid materials, or the equivalent using EPA's conversion factors.This waiver shall not apply to any claim or cause of action against any person meeting the above criteria if EPA has determined that the materials contributed to the Site by such person contributed or could contribute significantly to the costs of response at the Site. This waiver also shall not apply with respect to any defense, claim, or cause of action that a Defendant may have against any person if such person asserts a claim or cause of action relating to the Site against such Defendant.

G. The Defendants agree not to assert any claims and to waive all claims or causes of action that they may have for all matters relating to the Site, including, but not limited to, for

contribution, against any person that has entered into a final CERCLA § 122(g) *de minimis* settlement with EPA with respect to the Site as of the effective date of this Consent Decree. This waiver shall not apply with respect to any defense, claim, or cause of action that a Defendant may have against any person if such person asserts a claim or cause of action relating to the Site against such Defendant.

H. Responsibility for Work

As to the Cash Defendants and the Settling Federal Agency, the Work Defendants shall have the exclusive responsibility for the performance of the Work and, conditional upon satisfactory completion of all obligations of the Cash Defendants and the Settling Federal Agency under this Consent Decree, the Cash Defendants and the Settling Federal Agency shall have no responsibility to the United States, EPA, the State, the State Accounts, any other Defendant or any third party for the performance, or failure of performance, of the Work Defendants.

I. Reservation Among the Work Defendants

Nothing in this Section XXXV or in Paragraphs II.D (page 14) impairs or limits any rights or obligations among and between the Work Defendants that arise out of agreements among or between the Work Defendants to share or allocate costs or responsibilities imposed under this Consent Decree. The reservation in this Paragraph does not affect the rights and remedies available to the United States or the State.

J. Responsibility for the Cash Defendants' Payments

The Work Defendants shall have no responsibility to the United States, EPA, the State, the State Accounts, any other

Defendant, or any third party for any payment required of, or failure to pay by, any Cash Defendant or the Settling Federal Agency under this Consent Decree.

XXXVI. Certification of Completion

A. Completion of the Remedial Action

1. Within 90 Days after the Work Defendants conclude that the Remedial Action has been fully performed and the Performance Standards have been attained, the Work Defendants shall schedule and conduct a pre-certification inspection to be attended by the Defendants, EPA, and the State. If, after the pre-certification inspection, the Work Defendants still believe the Remedial Action has been performed and the Performance Standards have been attained, they shall submit a Final Remedial Action Completion Report, detailing the performance of the Remedial Action and requesting certification to EPA for approval, with a copy to the State, pursuant to Section IX (EPA Approval of Plans and Other Submissions, page 53) within thirty (30) Days of the inspection. In the report, a registered professional engineer and the Work Defendants' Project Coordinator shall state that the Remedial Action has been completed in full satisfaction of the requirements of this Consent Decree. The written report shall include as-built drawings signed and stamped by a professional engineer. The report shall contain the following statement, signed by the Work Defendants' Project Coordinator:

> To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate

and complete.

The Work Defendants and their representatives acknowledge that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. If, after completion of the pre-certification inspection and receipt and review of the written report, EPA, after reasonable opportunity for review and comment by the State, determines that the Remedial Action or any portion thereof has not been completed in accordance with this Consent Decree or that the Performance Standards have not been achieved, EPA will notify the Work Defendants in writing of the activities that must be undertaken by the Work Defendants pursuant to this Consent Decree to complete the Remedial Action and achieve the Performance Standards. EPA will set forth in the notice a schedule for performance of such activities consistent with this Consent Decree and the SOW or require the Work Defendants to submit a schedule to EPA for approval pursuant to Section IX (EPA Approval of Plans and Other Submissions, page 53). The Work Defendants shall perform all activities described in the notice in accordance with the specifications and schedules established pursuant to this Paragraph XXXVI.A, subject to their right to invoke the dispute resolution procedures set forth in Section XXV (Dispute Resolution, page 128).

2. If EPA concludes, based on the initial or any subsequent report requesting Certification of Completion and after a reasonable opportunity for review and comment by the State, that the Remedial Action has been performed in accordance with this Consent Decree and that the Performance Standards have

been achieved, EPA will so certify in writing to the Work Defendants. This certification shall constitute the Certification of Completion of the Remedial Action for purposes of this Consent Decree, including, but not limited to, Section XXVIII (Covenants Not to Sue by the United States for the Work Defendants, page 153), Section XXXI (Covenants Not to Sue by the United States for the Cash-2 and Cash-2/R Defendants ("Tier 2" Covenants), page 158), and Section XXXIII (Covenants by the State of California, page 165). Certification of Completion of the Remedial Action shall not affect the Defendants' obligations under this Consent Decree.

B. Completion of the Work

1. Within ninety (90) Days after the Work Defendants conclude that all phases of the Work and the Excluded Work (including, but not limited to, O&M), have been fully performed, the Work Defendants shall schedule and conduct a pre-certification inspection to be attended by the Defendants, EPA, and the State. If, after the pre-certification inspection, the Work Defendants still believe the Work and the Excluded Work has been fully performed, they shall submit a Final Work Completion Report, detailing the performance of the Work and the Excluded Work and requesting certification to EPA for approval, with a copy to the State, pursuant to Section IX (EPA Approval of Plans and Other Submissions, page 53) within thirty (30) Days of the inspection. In the report, a registered professional engineer and the Work Defendants' Project Coordinator shall state that the Work and the Excluded Work has been completed in full satisfaction of the requirements of this Consent Decree. The

report shall contain the following statement, signed by the Work Defendants' Project Coordinator:

> To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete.

The Work Defendants and their representatives acknowledge that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. If, after review of the written report, EPA, after reasonable opportunity for review and comment by the State, determines that any portion of the Work or the Excluded Work has not been completed in accordance with this Consent Decree, EPA will notify the Work Defendants in writing of the activities that must be undertaken by the Work Defendants pursuant to this Consent Decree to complete the Work. EPA will set forth in the notice a schedule for performance of such activities consistent with this Consent Decree and the SOW or require the Work Defendants to submit a schedule to EPA for approval pursuant to Section IX (EPA Approval of Plans and Other Submissions, page 53). The Work Defendants shall perform all activities described in the notice in accordance with the specifications and schedules established therein, subject to their right to invoke the dispute resolution procedures set forth in Section XXV (Dispute Resolution, page 128).

2. If EPA concludes, based on the initial or any subsequent request for Certification of Completion by the Work Defendants and after a reasonable opportunity for review and

comment by the State, that the Work and the Excluded Work has been performed in accordance with this Consent Decree, EPA will so notify the Work Defendants in writing and will issue the Certification of Completion of the Work.

XXXVII. Form of Notice

A. All communications between the Work Defendants or the Contractor(s) and EPA and the State made pursuant to this Consent Decree shall be sent to at least the Work Defendants, the State and EPA. Subject to Paragraph XVI.H (page 76 of Section XVI, Data Exchange: Sampling and Analysis), any Cash Defendant may obtain, upon written request, a copy of any or all such communications. The cost of copying any such material shall be borne by the Cash Defendant making the request.

B. When notification to or communication with the United States, EPA, the Settling Federal Agency, the State, the Work Defendants, or the work defendants under the Third Decree is required by the terms of this Consent Decree, it shall be in writing, postage prepaid, and addressed as follows:

As to the United States:

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
Department of Justice
P.O. Box 7611
Washington, DC 20044-7611

Re: DJ # 90-11-2-156/4

As to EPA:

EPA Project Coordinator - OII Site
Superfund Enforcement Section (SFD-7-1)
U.S. Environmental Protection Agency, Region IX
75 Hawthorne St.
San Francisco, CA 94105

Assistant Regional Counsel - OII Site
Office of Regional Counsel (ORC-3)
U.S. Environmental Protection Agency, Region IX
75 Hawthorne St.
San Francisco, CA 94105

As to the Settling Federal Agency:

Chief, Environmental Defense Section
Environment and Natural Resources Division
P.O. Box 23986
Washington, D.C. 20026-3986

Re: DJ # 90-11-6-05109

As to the Regional Superfund Accounting Program:

Superfund Accounting Section Chief (P.D.-6)
U.S. Environmental Protection Agency, Region IX
75 Hawthorne St.
San Francisco, CA 94105

As to the Work Defendants and the Work Defendants under the Third Decree:

Project Coordinator
c/o New Cure, Inc.
2550 Greenwood Avenue
Monterey Park, CA 91755

David A. Giannotti, Esq.
Gallagher & Gallagher
1925 Century Park East
Los Angeles, CA 90067

As to the State:

Department of Toxic Substances Control
Attention: OII Project Coordinator
Department of Toxic Substances Control
1011 Grandview Avenue
Glendale, CA 91201

C. When notification to or communication with a Cash Defendant is required by the terms of this Consent Decree, it

shall be in writing, postage prepaid, and addressed to the Agent identified by the Cash Defendant on its signature page attached to this Consent Decree pursuant to Paragraph XLIX.B (page 214) of Section XLIX (Representative Authority). Any Cash Defendant may change the identity or contact information for its agent at any time by written notice to the Court and to the parties specified in Paragraph XXXVII.B above, but need not provide such notice to all other Cash Defendants. Each Cash Defendant hereby waives notice of such changes submitted by other Cash Defendants.

XXXVIII. Modification

A. Each Cash Defendant hereby waives notice of and the right to approve any modification to this Consent Decree that EPA determines does not materially affect the rights or obligations of that Cash Defendant under this Consent Decree. Notice to and the approval of such Cash Defendant may be required by the Court, in its discretion, notwithstanding EPA's determination.

B. Except as provided in the preceding Paragraph XXXVIII.A or elsewhere in this Consent Decree, no modification shall be made to this Consent Decree without written notification to and written approval of all of the Parties to this Consent Decree and the Court. The notification required by this Section shall set forth the nature of and reasons for the requested modification. With any request for modification of this Consent Decree, EPA and the Work Defendants shall file with the Court a statement showing the efforts made to determine which Parties have requested notice under Paragraph XXXVIII.D of this Section XXXVIII, and to provide notice to those Parties. No oral modification of this Consent

Decree shall be effective. Nothing in this Section shall be deemed either to alter the Court's power to supervise or approve modifications to this Consent Decree or to limit EPA's authority to modify the Gas Control and Cover ROD and the Final ROD in accordance with CERCLA and the NCP.

C. Except as provided in Section X (Additional Work, page 55), no material modifications shall be made to the SOW without written notification to and written approval of the United States, the Work Defendants, and the Court. Prior to providing its approval to any modification, the United States will provide the State with a reasonable opportunity to review and comment on the proposed modification. Modifications to the SOW that do not materially alter that document may be made by written agreement between EPA, after providing the State with a reasonable opportunity to review and comment on the proposed modification, and the Work Defendants.

D. Notwithstanding the provisions of Paragraph XXXVIII.A above, any Cash Defendant may file with the Court and serve on each Party, pursuant to the provisions of Section XXXVII (Form of Notice, page 203), a special request for notice of all proposed modifications of this Consent Decree that require Court approval. EPA and the Work Defendants shall use their best efforts to provide notice of all such proposed modifications of the Decree to any Cash Defendant that has filed and served such a request. However, a modification that is approved by the Court shall continue to be of full force and effect despite the failure of EPA or the Work Defendants to give notice to a Cash Defendant pursuant to such a request, unless the Court determines, in its

discretion, that the modification materially affects the rights or obligations of that Cash Defendant under this Consent Decree, that the Cash Defendant did not receive adequate notice as required by law, and that for those reasons, the modification should be rescinded, suspended, or amended.

XXXIX. Admissibility of Data

A. For the purpose of proceedings under this Consent Decree only, the Parties waive any evidentiary objection as to the authenticity of data gathered, generated, or evaluated by any Party in the performance or oversight of the Work under this Consent Decree that have been verified using the Quality Assurance and Quality Control procedures specified in Section XIII (Quality Assurance/Quality Control, page 58).

B. For the purpose of proceedings under this Consent Decree only, the Parties also waive any objections to the introduction of such data based on hearsay.

XL. Contribution Protection

A. The Parties agree, and by entering this Consent Decree this Court finds, that the Defendants and the Settling Federal Agency are entitled, as of the effective date of this Consent Decree, to protection from contribution actions or claims as provided by CERCLA Section 113(f)(2), 42 U.S.C. § 9613(f)(2), and applicable state law, for Matters Addressed in this Consent Decree. Nothing in this Section shall constitute or be construed as releasing or providing any covenant not to sue or contribution protection with respect to any matter addressed by this Consent

Decree to any person or entity not a Defendant or the Settling Federal Agency, or to any Defendant or Settling Federal Agency that has defaulted on its obligations under this Consent Decree. Nothing in this Section shall be deemed to waive any other right to contribution protection that the Defendants or the Settling Federal Agency may have.

B. Each Cash Defendant's and the Settling Federal Agency's right to contribution protection under this Section shall remain in effect against all other persons, provided such Defendant or the Settling Federal Agency has not defaulted on any obligation under this Consent Decree, whether or not any other Defendant or the Settling Federal Agency has fully performed its obligations under this Consent Decree. Each Work Defendant's right to contribution protection under this Section shall remain in effect against all other persons provided the Work Defendants have not defaulted on any obligation under this Consent Decree and that such Work Defendant has not defaulted on its obligations arising out of this Consent Decree, whether or not any or all Cash Defendants and the Settling Federal Agency have fully performed their obligations under this Consent Decree.

C. The Parties to this Consent Decree agree that while the United States, EPA, the State and State Accounts may support the applicability of this Section XL based upon the existence of this Consent Decree, neither the United States, nor EPA nor the State nor the State Accounts shall be under any obligation to support the Defendants in any way in any action for contribution brought by or against the Defendants that alleges liability for Matters Addressed in this Consent Decree.

XLI. The Defendants' and Settling Federal Agency's Right of Contribution and Indemnity and Covenant Not to Sue Each Other

A. Except as provided in this Consent Decree, each Defendant and the Settling Federal Agency shall retain all rights under statutory or common law to seek contribution or indemnification against any and all other persons or entities not party to this Consent Decree.

B. Except as provided in this Paragraph, to the extent any Defendant or the Settling Federal Agency has complied with its obligations under this Consent Decree and, as among the Work Defendants only, with its obligations under any separate agreement allocating the costs incurred pursuant to this Consent Decree, no rights as to Matters Addressed in this Consent Decree are retained against such Defendant or the Settling Federal Agency by any other Defendant or the Settling Federal Agency and such rights are hereby expressly waived, released and discharged with regard to such Defendant and the Settling Federal Agency. Each Cash Defendant and the Settling Federal Agency specifically retains any and all rights to seek indemnification from the Work Defendants as provided in Paragraph XXIII.D (page 121 of Section XXIII, Indemnification and Insurance).

C. For and in consideration of the mutual covenants and promises of the Defendants made in this Consent Decree and, as to the Work Defendants only, in any separate agreement allocating the costs incurred pursuant to this Consent Decree, each

Defendant hereby covenants not to sue or otherwise assert any claim against any other Defendant for reimbursement of any payment made pursuant to this Consent Decree, except to enforce any allocation of costs made pursuant to such agreement.

XLII. Waiver of Claim-splitting Defense

All Parties recognize and acknowledge that the settlement embodied in this Consent Decree is only a partial resolution of issues related to the remediation of conditions at the Site. The Defendants hereby waive the defenses of res judicata, collateral estoppel, and claim-splitting by the Plaintiffs, only with respect to the Plaintiffs'('s) right to pursue subsequent litigation regarding the Defendants' responsibility for phases of Site work and costs not covered by this Consent Decree.

XLIII. Community Relations

The Work Defendants shall cooperate with EPA and the State in providing information to the public. As requested by EPA or the State, the Work Defendants shall participate in the preparation of all appropriate information to be disseminated to the public and in public meeting(s) that may be held or sponsored by EPA or the State to explain activities at or concerning the Site relative to the Work required under the terms of this Consent Decree. As appropriate, EPA or the State may seek consultation with and assistance from the Work Defendants in the preparation of information to be disseminated to the public and in public meeting(s) that may be held or sponsored by EPA or the State to explain activities at or concerning the Site.

XLIV. Lodging and Public Participation

A. As required by Section 122(d)(2) of CERCLA, 42 U.S.C. § 9622(d)(2), Section 7003(d) of RCRA, 42 U.S.C. § 6973(d), and 28 C.F.R. § 50.7, this Consent Decree will be lodged with the Court. The United States shall publish notice of availability of this Consent Decree for review to allow public comment on this Consent Decree prior to its entry by the Court.

B. The United States will provide persons who are not Parties to the proposed settlement with the opportunity to file written comments during a thirty (30) Day period following such notice. Commenters may request an opportunity for a public hearing in the affected area, in accordance with Section 7003(d) of RCRA, 42 U.S.C. § 6973(d). The United States will file with the Court a copy of any comments received and its responses to such comments.

C. The United States reserves the right to withdraw or withhold its consent to entry of this Consent Decree if the comments regarding this Consent Decree disclose facts or considerations that indicate that the Consent Decree is inappropriate, improper or inadequate, or that this Consent Decree should be modified as required by Section 122(d)(2) of CERCLA, 42 U.S.C. § 9622(d)(2), and 28 C.F.R. § 50.7. If a modification is deemed necessary by the United States based on public comments, the United States will notify the Defendants.

D. Except as otherwise provided in this Consent Decree, no Party shall be bound by modifications to this Consent Decree without its prior written consent.

XLV. State and Local Agency Participation

A. Lead Agency

EPA is and shall be the lead agency, as defined in the NCP, for the activities within the scope of this Consent Decree.

B. Interagency Committee

The IAC consists of interested State and local agencies. The IAC meets on a regular basis to exchange information on agency regulatory activities at the OII Site and reviews and comments on remedial and response actions undertaken at the Site.

C. Role of Interagency Committee

The Work Defendants shall make available copies of all significant deliverables developed pursuant to this Consent Decree as designated by EPA to the interested members of the IAC for review. EPA will provide the Work Defendants a current mailing list for IAC members prior to the effective date of this Consent Decree. Technical representatives of the Work Defendants, EPA and the IAC shall be given the opportunity to review the deliverables. After the IAC has had the opportunity to review the deliverables, it shall have the opportunity to meet with EPA to discuss the deliverables and prepare collaborative comments. These collaborative comments shall be submitted to the Work Defendants as EPA comments. The Work Defendants shall respond to the EPA comments as required by the terms of Section VII (Work to be Performed, page 37) and subject to the Work Defendants' right under Section XXV (Dispute Resolution, page 128) of this Consent Decree.

D. Consultation with the State

EPA will provide a reasonable opportunity to the State for

review and comment before approving any significant deliverables required to be submitted by the Work Defendants under this Consent Decree. EPA will also provide a reasonable opportunity to the State for review and comment before determining whether a force majeure event beyond the control of the Work Defendants has occurred, or whether the Work Defendants have substantially complied with or completed the terms of this Consent Decree. EPA's failure to provide such an opportunity to the State will not relieve the Work Defendants of any obligation to comply with the requirements of this Consent Decree. If it is not practicable for EPA to provide such an opportunity to the State, EPA shall notify the State of its approval or determination. Any comments or objections that the State may provide pursuant to this Paragraph must be conveyed to EPA and the Work Defendants in a timely manner consistent with the IAC process and the schedule established by EPA for review and comment by the IAC members.

XLVI. Notice to the State

EPA has notified the State of California pursuant to the requirements of Section 106(a) and 121(f)(1)(F) of CERCLA, 42 U.S.C. §§ 9606(a) and 9621(f)(1)(F), and EPA has provided the State with an opportunity to participate in negotiations and be a party to this settlement.

XLVII. Other Claims

Nothing in this Consent Decree shall be deemed to constitute a preauthorization of a CERCLA claim within the meaning of Sections 111 or 112 of CERCLA or 40 C.F.R. § 300.700(d). In con-

sideration of the entry of this Consent Decree, the Defendants agree not to make any claims pursuant to Sections 111, 112 or 106(b)(2) of CERCLA, 42 U.S.C. §§ 9611, 9612, 9606(b)(2), or any other provision of law directly or indirectly against the EPA Hazardous Substance Superfund, or make other claims against the United States or the State for those costs expended in connection with this Consent Decree.

XLVIII. Continuing Jurisdiction

The Court specifically retains jurisdiction over both the subject matter of and the Parties to this action for the duration of this Consent Decree for the purposes of issuing such further orders or directions as may be necessary or appropriate to construe, implement, modify, enforce, terminate, or reinstate the terms of this Consent Decree or for any further relief as the interest of justice may require.

XLIX. Representative Authority

A. Each undersigned representative of a Party to this Consent Decree certifies that he or she is fully authorized by the Party to enter into and execute the terms and conditions of this Consent Decree and to legally bind such Party and each subsidiary, division or affiliated entity listed on its signature page to this Consent Decree.

B. Each Defendant shall identify, on the attached signature page, the name and address of an agent who is authorized to accept service of process by mail on behalf of that Defendant with respect to all matters arising under or relating

to this Consent Decree.

C. Notwithstanding the agents identified by the Defendants pursuant to the preceding Paragraph XLIX.B, the Work Defendants, and the Cash Defendants identified in correspondence from their common counsel to EPA, agree to accept service through their common counsel at the address set forth below, in lieu of individualized service of any pleading pertaining to this Consent Decree on any other person:

David A. Giannotti, Esq.
Gallagher & Gallagher
1925 Century Park East
Los Angeles, CA 90067

D. The Defendants hereby agree to accept service in the manner set forth in this Section and to waive the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure and any applicable local rules of this Court, including, but not limited to, service of a summons.

L. Effective Date

This Consent Decree is effective upon the date of its entry by the Court.

LI. Severability

If any provision or authority of this Consent Decree or the application of this Consent Decree to any circumstance is held by the Court to be invalid, the application of such provision to other circumstances and the remainder of this Consent Decree shall remain in force and shall not be affected thereby.

LII. Termination and Satisfaction

A. This Consent Decree shall not terminate until EPA approval of the completion of the Work and the Excluded Work and EPA's notification to the Work Defendants that the Work and the Excluded Work have been satisfactorily completed as provided in Paragraph XXXVI.B (page 201) of Section XXXVI (Certification of Completion). Upon such notification by EPA, this Consent Decree shall be terminated as to the Work Defendants except for the provisions of Section XVII (Retention of Records, page 78), Section XXVIII (Covenants Not to Sue by the United States for the Work Defendants, page 153), Section XXXII (Covenants Not to Sue for Matters Addressed in the First and Third Decrees, page 162), Section XXXIII (Covenants by the State of California, page 165), Section XXXV (Covenants by the Defendants and the Settling Federal Agency, page 191), Section XXXIV (Reservation of Rights, page 178), Section XL (Contribution Protection, page 207), the completion of any periodic review then being conducted pursuant to Paragraph XI.A (page 57 of Section XI, Periodic Review), and such other continuing rights and obligations of the Work Defendants under this Consent Decree.

B. Upon full payment of all its obligations under Section XVIII (Payment of Response Costs, page 81) and Exhibit D, each Cash Defendant shall have satisfied its obligations for Matters Addressed in this Consent Decree, and this Consent Decree shall be terminated as to that Cash Defendant, except for the provisions of Section XVII (Retention of Records, page 78), Section XXIX (Covenants Not to Sue by the United States for the Cash-1 and Cash-1/R Defendants, page 157), Section XXXI

(Covenants Not to Sue by the United States for the Cash-2 and Cash-2/R Defendants, page 158), Section XXXII (Covenants Not to Sue for Matters Addressed in the First and Third Decrees, page 162), Section XXXIII (Covenants by the State of California, page 165), Section XXXV (Covenants by the Defendants and the Settling Federal Agency, page 191), Section XXXIV (Reservation of Rights, page 178), Section XL (Contribution Protection, page 207), and such other continuing rights and obligations of that Cash Defendant under this Consent Decree.

C. Upon full payment of all its obligations under Section XVIII (Payment of Response Costs, page 81), the Settling Federal Agency shall have satisfied its obligations for Matters Addressed in this Consent Decree, and this Consent Decree shall be terminated as to the Settling Federal Agency, except for the provisions of Section XVII (Retention of Records, page 78), Section XXX (De Minimis Covenants by the United States for the Settling Federal Agency, ("Tier 1 Covenants") page 158), Section XXXIII (Covenants by the State of California, page 165), Section XXXV (Covenants by the Defendants and the Settling Federal Agency, page 191), Section XXXIV (Reservation of Rights, page 178), Section XL (Contribution Protection, page 207), and such other continuing rights and obligations that the Settling Federal Agency has under this Consent Decree.

LIII. Section Headings

The Section, Paragraph and Subparagraph headings set forth in this Consent Decree and, with respect to the Section headings, set forth in its table of contents are included for convenience

of reference only, and are not intended to supersede any other provisions of this Consent Decree. In the event of any conflict between the any Section, Paragraph or Subparagraph headings and any terms contained in the body of this Consent Decree, the text in the body of the Consent Decree shall control.

LIV. Counterparts

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

SO ORDERED THIS 28th DAY OF May, 2002.

RONALD S.W. LEW
United States District Judge

EIGHTH PARTIAL CONSENT DECREE SIGNATURE PAGE

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Chevron, et. al, relating to the Operating Industries, Inc. (OII) Superfund Site.

FOR THE UNITED STATES OF AMERICA, INCLUDING THE SETTLING FEDERAL AGENCY

12.12.01
Date

JOHN C. CRUDEN
Acting Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

12/20/01
Date

NOEL WISE
Trial Attorney
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
301 Howard Street, Suite 1050
San Francisco, CA 94105

12/20/01
Date

MARK A. RIGAU
Trial Attorney
Environmental Defense Section
Environment and Natural Resources Division
U.S. Department of Justice
301 Howard Street, Suite 1050
San Francisco, CA 94105

FOR THE UNITED STATES OF AMERICA

9-28-01
Date

KEITH A. TAKATA
Director, Superfund Division
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105

9/28/01
Date

HARRISON KARR
Assistant Regional Counsel, Region IX
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, California 94105

10/11/01
Date

SYLVIA LOWRANCE
Acting Assistant Administrator
Office of Enforcement and Compliance Assistance
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20004

FOR THE STATE OF CALIFORNIA

September 24, 2001 — Sayareh Amir
Date — SAYAREH AMIR, Chief
Southern California Cleanup Operations, Glendale Office
California Department of Toxic Substances Control
1011 North Grandview Avenue
Glendale, California 91201

September 20, 2001 — Dennis A. Ragen
Date — DENNIS A. RAGEN
Deputy Attorney General
110 West A Street, Suite 1100
San Diego, California 92101

EIGHTH PARTIAL CONSENT DECREE SIGNATURE PAGE

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Chevron, et. al, relating to the Operating Industries, Inc. (OII) Superfund Site.

SETTLING PARTY'S NAME: Chevron Environmental Management Company, individually and on behalf of Chevron U.S.A. Inc., Chevron Chemical Company LLC, and Chevron Pipe Line Company

SETTLING ON BEHALF OF THE FOLLOWING GENERATORS APPEARING IN EPA'S VOLUMETRIC DATABASE:
Chevron & Gulf

SELECT ONE SETTLEMENT OPTION: Settlement Payment

☑ Work Option $0

September 20, 2001 — Allan Vance
Date — Signature

Allan H. Vance — President
PRINTED NAME OF SIGNATORY — TITLE OF SIGNATORY

6001 Bollinger Canyon Road — 925 842 5200
ADDRESS — TELEPHONE NUMBER

San Ramon, CA 94583 — 925 842 0213
CITY, STATE, ZIP CODE — FACSIMILE NUMBER

alhv@chevron.com
EMAIL ADDRESS

Agent* Authorized to Accept Service and Future Notices on Behalf of Above-signed Party *[Please Type or Print Clearly]*:

Name and/or Title: Cathy S. Robie

Address: 6001 Bollinger Canyon Road, San Ramon, CA 94588

Tel. Number: 925 842 2006

Fax Number: 925 842 0808

Email Address: casr@chevron.com

* The agent may be changed by written notice to EPA, the Court, and the parties listed in Section XXXVII, Form of Notice.

[SIGNATURE PAGES, PAGES 223 - 406, PRECEDING EXHIBIT A, ARE OMITTED FOR BREVITY.]

EXHIBIT A FOLLOWS THIS PAGE.

OPERATING INDUSTRIES, INC.
GAS MIGRATION
CONTROL OPERABLE UNIT
RECORD OF DECISION

RECORD OF DECISION

TABLE OF CONTENTS

DECLARATION STATEMENT i

DECISION SUMMARY

- SCOPE AND ROLE OF OPERABLE UNIT 1
- SITE DESCRIPTION 2
- SITE HISTORY AND ENFORCEMENT ACTIVITIES 4
- COMMUNITY RELATIONS HISTORY 9
- SITE CHARACTERISTICS 9
- SUMMARY OF SITE RISKS 13
- DOCUMENTATION OF SIGNIFICANT CHANGES 16
- DESCRIPTION OF ALTERNATIVES 17
- SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES 21
- SELECTED REMEDY 24
- STATUTORY DETERMINATIONS 31

ATTACHMENTS

- RESPONSIVENESS SUMMARY
- ADMINISTRATIVE RECORD INDEX

DECLARATION

SITE NAME AND LOCATION

Operating Industries, Inc. (OII)
Monterey Park, California

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for Operating Industries, Inc. Site, in Monterey Park, California, developed in accordance with CERCLA, as amended by SARA, and to the extent practicable, the National Contingency Plan. This decision is based upon the administrative record for this operable unit at this site. The attached index identifies the items which comprise the administrative record upon which the selection of the remedial action is based.

The State of California concurs with the selected remedy.

DESCRIPTION OF THE REMEDY

This is the third operable unit for the OII site. As an operable unit this document addresses only the issue of landfill gas (LFG) migration control. The Gas Control Remedial Action will be integrated with the final site remedy as the component for collecting and destroying landfill gas which would otherwise be released from the site. Final cover, leachate collection, groundwater, slope stability, soil contamination, and final closure will be fully addressed in the final Remedial Investigation/Feasibility Study for the site, or in future Operable Units.

The major components of the selected landfill gas control remedy include:

- Installing 58 new perimeter LFG extraction wells, as shown in Figure 5, with placement focused on minimizing offsite LFG migration.
- Installing 48 pile driven wells on the top deck of the landfill with placement focused on maximizing source control of LFG.

- Installing 50 shallow and 12 deep slope wells with placement focused on reducing surface emissions, and controlling intermediate to deep subsurface migration at the perimeter.
- Installing new integrated perimeter and interior LFG headers (abovegrade).
- Utilizing functional existing gas extraction wells and gas monitoring probes.
- Installing 58 multiple completion monitoring wells at the property boundary.
- Installing landfill gas destruction facilities with a capacity of approximately 9,000 cfm, and an automated control station for the gas control system.
- Installing abovegrade condensate sumps to collect condensate from gas headers.
- Installing leachate pumps in gas wells to de-water saturated zones, and installing abovegrade leachate sumps.

DECLARATION

The selected remedy is protective of human health and the environment, a waiver can be justified for whatever Federal and/or State applicable or relevant and appropriate requirements which will not be met, and it is cost-effective. This remedy satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility or volume as a principal element and utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable.

Because this remedy will result in hazardous substances remaining onsite above health-based levels, a review will be conducted within five years after commencement of the final remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

9.30.88
Date

Daniel W. McGovern
Regional Administrator
EPA, Region IX

DECISION SUMMARY

OPERATING INDUSTRIES, INC.

GAS MIGRATION CONTROL OPERABLE UNIT

RECORD OF DECISION

SCOPE AND ROLE OF OPERABLE UNIT

The Operable Unit Feasibility Study (OUFS) for Landfill Gas (LFG) Migration Control at the Operating Industries, Inc. (OII) Landfill in Monterey Park, California, has been conducted to evaluate potential remedial alternatives for mitigating the LFG problems at the site. The U.S. EPA is addressing LFG problems as an operable unit so that a gas migration control remedial action can be initiated prior to implementation of the overall final remedial action for the site. The Gas Control Remedial Action will be integrated with the final site remedy as the component for collecting and destroying landfill gas which would otherwise be released from the site.

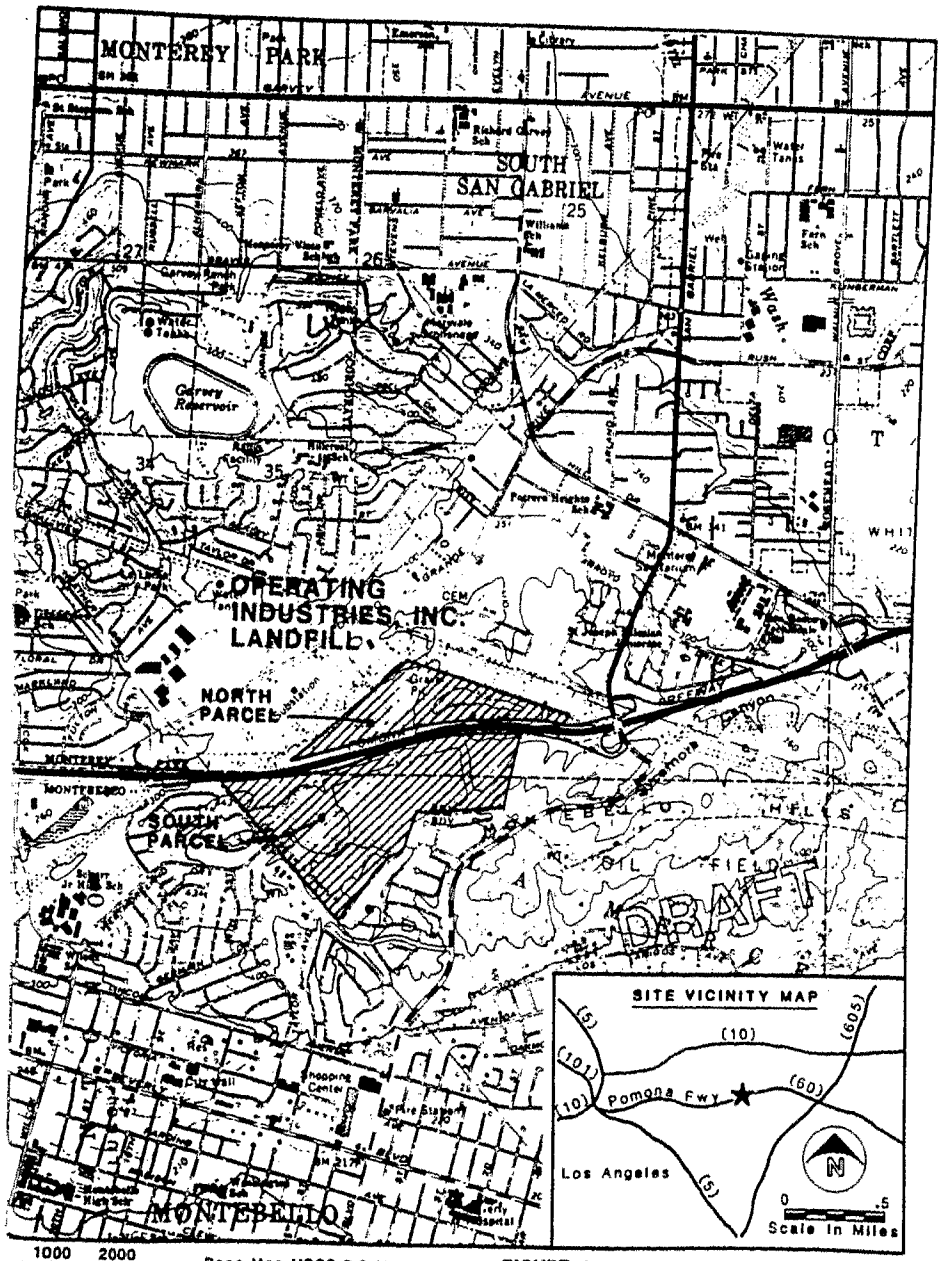
As an Operable Unit, this document addresses only the issue of LFG migration control. It does not address other issues such as leachate and condensate management, groundwater contamination, final site closure, and final remedy. This is the third operable unit for the OII site. A Record of Decision (ROD) for Site Control and Monitoring was signed on July 31, 1987, and a ROD for Leachate Management was signed on November 16, 1987. Final cover, leachate collection, groundwater, slope stability, soil contamination and final closure will be addressed in the final Remedial Investigation/Feasibility Study for the site, or in future Operable Units.

SITE DESCRIPTION

The OII Landfill is located at 900 Potrero Grande Drive, Monterey Park, 10 miles east of Los Angeles (Figure 1). The site is 190 acres in size with 145 acres (south parcel) lying south of the Pomona Freeway (California Highway 60) and 45 acres (north parcel) to the north. Ground surface elevations adjacent to the south parcel vary from approximately 500 feet above mean sea level (msl) along the south boundary to approximately 380 feet above msl along the Pomona Freeway. The top of the south parcel varies from 620 to 640 feet above msl. The north parcel is relatively level. The site is owned by Operating Industries, Inc., and related entities.

The adjacent land ownership is as follows:

- The Southern California Edison Company (SCE) owns the land abutting the north parcel, north of the Pomona Freeway. The SCE substation complex is located south of Potrero Grande Drive on the west side of Greenwood Avenue. A nursery leases the remaining SCE property.
- The land east of the south parcel, bounded by the Pomona Freeway, Montebello Boulevard, and Paramount Boulevard, is owned by Chevron U.S.A., Inc., and is currently undeveloped. It is currently used for oil recovery by Chevron.
- The Southern California Gas Company, a subsidiary of the Pacific Lighting Gas Supply Company, operates an underground gas storage facility in the area adjacent to the west boundary of the landfill.
- A piece of property to the south is jointly owned by Continental Development of California, Inc., and California Bankers Trust Company.
- The remaining land adjacent to the landfill is primarily residential with single-family homes to the south and southwest of the landfill boundary. The City of Montebello's Iguala Park also borders the southern boundary of the landfill.



1000 2000
Scale In Feet

Base Map USGS 7.5 Min.
El Monte Quadrangle 1966
Photo Revision 1981

FIGURE 1
SITE LOCATION MAP
OPERATING INDUSTRIES, INC. LANDFILL
DUFS-GAS MIGRATION CONTROL

LAND USE AND DEMOGRAPHY

The City of Monterey Park zoning ordinance designation for the OII Landfill is M, Manufacturing. In Monterey Park, land to the northwest of the landfill is zoned C-4 (Arterial Service Commercial), C-M (Heavy Commercial-Nonmanufacturing). To the south and west of the landfill, land use primarily consists of residential units (single-family houses). Land to the east is zoned R-A-O, Residential, Agricultural, Oil Production District. A cemetery lies to the northeast along Potrero Grande Drive, and the remainder of this area, between Neil Armstrong Street and Paramount Boulevard, is zoned residential.

The City of Monterey Park has a population of 54,338 and the City of Montebello has a population of 52,929 (1980 Census). Within a three-mile radius of the site there are approximately 53,000 residences.

Regional Hydrogeology

OII is located in the La Merced Hills, between two major groundwater basins: the San Gabriel Basin to the north and east, and the Los Angeles Central Basin to the south.

The San Gabriel Basin aquifer system to the north includes both semiconsolidated and unconsolidated nonmarine sedimentary deposits of Pleistocene and Holocene age. The pattern of groundwater movement within this basin is generally from the perimeter mountains toward the Whittier Narrows. Subsurface outflow and surface flow in the Rio Hondo and San Gabriel Rivers through the Whittier Narrows provide a major source of recharge to the Los Angeles Central Basin, from the San Gabriel Basin to the north.

Los Angeles Central Basin aquifers consist of consolidated to unconsolidated marine and nonmarine rocks ranging from late Pliocene to Holocene age. Regional flow is generally to the west.

The depth and character of the water-bearing strata adjacent to and beneath the OII site are not well understood. Water level measurements from existing wells suggest that perched, unconfined, and confined zones may be present, but have not been adequately identified or characterized. Additional wells will be installed to define hydraulic gradients and to identify potential contaminant migration pathways as part of EPA's ongoing RI/FS at the site.

SURFACE-WATER HYDROLOGY

The major surface streams that receive run-off from the Montebello Hills are the Rio Hondo and Los Angeles Rivers. Tributaries to these drainages in the area of the OII Landfill contain only ephemeral flow generated by storm or urban run-off. The majority of natural drainages have been extensively modified and channelized or diverted to storm sewers.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

Disposal operations at the OII Landfill site began in October 1948, when the Monterey Park Disposal Company (MPD) leased 14 acres from Henry H. Wheeler. An operations agreement between the City of Monterey Park and MPD provided that MPD would operate a municipal landfill on behalf of the City.

The landfill reverted to private ownership by the OII corporation in early 1952 when zoning variances for operating the landfill were not obtained by MPD. The site expanded to 218 acres as additional Wheeler property was obtained in 1953 and 1958.

The landfill was classified as Class II-I by the Los Angeles Regional Water Quality Control Board (LARWQCB) in October 1954. It was permitted to accept Group 2 wastes (ordinary household refuse, decomposable organic refuse, and selected scrap metal), Group 3 wastes (nondecomposable inert solids), and certain types of liquids.

The State of California (CALTRANS) purchased 28 acres from OII for the construction of the Pomona Freeway (completed in 1964), which separated the site into the 45-acre north parcel and the 145-acre south parcel. In August 1975, the Monterey Park City Council adopted Resolution 78-76, which eliminated solid waste disposal on the north parcel and on a 15-acre area in the northwestern section of the south parcel. Thus, after 1975, solid waste disposal was limited to a 130-acre section of the south parcel.

The height of the landfill was first limited to 540 feet in 1957 based on the height of the surrounding hills. The City of Monterey Park increased the height limit to 605 feet in June 1975, and to 640 feet in August 1975.

In March 1976, the LARWQCB restricted disposal of liquids to a 32-acre area in the western portion of the south parcel. OII was allowed to mix liquids with solid refuse at a ratio of 10 gallons

per cubic yard; the ratio was increased to 20 gallons per cubic yard in September 1976. Leachate generated at the site was collected and redisposed.

OII ceased accepting hazardous liquid waste in January 1983 and all liquid waste in April 1983. The California Department of Health Services (DOHS) classified leachate generated at the site as hazardous and prohibited redisposal, effective October 1984. OII stopped accepting all solid waste in October 1984.

Facilities have been constructed on the landfill to monitor and provide limited control of the offsite migration of landfill gas (LFG) and leachate from the landfill. A commercial gas recovery facility, referred to as the interior gas extraction system, was constructed by GSF Energy, Inc., in the interior area of the landfill. These systems are described in the following sections.

Landfill Gas Monitoring Probes

Sixteen LFG monitoring probes were installed by OII onsite along the west, south, and east borders of the south parcel of the landfill in 1976. In December 1981, 15 probes were added and the total 31 probes allowed LFG monitoring along the entire perimeter of the south parcel. In addition, 15 LFG monitoring probes were installed in the north parcel. Thirty-five perimeter probes were installed in July and August 1981 along the west and southwest boundaries to monitor the effectiveness of the air dike system.

Perimeter Gas Extraction System

The perimeter gas extraction system was installed by OII in five major phases on the south parcel to partially control offsite migration of LFG. Phase I (the air dike injection system), installed in 1981, consists of approximately 31 wells on the west border. This air dike injection system introduces air under pressure into the ground at the landfill perimeter to induce a positive pressure gradient and air flow as a barrier to LFG migration away from the landfill. Phases II/III/IV of the system, consisting of LFG extraction wells along the southern and eastern borders, were installed in 1982, and 1983.

After the wells were installed, gas was collected using a portable blower and flare system. In 1983, a permanent blower and flare station (now known as the auxiliary flare) was installed in the southwest corner of the landfill, and the wells were connected with a header system. By July 1983, both the auxiliary flare and portable system were in operation. Phase V wells were connected in May 1984.

The rim well system on the southeast slopes was also added in 1984. This system collects landfill gas from an upper bench of the landfill near the southern perimeter. The wells are relatively shallow, and extract LFG from the above-ground portion of the landfill. The rim wells are connected to the perimeter gas extraction system and, therefore, operate independently of the nearby interior gas extraction system. A new flare station (now known as the main flare) in the northwest corner of the landfill was added in 1984.

Leachate Collection System

The leachate collection system is described in the EPA Leachate Management ROD of November 16, 1987, and is not described further here. Liquids collected from the gas extraction system will be managed under the Leachate Management Remedial Action, or subsequent Leachate Management provision of the final remedy for the site.

Interior Gas Extraction System

GSF (then called NRG NuFuels, Inc.) signed a contract with OII in August 1974 to develop a LFG recovery system for commercial purposes at the OII Landfill site.

The GSF gas collection system and plant began recovering methane for sale to Southern California Gas Company in October 1979. After deciding that continued resource recovery operations at OII were no longer economically viable, GSF relinquished ownership of all subsurface facilities to OII per their contract and notified the EPA that they intended to dismantle their aboveground facilities by March 1, 1987.

In April 1987, GSF, the EPA, and the South Coast Air Quality Management District (SCAQMD) completed negotiations for the purchase of GSF surface facilities using OII trust fund monies held by the SCAQMD. Extraction and flaring of LFG continued from February to May 1987 under temporary agreement between GSF, the SCAQMD, and the EPA. At present, LFG extraction and flaring are operated by the EPA.

EPA is currently performing operation and maintenance of the existing leachate collection system, the existing perimeter gas extraction system, and the existing interior gas extraction system. The system operation and maintenance includes daily monitoring of LFG probes (onsite and offsite, including water meter boxes), conducting scheduled maintenance of blower/flare

stations and compressor equipment, and maintaining site security. This is described in the EPA Site Control and Monitoring ROD of July 31, 1987.

In addition, the EPA is conducting a remedial investigation/feasibility study (RI/FS) to determine the nature and extent of contamination resulting from the site and to assess potential remedial actions.

Enforcement

Various state and local agencies have recorded that Operating Industries frequently violated waste disposal regulations during the operating life of the landfill from 1952 to 1984. Site inspections identified some of these violations and agencies notified Operating Industries to correct the noted problems.

Recent State and Local enforcement actions include:

1978 - Order for Abatement 2121 (South Coast Air Quality Management District) - The Order includes site maintenance, grading, soil cover, and waste disposal. The order has been modified six times. In 1983, installation of a gas emissions control system and a permanent leachate control system were added. OII has not complied with the major requirements of the order.

1980 - (California Waste Management Board) - Listed site on the California Open Dump Inventory due to RCRA subtitle D violations.

1981 - Cease and Desist Order (L.A. County DOHS) - Issued to OII for operating the landfill without an approved plan for control of landfill gas.

1982 - (City of Montebello) - Filed suit for permanent closure of the landfill to abate a continuing public nuisance.

1983 - Notice and Order (L.A. County DOHS) - Cited violations of California Administrative Code.

Supplemental Notice and Order (L.A. County DOHS) - Reiterates Order requirements, requires installation of gas probes, wells, daily monitoring of gas systems, reporting to L.A. County DOHS, CWMB, and SCAQMD.

1984 - Temporary Restraining Order 0500141 (CA DOHS) - Order to secure financial resources from OII for closure.

30-Day Preliminary Injunction (CA DOHS) - Addressed activities required for closure.

Remedial Action Order LA001 (CA DOHS) - Required leachate management, site characterization, landfill gas control, and closure plans.

Notice of Violation to OII (CA DOHS) - Notification of noncompliance with Remedial Action Order.

Clean-up and Abatement Order 84-5 (Regional Water Quality Control Board) - Reiterates requirements of CA DOHS Order, required phase-out of leachate redisposal, and construction/operation of a permanent leachate control system.

Clean-up and Abatement Order 84-119 (RWQCB) - Required interception, pumping and legal disposal of leachate, and prohibited discharge of leachate on and off-site.

EPA enforcement activities include:

1982 - Section 3008 Notice - Notice of EPA Interim Status Part 265 RCRA violations at OII.

1983 - RCRA Complaint Issued.

OII submitted draft closure documents in lieu of Part B.

RCRA Consent Agreement Signed

1984 - 3007/104 letters issued to OII and GSF.

OII proposed for the National Priorities List

RCRA Section 3007/CERCLA Section 104 Notice Letters/Information Requests issued to Operating Industries, Inc, and individual owners. (8/23/84)

1986 - OII finalized on NPL

General Notice Letters/3007/104 Information Requests sent to 27 Potentially Responsible Parties representing 50 percent of manifested wastes. (6/20/86)

Follow-up 3007/104 Letter sent to OII owners.

1987 - General Notice Letters/3007/104 Information Requests sent to 56 additional PRPs representing an additional 20 percent of manifested wastes. (1/9/87)

Follow-up 3007/104 Letter sent to OII owners.

Negotiations for PRP conduct of RI3/FS held, settlement not reached.

General Notice Letters/3007/104 Information Requests sent to 106 additional PRPs representing an additional 10 percent of manifested wastes. (11/4/87)

1988 - Joint Special Notice and Demand Letter issued to all noticed PRPs, including OII owners for past costs, design and construction of the Leachate Management Remedial Action, and Site Control and Monitoring Activities and EPA's associated oversight costs (2/18/88). Negotiations in progress.

Special Notice Letter/3007/104 Information Request sent to City of Monterey Park. (2/18/88)

COMMUNITY RELATIONS HISTORY

A history of community relations activities at the OII site, the background on community involvement and concerns, and specific comments on the Feasibility Study and EPA's responses are found in the Responsiveness Summary which accompanies this ROD.

SITE CHARACTERISTICS

Figure 2 illustrates the mechanisms at work in generation, emission, and subsurface migration of gases at the OII Landfill. The four major mechanisms of gas migration at OII are:

- Generation by anaerobic decomposition of the refuse within the landfill combined with volatile organic compounds released by hazardous substances disposed of at the landfill
- Surface emissions by releases and diffusion to the atmosphere through the top and sides of the landfill as well as from other areas where gas has migrated in the subsurface to the surrounding neighborhood

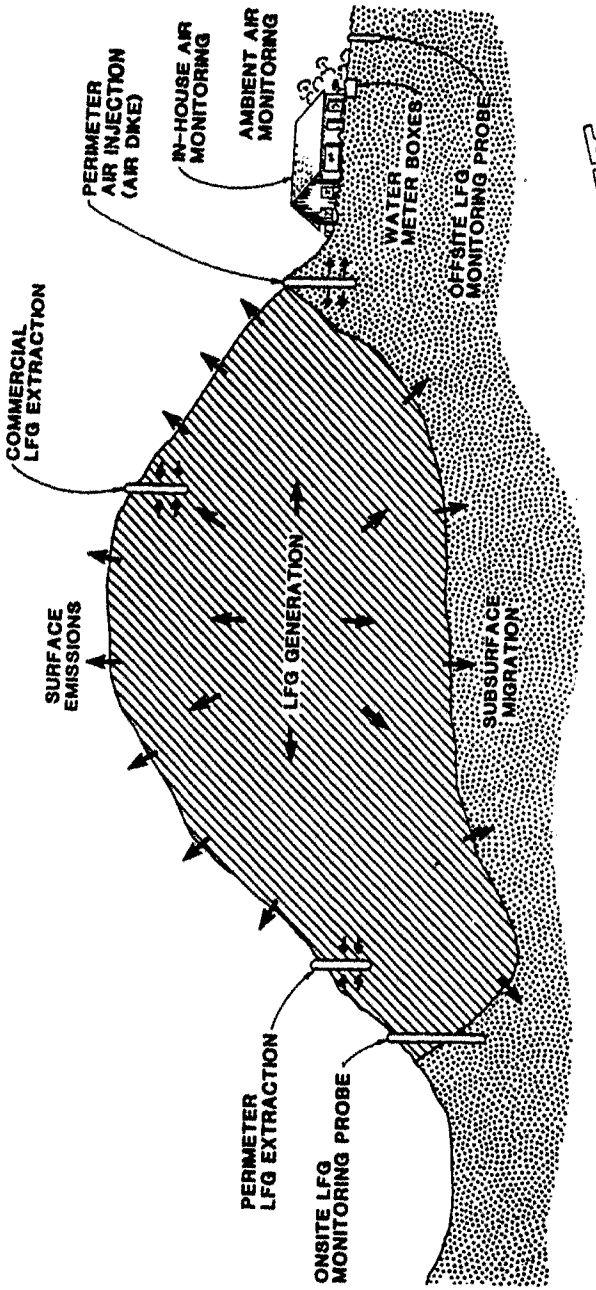


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FIGURE 2
SCHEMATIC OF LFG MIGRATION
FROM OII LANDFILL SITE
OPERATING INDUSTRIES, INC. LANDFILL
OUFS-GAS MIGRATION CONTROL

- Subsurface migration by releases and diffusion through the bottom (below ground surface) boundaries of the landfill

- Collection and partial control by existing perimeter extraction, which removes gas along portions of the landfill slopes and boundary; by perimeter air injection, which provides an air curtain for partial containment along portions of the landfill boundary; and by existing interior extraction, which removes gas from within the interior of the landfill

GAS GENERATION

The estimated 1988 methane generation rate from the landfill is between 3.8 million and 5.2 million standard cubic feet per day (mmscfd). Although the average methane generation is decreasing, it may continue for 35 years or more (Figure 3).

During 1987 and early 1988 EPA installed 15 multiple completion gas monitoring wells. Probes were installed at up to six different depths, extending down to 340 feet. These probes are now being monitored by EPA for methane concentrations, gas pressure and sampled for analysis of other constituents in the gas stream. Contaminants which have been detected include benzene, carbon tetrachloride, 1,1-dichloroethane, 1,1-dichloroethylene, perchloroethylene, trans-1,2-dichloroethylene, trichloro ethylene, toluene, vinyl chloride, and 1,1,1-trichloroethane.

Probe monitoring data support the evaluation of subsurface LFG migration. In the areas of high subsurface LFG migration identified in the west and east ends of the landfill, the new probes also showed high levels of methane. With the exception of LFG monitoring wells (GMW) No. 2 and No. 3, the probes on the east and west ends of the landfill also showed high levels of methane extanding to the depth of the waste mass within a radius of 1,000 feet of the probe location. This information from the deep monitoring probes indicated that subsurface LFG migration is occurring at greater depths than previously known, and supports the recommendation in the FS for installing deep LFG extraction wells and monitoring probes at the perimeter in these areas.

The EPA probes located in the areas identified as having low LFG migration in the FS generally showed lower concentrations than the probes located on the east and west ends of the landfill. Several of these probes showed methane concentrations exceeding 5 percent, the lower explosive limit (LEL).

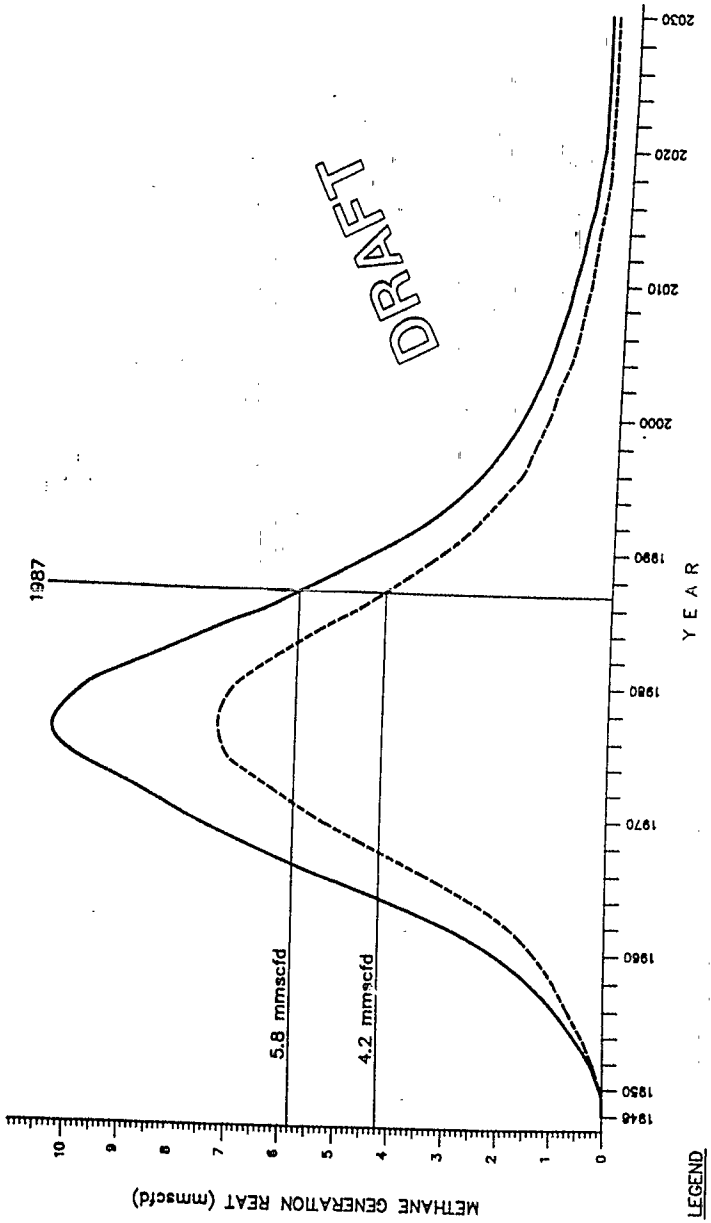

FIGURE 3
ESTIMATED MINIMUM AND MAXIMUM POTENTIAL METHANE GENERATION RATES VS TIME
OPERATING INDUSTRIES, INC. LANDFILL
OUFS-GAS MIGRATION CONTROL

Additional source control and perimeter extraction wells proposed for other areas may also reduce methane levels in this area. However, the new data indicates that additional gas extraction wells may be required in areas of low methane migration if methane concentrations above 5 percent persist. The number and placement of these wells will depend on future monitoring data.

In summary, new EPA monitoring probe data verifies the presence of methane at concentrations greater than 5 percent in both the shallow and deep probes in the previously identified high migration areas. The data supports the distinction between high and low migration, but indicates that some additional gas extraction wells may also be required in the low migration areas.

At the eastern boundary of the site, subsurface investigation conducted by Geotechnical Consultants, Inc. (GTC) indicated deposits of refuse within Chevron U.S.A. property. The approximate extent of refuse at the east end of the landfill is shown in Figure 4. This composite figure was prepared based on an existing topographic map of the landfill and the conclusions drawn by GTC.

Gas migrating in the subsurface on the Chevron property to the east of the site would be more effectively controlled with perimeter wells installed at the boundary of the refuse (which extends off the OII property in this area) rather than wells installed at the legal property boundary. The zone of influence of wells installed on the legal boundary would have to extend to the perimeter of the waste mass in order to control gas migration. Establishing such zones of influence within the waste mass could lead to excessive oxygen intrusion, creating the potential for underground fires. Smaller zones of influence within native soil could be used to control gas migration if the wells were installed at the boundary of the refuse. The gas control alternatives that involve increased gas extraction on the South Parcel have the flexibility for modification of the conceptual design for gas well and header placement, to better address gas control in this area. This modification consists of locating the perimeter wells and perimeter header line at the edge of the refuse and potentially redistributing a portion of the slope wells in this area. These modifications can be accomplished during the design phase without altering the cost estimates for the alternatives. Field work during the design phase will more precisely define the extent of refuse in this area.

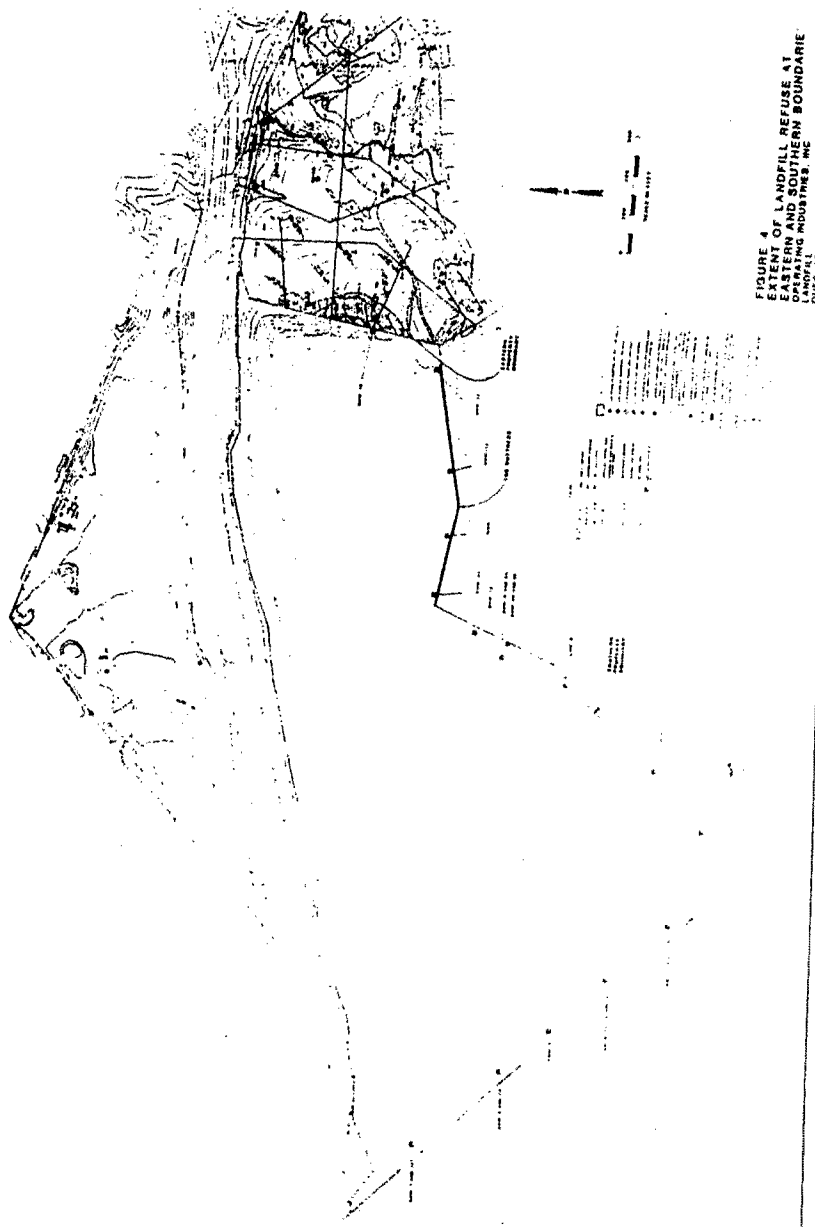

FIGURE 4
EXTENT OF LANDFILL REFUSE AT
EASTERN AND SOUTHERN BOUNDARIE
OPERATING INDUSTRIES, INC
LANDFILL

Landfill gas is also being generated within the 11 acres of waste located on the North Parcel of the OII site as confirmed by field monitoring of EPA probes in 1987. A more detailed discussion of the LFG investigation can be found in the Preliminary North Parcel Site Characterization Report, March 4, 1988.

Methane concentrations of 5 to 82 percent were found in the probes placed within the waste mass and at the perimeter of the waste mass. Generally, during monitoring, LFG was found to be prevalent within the landfilled area, as well as at the northwestern and southwestern boundaries of the North Parcel. Lab analysis of LFG samples confirmed the presence of elevated levels of methane. Carcinogenic and toxic organic compounds were also found in the landfill gas.

Methane levels (and, for the most part, levels of carcinogenic and toxic compounds) were found to be lower on the eastern portion of the North Parcel outside of the fill area. EPA believes that the majority of the compounds present in this area are due to the migration of gas away from the landfill areas on the North and South Parcels. EPA presently assumes that control of the gas migration problems of the filled areas of the North and South Parcels should eliminate the existing gas problem on the eastern portion of the North Parcel. Based upon EPA evaluation of the volume of the waste mass and the age of the waste, the North Parcel is beyond the peak of methane generation and is producing approximately 9,000 to 14,000 cubic feet of methane gas per day.

Contaminant Release

LFG that is not collected by the gas collection systems and destroyed by flaring is released by surface emissions or migrates laterally through porous soil, and thus contributes to emissions offsite around the landfill.

A portion of the LFG generated in the landfill is released or emitted by venting mechanisms through the landfill cover. The heat generated by the biochemical reactions in the landfill increases the vapor pressure and the rate of volatilization of organic chemicals present in the waste. The molecular weight, reactivity, and water solubility of each chemical also affect volatilization. Once volatilized, the organic chemicals are transported with the LFG by dominant mechanisms such as diffusion, convection, and barometric pressure pumping.

These release mechanisms have been documented by data on emissions from the landfill surface. The areas onsite with the highest amount of emissions (measured as methane) appear to be

the slopes. The slopes have a thinner cover and are prone to surface erosion and instability causing fissures and cracks. These areas, which will be further monitored during the upcoming RI/FS air sampling tasks, also abut many residences.

Subsurface LFG migration is another release mechanism at the OII landfill. Methane has been detected in water meter boxes and offsite probe locations in the residential neighborhoods at concentrations above the lower explosive limit. Historically, the area to the northwest of the landfill has not exhibited detectable levels of methane in the water meter boxes. The neighborhood to the southwest has continued to exhibit elevated levels of methane despite the existing LFG migration control systems at the landfill.

Contaminant Transport Pathways

Contaminants contained in the LFG either migrate offsite in subsurface soils, or are emitted to the ambient air through the landfill cover. Subsurface migration primarily occurs by diffusion (due to concentration gradients) and convection (due to pressure gradients) through refuse and soil. Chemical contaminants are released to ambient air through the landfill cover onsite or via surface soils around the landfill offsite and are transported by wind and prevailing air drainage patterns.

Contaminants may also move through the void spaces in underground utility conduits. The water meter box data indicate that this has occurred and is still occurring in the southwest section.

Urban development adjacent to the OII site in the mid-1970s resulted in extensive grading and modifications of the original topography. Grading required for access roads and residential lots resulted in excavation of ridges and placement of fill in low areas. Replaced fill, unless compacted effectively, may be more permeable to LFG than undisturbed material.

Geologic formations, such as faults, may also act as pathways for migration. Several faults have been identified in the area.

SUMMARY OF SITE RISKS

A preliminary risk assessment was performed to evaluate the potential public health impacts. This assessment focused only on the LFG issues; other issues will be incorporated into the risk assessment for the site in the overall RI/FS.

As of December 1986, many of the water meter boxes that previously had high methane readings close to the landfill were vented to prevent the build up of methane or other volatile contaminants. The data collected prior to venting indicated the presence of methane in concentrations within the explosive range. Methane concentrations continue to exceed the lower explosive limit in some of these boxes, and additional venting is planned as part of the Site Control and Monitoring Remedial Action. These data are useful for demonstrating that subsurface migration is occurring and still presents a risk if allowed to build up to high concentrations in enclosed spaces. Venting of meter boxes does not eliminate the potential for fire and explosion, since homes, sheds and other enclosed spaces are adjacent to the site. The potential for fire and explosion can only be eliminated by controlling landfill gas to below the the explosive limit (5%) of methane.

Methane build-up in enclosed spaces has been demonstrated at the OII site and may pose an acute and imminent hazard due to the risk of fire and explosion. Methane is a highly flammable gas at concentrations between 5 percent (LEL) and 15 percent (UEL). The water meter box and offsite probe data demonstrate that methane gas has migrated offsite, and methane has accumulated to concentrations up to 70 percent by volume in the meter boxes. If air is added to the enclosed space and decreases the concentrations to within the combustible range, a spark, lighted cigarette, or match can cause an explosion.

The preliminary risk evaluation is based solely on the LFG problem and the chronic effects of LFG components such as benzene and vinyl chloride to humans over a long-term exposure at the site. Methods assessed in the operable unit to remediate the methane problem may also alleviate the other components (e.g., benzene and vinyl chloride).

The risks associated with exposure to volatile organic compounds (VOCs) are estimated for the residential and occupational scenarios with inhalation as the only exposure route considered. The inhalation route is considered in the OUFS risk assessment since it is the criterion to be used to determine feasible technologies for the gas problem. The ambient air data were assumed to represent the air quality inside the houses. In-house data indicated the potential presence of contaminants, but were not used for residential exposure because the data were of questionable quality.

The population potentially exposed to these contaminants includes 2,150 people within 1,000 feet of the landfill as demonstrated by available data.

Contaminants detected in at least 10 percent of the ambient air samples include benzene, carbon tetrachloride, perchloroethylene, trichloroethylene, vinyl chloride, 1,1,1-trichloroethane, and toluene. Of these vinyl chloride is the only compound for which there is an ambient air quality standard, which is 10 ppb. The mean concentration between August 1983, and August 1986, was 1.8 ppb, and the maximum concentration was 14 ppb. The standard was exceeded 16 days during this time period, with the last exceedance occurring on August 23, 1985.

More defined information will be available for the final risk assessment to be included in the overall RI/FS after additional ambient and in-house air monitoring data is collected.

Exposure is estimated based on EPA's Superfund Public Health Evaluation Manual (1986) and CH2M HILL Risk Assessment Guidance document (1986).

The daily chemical intakes via inhalation of noncarcinogens for a 70-kg adult and for 30-kg and 10-kg children in a residential setting were compared to acceptable intakes for chronic exposure (AIC). None of the contaminants exceeded the AIC. The daily chemical intake for the occupational scenario did not exceed the acceptable chronic or subchronic intake levels.

The Hazard Index for multiple exposures was calculated at less than one, therefore, no effect is expected to occur from exposure to the toxic chemicals at the levels found around OII.

The excess lifetime cancer risk was estimated at 1.6×10^{-4} for the residential setting and 5.4×10^{-5} for the occupational scenario. The cancer risk was dictated primarily by benzene and vinyl chloride. However, benzene was not detected in 85 percent of the samples collected and vinyl chloride was not detected in 50 percent of the samples. The detection limit for benzene was 5 ppb in 1983 and 2 ppb in 1984. Thus, the cancer risk was calculated using limited data, and was affected by sensitivity in the analytical technique. Additional data from upcoming ambient air monitoring should allow a distinction between the background risk posed by ambient air in the area, and additional risk posed by contaminants from the OII site. This risk assessment will be presented in the overall RI/FS for the site.

DOCUMENTATION OF SIGNIFICANT CHANGES

Alternatives 9 and 10 (the gas control system for the south p cel and the gas destruction facility, and the gas control sys for the north parcel, respectively) were presented in the proposed plan as the preferred alternative. No significant changes have been made to these alternatives, although a modification of the conceptual design for the gas destruction facility may be required.

EPA originally proposed thermal destruction of the landfill g using "flare" gas incinerators. The ARAR governing emission from the thermal destruction of the landfill gas has been clarified (See the Statutory Determinations Section of the RO This ARAR limits emissions of CO to 550 pounds per day, and N to 100 pounds per day, and the exemption from the emissions o set requirements for landfill gas facilities is not allowable Therefore, EPA may be required to either establish sufficient ditional controls on the proposed landfill gas flares to achi these requirements, or consider alternative gas incinerator designs which would allow further emissions controls. This change constitutes a minor modification of the proposed remedy. Thermal destruction will still be utilized and this modification will not significantly affect the cost of the selected remedy. Additional control equipment for flare emissions could increase the cost of the flare facility by $1 million. Use of alternative incinerator designs may increase the remedy costs by $1 to $2 million. Since the cost of the propo remedy was previously estimated at $73 million, with an accura range of -30% to +50%, the cost of the remedy is not significantly affected.

If the emissions requirement for landfill gas destruction cann practicably be achieved, EPA will invoke the waiver from these requirements under SARA, on the grounds that compliance with these requirements would cause more damage to human health and environment (by preventing collection and destruction of landf gas at OII) than waiving them.

Comments were received which suggested that additional interim cover or partial final cover should be applied on the slopes o the landfill as part of this Operable Unit to further improve control of surface landfill gas emissions. The Feasibility St deferred cover options for landfill gas control due to data limitations which impacted the technical feasibility of cover evaluation, design, and construction at this time. However, t Feasibility Study did note that integration with the cover wou be required for control of surface emissions from the site. A

information becomes available from studies conducted by EPA and/or other parties, or from Site Control and Monitoring activities, EPA will consider the feasibility of integrating additional interim cover or partial final cover with the construction of the selected gas control remedy, and this activity may be added to this Operable Unit. If information becomes available to allow development and evaluation of conceptual cover designs an opportunity for public comment on proposed cover alternatives may be offered, as appropriate.

Several of the alternatives in the Feasibility Study included resource recovery components, however, these were found not to be cost-effective, and therefore, were not included in the preferred alternative. Although the selected remedy does not include design and construction of a resource recovery component, it does allow for EPA to decide to design and construct a resource recovery component in the future if resource recovery becomes cost-effective, and such a decision is consistent with EPA's other decision making criteria.

DESCRIPTION OF ALTERNATIVES

GOALS AND OBJECTIVES

The goals and objectives for remediation include:

- Limiting methane concentration to less than 5 percent at the site boundary
- Controlling surface emissions of LFG such that total organic compound concentration is less than 50 ppm on the average and methane concentration is less than 500 ppm at any point on the surface through integration of the gas control remedy and the final cover for the site. Although, prior to final cover placement an interim goal will be to reduce surface emissions to a significant degree, a waiver from full compliance with this ARAR will be required until the final remedy is implemented.
- Minimizing the odor nuisance - this is directly associated with the reduction of surface emissions, and consequently, although odor reduction will be achieved prior to final cover placement, integration with the final cover will be required to fully address this problem

- Attaining applicable or relevant and appropriate standards, requirements, criteria, or limitations under other federal and state environmental laws according to the terms of Section 121 of SARA (For an operable unit compliance with ARARs (such as surface emissions control) may be waived if compliance is expected to be achieved through implementation of the final remedy.)
- Expediting implementation - sequencing and phasing remedial activities to rapidly mitigate identified gas problems
- Providing consistency with final remedies - considering potential effects of future remedial activities in developing alternatives to mitigate and minimize identified gas problems
- Integrating gas operations - optimizing migration control by integrating perimeter and interior gas extraction systems
- Using resource recovery technologies to the maximum extent practicable if cost-effective

SUMMARY OF GAS FS ALTERNATIVES

The alternatives which underwent detailed evaluation in the FS ranged from maintaining the existing LFG systems, to extensive additional well placements to extract LFG. LFG destruction systems ranged from simple flares to a LFG-fired steam boiler with electrical power generation.

Two of the alternatives included a resource recovery element that uses LFG combustion to generate steam and drive steam turbine electrical generators. These could provide electricity for sale to the local utility company.

Except for Alternatives 0 and 1 (no action and status quo, respectively), the emphasis of the alternatives is on increased collection and destruction or utilization of the LFG through thermal destruction. Other gas cleaning or processing technologies were eliminated during the initial screening of alternatives. Alternatives 1 through 9 are possible remedies for the south parcel and alternative 10 is for the north parcel.

Alternative 0

No Action. Walk away, cease extraction system and air dike operation.

Alternative 1

Status Quo. Operate existing systems as is.
- Air dike--31 wells
- OII system (scope wells)--79 wells
- GSF system--64 wells
- GSF flare station--1 blower, 1 flare
- OII flare station--3 blowers, 3 flares

Methane collected--2.0 million standard cubic feet per day
- Percent of methane generated--52 percent
- Percent increase--0 percent

Alternative 2

Improve Alternative 1 by replacing the header line abovegrade, collecting condensate, and modifying, improving, and integrating the flare facilities.

Alternative 3

Minimal Additional Gas Extraction. Expansion of Alternative 2.
- Replace air dike with extraction wells
- 29 new perimeter wells
- 25 new interior wells
- New perimeter probes to monitor performance

Methane collected--2.4 million standard cubic feet per day
- Percent of methane generated--63 percent
- Percent increase--22 percent

Alternative 4

Intermediate Additional Gas Extraction. Expansion of Alternative 2.
- Replace air dike with extraction wells
- 41 new perimeter wells
- 63 new interior wells
- New perimeter probes to monitor performance
- 1 new blower, and 1 new flare

Methane collected--2.9 million standard cubic feet per day

- Percent of methane generated--77 percent
- Percent increase--50 percent

Alternative 5

Maximum Additional Gas Extraction. Expansion of Alternative 2.
- Replace air dike with extraction wells
- 56 new perimeter wells
- 96 new interior wells
- New perimeter probes to monitor performance
- 2 new blowers, 2 new flares

Methane collected--3.4 million standard cubic feet per day
- Percent of methane generated--90 percent
- Percent increase--78 percent

Alternative 6

Alternative 5 with gas boiler and steam generator added.
- Net electric output--6.1 mw
- Net revenues--$2.4 million
- Duration of electric generation--10 years

Alternative 7

Replacement of existing systems with a completely new system.
- 59 new perimeter wells
- 180 new interior wells
- New perimeter probes to monitor performance
- 6 new blowers, 6 new flares

Methane collected--3.4 million standard cubic feet per day
- Percent of total methane--90 percent
- Percent increase--78 percent

Alternative 8

Alternative 7 with gas boiler and steam generator. Uses the same resource recovery system as Alternative 6.

Alternative 9

Modified Alternative 7. Uses existing gas extraction wells.
- 58 new perimeter wells
- 110 new interior wells

- 105 existing wells
- New perimeter probes to monitor performance
- 6 new blowers, 6 new flares

Methane collected--3.4 million standard cubic feet per day

- Percent of total methane--90 percent
- Percent increase--78 percent

Alternative 10

North Parcel System.

- 6 new wells and header line
- Existing LFG monitoring probes
- Integrated with South Parcel alternative for LFG destruction

Methane collected--.009 to .014 million standard cubic feet per day

In the FS, remedial action alternatives are described in sufficient detail to develop order-of-magnitude cost estimates (-30 to +50 percent) and to allow comparison of alternatives. They are based on the existing site data and understanding of site conditions as well as estimates of future conditions. Information presented concerning sizing of equipment, LFG flows, and extracted LFG quality is preliminary and is useful for evaluation and comparison of alternatives. Values to be used for design will be re-evaluated in the predesign or final design efforts. In addition, data collected as part of continuing site remedial investigation efforts will supplement understanding of current site conditions and may help in optimizing an alternative. Variations in design could include:

- Number and placement of components such as header lines and extraction wells
- Extraction rates
- LFG quality (constituent concentration).

It should also be noted that Alternatives 2 through 8 include facilities for the collection of condensate and/or leachate which result from LFG migration control remedial actions. However, facilities and costs associated with condensate and leachate treatment and/or disposal are not included in these alternatives. Leachate and condensate will be managed under EPA's Leachate Management Remedial Action.

SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

Alternative Nos. 0 through 2 are not acceptable gas control alternatives because the quantity of LFG collected would remain the same or decrease. The potential threat from fire and explosion, and contamination of the ambient air from surface emissions would continue.

Alternative No. 3 would provide additional partial control of LFG in some areas. However, control of subsurface migration to less than 5 percent methane and surface emissions to the SCAQMD requirements (when the final cover is implemented) are not expected to be achieved. Therefore, the potential threat from fire and explosion and the contamination of the ambient air from surface emissions would continue. The remedial goals and objectives, including overall protection of human health and the environment, compliance with ARARs, and long and short-term effectiveness would not be met.

Alternative No. 4 could possibly achieve control of subsurface migration and surface emissions in compliance with ARARs. However, this level of control is not considered to be likely. If this alternative does not achieve the ARARs, then the potential threat of fire and explosion and contamination of ambient air could continue, therefore this is not considered an effective alternative.

Alternative Nos. 5, 6, 7, 8 and 9 all have a high probability of controlling subsurface migration and surface emissions (when integrated with the final cover) to achieve ARARs. This level of control will eliminate the threat of fire and explosion and should reduce the amount of contaminants released to the ambient air to protective levels. These alternatives are, therefore, protective of public health and environment. All of these alternatives (5 through 9) are considered roughly equivalent in their effectiveness and implementability.

Alternative Nos. 6 and 8 include electrical generation resource recovery from the LFG. An economic analysis found that the net costs of implementation and operation and maintenance would be increased rather than reduced by these alternatives because the benefit to cost ratios for the resource recovery technologies are less than one. Therefore, these two alternatives were not found to be cost-effective.

Alternative 9 is more cost-effective than alternatives 5 and 7 because it uses existing wells and alternative well installation techniques. The 30-year present worth cost for this alternative

(using a 3 percent discount rate) is estimated at $72 million, compared to $90 million for Alternative 5 and $96 million for Alternative 7. This alternative is also more reliable than Alternative 5 due to the complete replacement of the gas extraction and flaring facilities, and is therefore considered to offer better short and long-term effectiveness.

Alternative 10 is a separate component that will control gas migration in the subsurface and surface emissions from the North Parcel. This alternative is readily implementable and can be integrated with Alternative 9 which will provide LFG extraction and destruction facilities. The 30-year present worth cost of Alternative 10 is $1.1 million.

Tables 1 and 2 provide a brief comparison summary of the alternatives. These tables present information on EPA's decision making criteria of capital, operations and maintenance, and present worth costs, effectiveness, and compliance with ARARs. Table 3 provides a more detailed comparison of the alternatives. This table presents information on EPA's decision making criteria of overall protection of human health and environment (both short- and long-term effectiveness and permanence), implementability, and compliance with ARARs.

EPA's selected remedy is a combination of Alternatives 9 and 10. It offers a degree of protection of public health and environment that exceeds that of Alternatives 0 through 4, is equivalent to the protection offered by Alternatives 5 through 8, and is readily implementable.

The State of California, Department of Health Services, the Regional Water Quality Control Board, the City of Montebello, and the Los Angeles County Department of Health Services all support the selection of Alternatives 9 and 10 as the selected remedy. The local community group, H.E.L.P., Homeowners to Eliminate Landfill Problems, also support the selection of Alternatives 9 and 10.

The California Waste Management Board, and one local community member preferred Alternative 7 over Alternative 9, because they were opposed to the inclusion of functional existing gas extraction wells at OII. EPA considers it to be more cost-effective to include these functional wells rather than replacing them unnecessarily. EPA's selected remedy provides money to replace these wells when they are no longer functional, as part of yearly operations and maintenance.

Table 1
ALTERNATIVES COMPARISON SUMMARY
OII LFG MIGRATION CONTROL

Alternative		Effectiveness			Cost Estimates ($ Millions)[a]	
No.	Description	Innovative or Resource Recovery Technology	Estimated Additional LFG Collection (%)	Probability of Meeting or Exceeding ARARs	Capital Investment	O/M[c]
0	No Action	No	-	No	0	0
1	Status Quo	No	0	No	0	1.6
2	Improved Status Quo	No	0	No	5.8	1.5
3	Minimal Gas Extraction with LFG Flaring	No	+20	Partially	15.5	2.0
4	Intermediate Gas Extraction with LFG Flaring	No	+45	Possibly	23.3	7.5
5	Maximum Gas Extraction with LFG Flaring	No	+70	High Probability	32.1	3.0
6	Maximum Gas Extraction with LFG Boiler and Steam Power Generation	Yes	+70	High Probability	46.6	1.4[d] 3.0[e]
7	Replacement Gas Extraction with LFG Flaring	No	+70	High Probability	45.3	2.6
8	Replacement Gas Extraction with LFG Boiler and Steam Power Generation	Yes	+70	High Probability	59.8	1.0[d] 2.6[e]
9	Modified Replacement Gas Extraction with LFG Flaring	No	+70	High Probability	27	2.3
10	North Parcel System	No	+70	High Probability	0.4	0.038

[a]These costs are order-of-magnitude level estimates (i.e., the cost estimates have an expected accuracy of -30 to +50 percent).
[b]Percent increase over projected (based on LFG generation model) LFG collected in 1990 using existing LFG facilities.
[c]Operation/Maintenance, net estimated annual costs, 30 years, rounded off.
[d]Operation/Maintenance, net estimated annual costs, 0-10 years, rounded off.
[e]Operation/Maintenance, net estimated annual costs, 11-30 years, rounded off.

LAT3T/087

Table 2
NET PRESENT WORTH OF ALTERNATIVES

Alternative	Project Life	Present Worth Rates ($ millions) @3%	@5%	@10%
1	30 years	31.1	24.4	15.0
	45 years	37.5	27.2	15.1
	60 years	41.4	28.3	14.9
2	30 years	35.3	29.0	20.0
	45 years	41.6	31.7	20.2
	60 years	45.5	32.9	20.2
3	30 years	54.1	45.7	34.0
	45 years	62.3	49.4	34.3
	60 years	67.6	51.1	34.3
4	30 years	71.5	61.1	46.5
	45 years	82.1	65.9	46.9
	60 years	88.8	68.1	46.9
5	30 years	90.0	77.5	60.0
	45 years	103.0	83.5	60.6
	60 years	111.2	86.2	60.6
6	30 years	94.0	82.2	67.7
	45 years	107.0	88.8	68.4
	60 years	115.3	91.5	68.4
7	30 years	96.1	85.2	69.8
	45 years	107.6	90.4	70.3
	60 years	114.9	92.9	70.3
8	30 years	100.2	90.5	77.5
	45 years	111.6	95.8	78.1
	60 years	119.0	98.0	78.1
9	30 years	71.6	61.9	48.4
	45 years	81.5	66.5	48.8
	60 years	87.9	68.6	48.9
10	30 years	1.1	1.0	0.8
	45 years	1.2	1.0	0.7
	60 years	1.2	1.0	0.7

LAT3Y/086

Table 3
EFFECTIVENESS EVALUATION OF ALTERNATIVES

Effectiveness Criteria	Alternative 0	Alternative 1	Alternative 2
Protectiveness of Human Health and the Environment			
o Estimated reduction in methane normally released as surface emissions and subsurface migration[a]	None	None	None
o Surface emissions control - comply with ARARs (less than 50 ppm average; 500 ppm maximum at any point); compliance requirement deferred to the final remedy	Will not comply	Will not comply	Will not comply
o Subsurface migration control - comply with ARARs (less than 5 percent at the boundary)	Will not comply	Will not comply	Will not comply
o Source control - LFG collection at the source	None	No additional source control	No additional source control
o Resource recovery	None	None	None
o Odor control	None	Inadequate	Inadequate
Reliability			
o Potential for poor performance or failure of system components (assuming design criteria represent actual field conditions)	NA	Poor reliability as evidenced by current operational problems at site	Improved reliability Slight reduction (not estimatable) due to system improvements
o Operational flexibility to address variations between design criteria and actual field conditions	NA	NA	System improvements are expected to allow greater flexibility in flare system operation and header maintenance

Table 3
(Continued)

Effectiveness Criteria	Alternative 3	Alternative 4	Alternative 5
Protectiveness of Human Health and the Environment			
o Estimated reduction in methane normally released as surface emissions and subsurface migration[a]	Reduction estimated at 0.4 mmscfd (22 percent reduction in methane release)	Reduction estimated at 0.9 mmscfd (50 percent reduction in methane release)	Reduction estimated at 1.4 mmscfd (78 percent reduction in methane release)
o Surface emissions control - comply with ARARs (less than 50 ppm average; 500 ppm maximum at any point); compliance requirement deferred to the final remedy	Additional extraction wells on slopes; monitoring data required to determine compliance; more likely to comply than Alternatives 1 and 2	More wells on slopes than Alternative 3; more likely to comply than Alternatives 2 and 3	Maximum well coverage of "add on" alternatives, more likely to comply than Alternative 4. High probability of compliance.
o Subsurface migration control - comply with ARARs (less than 5 percent at the boundary)	Additional extraction wells at the landfill perimeter; monitoring data required to determine compliance; not likely to comply	More wells on perimeter than Alternative 3; more likely to comply than Alternatives 2 and 3	Maximum well coverage of "add on" alternatives, more likely to comply than Alternative 4. High probability of compliance.
o Source control - LFG collection at the source	Additional interior wells will collect more LFG from within the refuse than Alternatives 1 and 2	More interior wells than Alternative 3 will collect more LFG	Maximum well coverage of "add on" alternatives; should provide greater degree of source control than Alternative 4.
o Resource recovery	None	None	None
o Odor control	Some reduction from additional wells on landfill slopes	Greater reduction in odors than Alternative 3	Greater reduction in odors than Alternatives 3 and 4
Reliability			
o Potential for poor performance or failure of system components (assuming design criteria represent actual field conditions)	Low; costs include periodic replacement of equipment, standby gas blower, and flare capacity	Reliability of LFG collection and flaring is same as Alternative 3	Reliability of LFG collection and flaring is same as Alternative 3
o Operational flexibility to address variations between design criteria and actual field conditions	Liquid/leachate pump provided for each well if necessary; use of oversized collection headers to allow additional well installations, flexibility limited by existing systems layout (i.e., header configuration and well design and placement).	Same as Alternative 3	Same as Alternative 3

LAT3Y/084-2

Table 3
(Continued)

Effectiveness Criteria	Alternative 6	Alternative 7	Alternative 8
Protectiveness of Human Health and the Environment			
o Estimated reduction in methane normally released as surface emissions and subsurface migration[a]	Reduction estimated at 1.4 mmscfd (78 percent reduction in methane release)	Reduction estimated at 1.4 mmscfd (78 percent reduction in methane release)	Reduction estimated at 1.4 mmscfd (78 percent reduction in methane release)
o Surface emissions control - comply with ARARs (less than 50 ppm average; 500 ppm maximum at any point); compliance requirement deferred to the final remedy	Same as Alternative 5	Greatest potential for control due to integration of complete system through design and construction does not rely on existing well locations and header configuration. Improved reliability enhances protectiveness.	Same as Alternative 7
o Subsurface migration control - comply with ARARs (less than 5 percent at the boundary)	Same as Alternative 5	Greatest potential for control due to integration of complete system through design and construction does not rely on existing well locations and header configuration. Improved reliability enhances protectiveness.	Same as Alternative 7
o Source control - LFG collection at the source	Same as Alternative 5	Greatest potential for control due to integration of complete system through design and construction does not rely on existing well locations and header configuration. Improved reliability enhances protectiveness.	Same as Alternative 7
o Resource recovery	Power generation with LFG boiler/steam turbine generator; an estimated 6000 kW of power may be recovered	None	Power generation with LFG boiler/steam turbine generator; an estimated 6000 kW of power may be recovered
o Odor control	Same level of odor control as Alternative 5	Greatest potential for control due to integration of complete system through design and construction does not rely on existing well locations and header configuration. Improved reliability enhances protectiveness.	Same level of odor control as Alternative 7

Table 3
(Continued)

Effectiveness Criteria	Alternative 6	Alternative 7	Alternative 8
Reliability			
o Potential for poor performance or failure of system components (assuming design criteria represent actual field conditions)	Reliability of LFG collection and flaring is same as Alternative 3; power generation equipment requires high maintenance and is less reliable than other components	Reliability of LFG collection and flaring is greater than for all other alternatives because all facilities are new	Reliability of LFG collection and flaring is same as Alternative 3; power generation equipment requires high maintenance and is less reliable than other components. Overall reliability better than Alternative 6 but less than Alternative 7.
o Operational flexibility to address variations between design criteria and actual field conditions	Same as Alternative 3	Greatest flexibility, installation of complete new system is not tied to existing flare facilities, existing header configuration, or well design and location.	Same as Alternative 3

NA = Not Applicable.

[a] Reduction of methane normally released as surface emissions and subsurface migration are based on LFG generation and loss estimates projected for 1990. Normal methane losses in 1990 are defined as those that would occur utilizing existing facilities (e.g., as in Alternatives 1 and 2). Methane loss reductions presented are approximations based on assumptions and theoretical calculations. They are useful for purposes of comparing alternatives but do not reflect actual values.

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LAT3Y/084-4

Table 3
(Continued)

Effectiveness Criteria	Alternative 9	Alternative 10
Protectiveness of Human Health and the Environment		
o Estimated reduction in methane normally released as surface emissions and subsurface migration[a]	Reduction estimated at 1.4 mmscfd (78 percent in methane release) methane per day.	Reduction of estimated release of about 11,500 cubic feet of methane per day
o Surface emissions control - comply with ARARs (less than 50 ppm average; 500 ppm maximum at any point); compliance requirement deferred to the final remedy	Greater than Alternative 5, approximately equal to Alternative 7 once existing wells are replaced. High probability of compliance.	Likely to comply with the requirements
o Subsurface migration control - comply with ARARs (less than 5 percent at the boundary)	Greater than Alternative 5, approximately equal to Alternative 7 once existing wells are replaced. High probability of compliance when integrated with the final cover.	Most likely to comply with the requirements
o Source control - LFG collection at the source	Greater than Alternative 5, approximately equal to Alternative 7 once existing wells are replaced. High probability of compliance	Maximum well coverage
o Resource recovery	None	None
o Odor control	Greater than Alternative 5, approximately equal to Alternative 7 once existing wells are replaced. High probability of compliance	Would cut down odor nuisance with high probability of compliance.
Reliability		
o Potential for poor performance or failure of system components (assuming design criteria represent actual field conditions)	Reliability is high. All facilities other than existing wells will be new. Reliability will be the same as Alternative 7 when new wells are replaced.	Reliability is high and would increase with a new cap
o Operational flexibility to address variations between design criteria and actual field conditions	With the exception of existing well locations, great flexibility, installation of new system no tied to existing header configurations or flare facilities. Easier installation of pile driven and single completion wells improves flexibility	Use of oversize headers allows additional well installation

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LAT3Y/084-5

Table 3
IMPLEMENTABILITY EVALUATION OF ALTERNATIVES

Implementability Criteria	Alternative 0	Alternative 1	Alternative 2
Technical Feasibility			
o Use of proven technology	N/A	Gas extraction wells and gas flaring are currently used.	Gas extraction wells and gas flaring are currently used.
o Ease of installation and time to implement	N/A	N/A	Replacement and improvement of existing systems can be implemented within 1 year of project initiation.
o Short-term construction-related environmental impacts	N/A	N/A	Noise, LFG emissions, odors, and dust during excavation to be controlled.
o Short-term construction-related health risks	N/A	N/A	Potential contact with hazardous wastes. Requires appropriate health and safety procedures.
o Operational problems and considerations	N/A	Header line breakages; inadequate condensate collection; corrosion of equipment; lack of adequate safety and backup systems.	Problems should be reduced by recommended improvements.
Availability of Technology	N/A	N/A	Demonstrated technology in LFG applications. Equipment for gas extraction and flaring system improvements is readily available.
Operations and Maintenance	N/A	Continuation of existing long-term operating, maintenance, and monitoring of LFG facilities and site.	Requires long-term operating, maintenance, and monitoring of LFG facilities and site.
Administrative Feasibility			
o Administration of operating, maintenance, monitoring, and reporting activities	N/A	Continuation of existing operations.	Continuation of existing operations.
o Permitting considerations	N/A	None.	None.

N/A = Not applicable

LAT3Y/085-1

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Table 3
(Continued)

Implementability Criteria	Alternative 3	Alternative 4	Alternative 5
Technical Feasibility			
o Use of proven technology	Gas extraction wells and gas flaring are currently used.	Gas extraction wells and gas flaring are currently used.	Gas extraction wells and gas flaring are currently used.
o Ease of installation and time to implement	Straightforward; less than 2 years estimated for implementation. Well construction on slopes more difficult than perimeter wells.	Straightforward, but more wells installed; less than 2 years estimated for implementation. Well construction on slopes more difficult than perimeter wells.	Straightforward, but more wells installed; less than 2 years estimated for implementation. Well construction on slopes more difficult than perimeter wells.
o Short-term construction-related environmental impacts	Noise, LFG emissions, odors, and dust during drilling/excavation to be controlled.	Noise, LFG emissions, odors, and dust during drilling/excavation to be controlled.	Noise, LFG emissions, odors, and dust during drilling/excavation to be controlled.
o Short-term construction-related health risks	Potential contact with hazardous waste. Requires appropriate health and safety procedures.	Greatest potential for contact with hazardous waste. Requires appropriate health and safety procedures.	Greatest potential for contact with hazardous waste. Requires appropriate health and safety procedures.
o Operational problems and considerations	Problems are minimized by implementation of improvements recommended in Alternative 2.	Problems are minimized by implementation of improvements recommended in Alternative 2.	Problems are minimized by implementation of improvements recommended in Alternative 2.
Availability of Technology	Demonstrated technology in LFG applications. Equipment and supplies for gas extraction well installation and flare system expansion are available.	Demonstrated technology in LFG applications. Equipment and supplies for gas extraction well installation and flare system expansion are available.	Demonstrated technology in LFG applications. Equipment and supplies for gas extraction well installation and flare system expansion are available.
Operations and Maintenance	Requires long-term operating, maintenance, and monitoring of LFG facilities and site. Requires special personnel safety procedures due to potential hazard associated with LFG.	Same as Alternative 3, but larger in scope due to larger system.	Same as Alternatives 3 and 4, but larger in scope due to larger system.
Administrative Feasibility	Alternatives 5 and 6 should include permits required for expanded flare station. Permits for Alternative 3 are incomplete.		

00447

Table 3
(Continued)

Implementability Criteria	Alternative 6	Alternative 7	Alternative 8
Administrative Feasibility			
o Administration of operating, maintenance, monitoring, and reporting activities	Larger scope than Alternatives 1 and 2.	Larger scope than Alternatives 1, 2, 3, and 4.	Larger scope than Alternatives 1, 2, 3, and 4.
o Permitting considerations expanded gas flaring system.	SCAQMD permits required for	Same as Alternative 3.	Sames as Alternative 3.
Technical Feasibility			
o Use of proven technology	Gas extraction wells and gas flaring are currently used at site. Boiler/steam turbine systems are widely employed.	Gas extraction wells and gas flaring are currently used at site.	Gas extraction wells and gas flaring are currently used at site. Boiler/steam turbine systems are widely employed.
o Ease of installation and time to implement	Same difficulty as Alternative 5; less than 2 years estimated for implementation.	Straightforward; more difficult than Alternatives 5 and 6 due to number of wells installed; less than 2 years estimated for implementation.	Straightforward; more difficult than Alternatives 5 and 6 due to number of wells installed; less than 2 years estimated for implementation.
o Short-term construction-related environmental impacts	Noise, LFG emissions, odors, and dust during drilling/excavation to be controlled.	Noise, LFG emissions, odors, and dust during drilling/excavation to be controlled.	Noise, LFG emissions, odors, and dust during drilling/excavation to be controlled
o Short-term construction-related health risks	Potential contact with hazardous waste. Requires appropriate health and safety procedures.	Potential contact with hazardous waste. Requires appropriate health and safety procedures.	Potential contact with hazardous waste. Requires appropriate health and safety procedures.
o Operational problems and considerations	Problems are reduced by implementation of improvements recommended in Alternative 2.	Problems are minimized by replacement of all existing facilities.	Problems are minimized by replacement of all existing facilities.
Availability of Technology	Same as Alternative 5. Boiler/steam turbine systems are readily available process equipment.	Same as Alternative 5.	Same as Alternative 5. Boiler/steam turbine systems are readily available process equipment.
Operations and Maintenance	Same as Alternative 5, but larger in scope.	Same as Alternative 5, but larger in scope.	Same as Alternative 5, but larger in scope.

LAT3Y/085-3

00448

Table 3
(Continued)

Implementability Criteria	Alternative 6	Alternative 7	Alternative 8
Administrative Feasibility			
o Administration of operating, maintenance, monitoring, and reporting activities	Larger scope than Alternative 5.	Same as Alternative 5.	Same as Alternative 6.
o Permitting considerations	Backup flaring systems must meet SCAQMD permitting requirements. Boiler NO_x emissions are minimized by ammonia injection process; emissions can be verified after installation.	Flaring systems must meet SCAQMD permitting requirements.	Backup flaring systems must meet SCAQMD permitting requirements. Boiler NO_x emissions are minimized by ammonia injection process; emissions can be verified after installation.

00449

Table 3
(Continued)

Implementability Criteria	Alternative 9	Alternative 10
Technical Feasibility		
o Use of proven technology	Gas extraction wells and gas flaring are currently used at site	Gas extraction wells and gas flaring are currently used at South Parcel
o Ease of installation and time to implement	Straightforward, less difficult than Alternative 7 due to fewer new well installations and easier installation methods; less than 2 years estimated for implementation	Easier installation methods; estimated less than 1-year time for implementation
o Short-term construction-related environmental impacts	Noise, LFG emissions, odors, and dust during drilling/excavation to be controlled.	Noise, LFG emissions, odors and dust during drilling excavation would be controlled.
o Short-term construction-related health risks	Potential contact with hazardous waste. Requires appropriate health and safety procedures. Pile driven wells reduce potential for hazardous waste contact.	Potential contact with hazardous waste. Requires appropriate health and safety procedures.
o Operational problems and considerations	Problems are minimized by replacement of all existing facilities, excluding functional extraction wells.	Problems will be minimized with proper design of extraction wells.
Availability of Technology	Demonstrated technology in LFG applications. Equipment and supplies for gas extraction well installation and flare system construction are available.	Demonstrated technology. Equipment and materials readily available.
Operations and Maintenance	Requires long-term operation and maintenance, and monitoring of LFG facilities and site. Requires special personnel safety procedures due to potential hazards associated with LFG.	Requires long-term operation and maintenance including monitoring. Requires trained personnel for safety procedures due to potential hazards associated with LFG.
Administrative Feasibility		
o Administration of operating, maintenance, monitoring, and reporting activities	Same as Alternatives 5 and 7	Same as other alternatives
o Permitting considerations	Same as Alternative 3	Same as other alternatives

LAT3Y/085-5

SELECTED REMEDY - ALTERNATIVES 9 AND 10

ALTERNATIVE NO. 9--MODIFIED REPLACEMENT ALTERNATIVE

Although this alternative considers fewer new extraction wells than Alternative No. 7, it is designed to provide approximately the same level of protection by using existing extraction wells. This alternative includes the following major items:

- Installing 58 new perimeter LFG extraction wells, as shown in Figure 5, with placement focused on minimizing offsite LFG migration.
- Installing 48 pile driven wells on the top deck of the landfill with placement focused on maximizing source control of LFG.
- Installing 50 shallow and 12 deep slope wells with placement focused on reducing surface emissions, and controlling intermediate to deep subsurface migration at the perimeter.
- Installing new integrated perimeter and interior LFG headers (abovegrade).
- Including functional existing gas extraction wells and gas monitoring probes.
- Installing 58 multiple completion monitoring wells at the property boundary.
- Installing landfill gas destruction facilities with a capacity of approximately 9,000 cfm, and an automated control station for the gas control system.
- Installing abovegrade condensate sumps to collect condensate from gas headers.
- Installing leachate pumps in gas wells to de-water saturated zones, and installing abovegrade leachate sumps.

The LFG extraction wells proposed in this alternative will be cross-tied such that all gas collected from the landfill can be mixed and sent to a unified gas destruction facility.

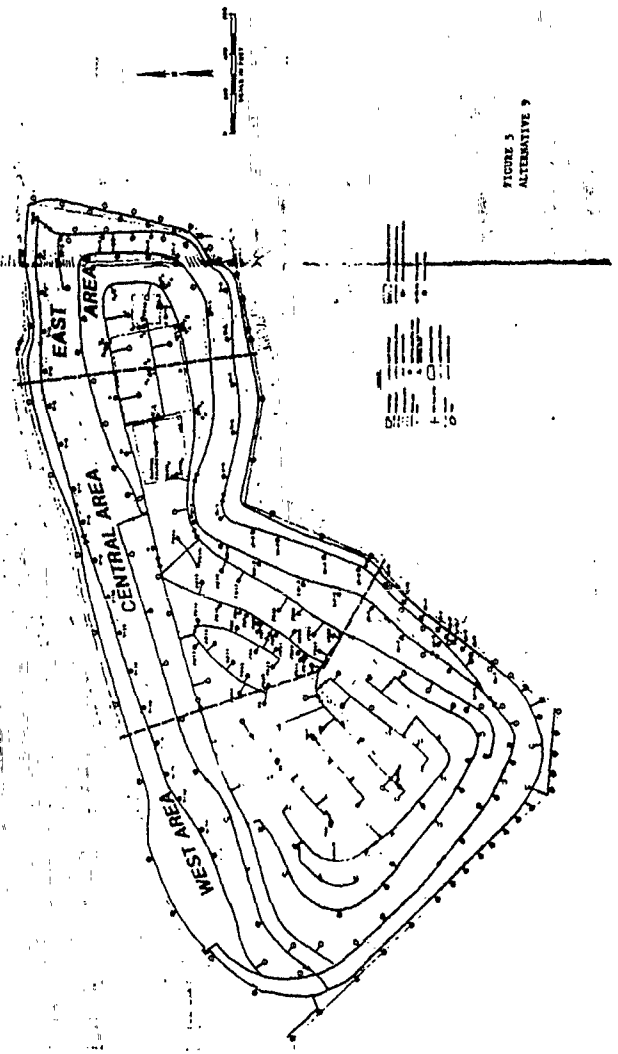


FIGURE 5
ALTERNATIVE 9

Well Construction

Four different types of gas extraction wells have been considered and included in Alternative No. 9 for control of the South Parcel LFG problems. The selection of different types of wells for different locations was based on landfill geometry, refuse characteristics, subsurface geology, and the expected effectiveness in controlling LFG at specific locations identified earlier in the OUFS report.

Initially, emphasis will be placed on perimeter extraction wells along the west and east ends of the landfill, where the most severe migration problems have been identified. Perimeter gas extraction wells at these locations will be drilled to depths equal the elevations of deepest refuse within 1,000 feet from the site boundary. Additional perimeter extraction wells will be sequenced according to a phased approach discussed under "Phasing of Alternatives." Perimeter extraction wells will be constructed as multiple completion wells with three or more well casings and screens at three or more depth intervals.

Wells on the slopes, particularly on the benches, will be drilled to a depth of between 60 to 90 feet by a drilling and/or driving method. These wells will be constructed with a single well casing with perforations and gravel packing at the bottom half of the well. In addition, to assist in perimeter migration control, about 12 deep single-casing wells are planned to be installed at the first bench. These wells would be installed along the west and east ends of the landfill. Along these boundaries, it is expected that approximately every third slope well on the first bench will be a deep well. The depth of such wells would be approximately 175 feet. Specific design of these deep wells would depend on conditions encountered during drilling.

Additional gas extraction wells will be placed on the top deck. These wells will be pile driven. The depth of these wells will be extended below the elevation of 450 feet throughout the landfill. At the western end of the landfill, depths may vary due to the suspected liquid/leachate problem.

Expected Longevity of Gas Extraction Wells

The expected longevity of each type of well discussed above depends on various landfill factors, quality of construction methods, and long-term operation and maintenance procedures.

Wells constructed within the refuse will experience wear and tear from the landfill settlement, corrosion and plugging of wells from landfill liquid/leachate, and from particulates/ sediment deposits clogging up well screens. Based on experience from the existing landfill gas extraction systems in Southern California, it is estimated that the wells within refuse will have an average life of 7.5 years. This estimate may be further revised based on actual drilling and construction experience encountered at site-specific locations.

Wells drilled within the native soil, specifically at the landfill perimeter, are expected to last longer. Average life expectancy of these wells is assumed to be 15 years. This expected longevity of the perimeter wells is based on information made available to EPA by the L.A. County Sanitation District.

As existing wells utilized by the South Parcel Alternative No. 9 require replacement, the location and design of the replacement will be optimized to improve performance.

The capital cost of Alternative 9 is estimated at approximately $27 million, and annual operations and maintenance is estimated at $2.3 million as shown in Table 4 (estimates are -30% to +50%).

ALTERNATIVE NO. 10--NORTH PARCEL SYSTEM

EPA's remedial investigation at the North Parcel found LFG within the landfilled portion of the site. This landfilled area contains approximately half a million cubic yards of refuse, and it is estimated that some gas will be produced for more than 30 years due to the continued anaerobic degradation of the refuse.

Based on the volume and depth of refuse, a conceptual layout of six gas extraction wells to control gas migration/emission from the North Parcel was prepared. (Figure 6 represents the schematic layout of the extraction system.) This extraction system will control existing and potential migration of gases from the property boundary and mitigate surface emissions from the landfilled portion of the North Parcel. This component includes the following major items:

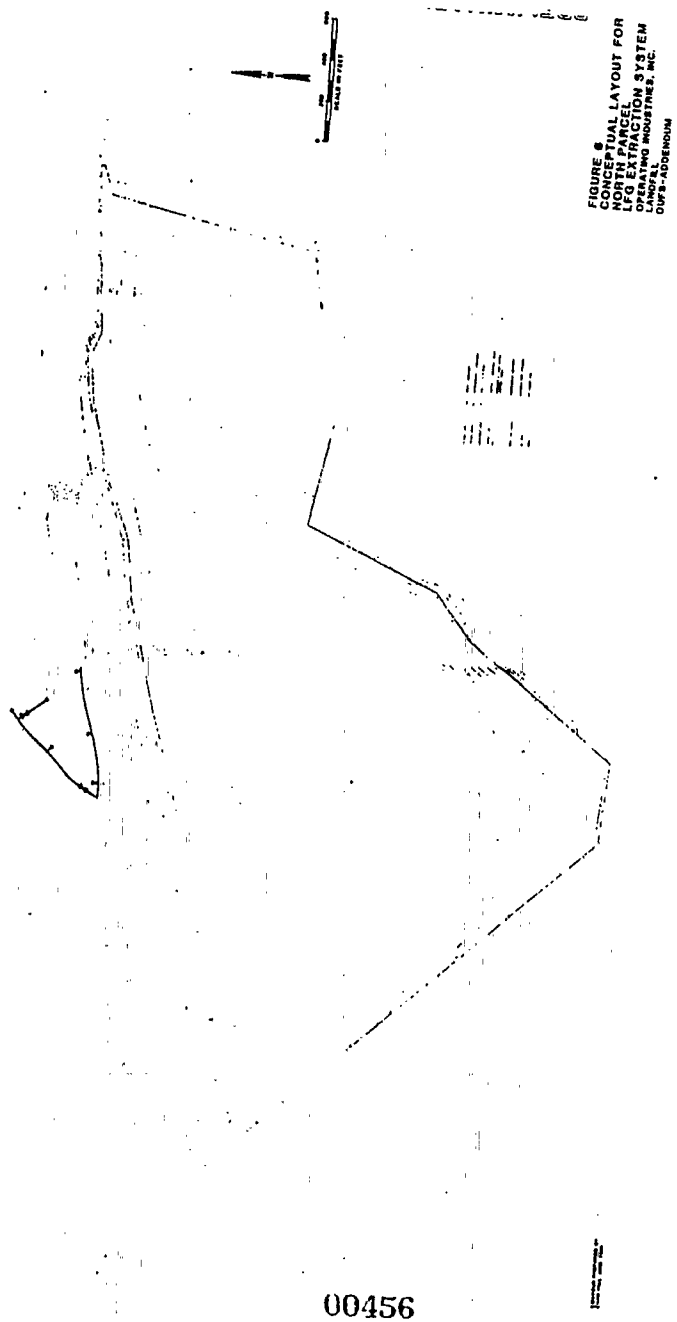
- Installing 6 single completion extraction wells to the depth of refuse (up to 50 feet).
- Installing 1,500 feet of header lines.

Table 4
COST SUMMARY OF ALTERNATIVE NO. 9
MODIFIED REPLACEMENT ALTERNATIVE WITH LFG FLARING

Cost Items	Short-Term Capital Costs ($1,000's)
LFG Gas Extraction System Improvements	
New Perimeter	$8,000
New Interior	7,300
LFG Destruction System	
Type-Flare	900
Ancillary Items	
Protective Equipment	686
Decontamination and Disposal	28
Startup	90
Health and Safety	1,134
Construction-Related Equipment	858
Bid Contingency (5%)	949
Scope Contingency (10%)	1,899
Permitting and Legal (5%)	1,092
Services During Construction (8%)	1,747
Engineering Design (9%)	2,221
TOTAL (Rounded)	$26,900

Cost Item	Long-Term O&M Costs ($1,000's)
New LFG System	$2,280
TOTAL (Rounded)	$2,300

Note: Order-of-magnitude level estimates (expected accuracy range of -30 to +50 percent) at annual operation and maintenance costs.



LFG collected by this component will be fed to the flare system included in Alternative 9. The expected quantity of gas to be collected by the extraction system under this alternative may vary between 9,000 and 14,000 cubic feet of methane per day. The capital cost of this alternative is estimated at $400,000, and annual operations and maintenance is estimated at $38,000 as shown in Table 5 (estimates are -30% to +50%).

EMISSION ESTIMATES

The landfill gas disposal technologies used by the gas control alternatives all involve thermal destruction of the gas. In order to estimate potential emissions from the gas destruction technologies, a review of South Coast Air Quality Management District (SCAQMD) source test data was performed. This data was from actual emissions tests performed by SCAQMD on similar technologies (i.e., flares, boilers, etc.) used at other landfills in southern California. Estimates of emissions per million Btus of LFG destroyed by each technology were developed from this data base.

In addition, potential emissions from flares and various resource technologies were calculated using the maximum gas extraction rate of approximately 136 million Btus per hour. Flare and internal combustion engine emissions were estimated using the maximum emission factor, since the mean emissions factor developed from many nonhazardous waste landfills was not considered representative of the situation at OII.

All of the LFG destruction technologies are estimated to exceed SCAQMD's new source review requirements for carbon monoxide (550 pounds per day) and nitrogen oxides (100 pounds per day) at the maximum gas extraction rates using the maximum emission factor. Therefore, EPA may be required to either establish sufficient additional controls on the proposed landfill gas flares to achieve these requirements, or consider alternative gas incinerator designs which would allow further emissions controls. This change constitutes a minor modification of the proposed remedy. Thermal destruction will still be utilized and this modification will not significantly affect the cost of the selected remedy. Additional control equipment for flare emissions could increase the cost of the flare facility by $1 million. Use of alternative incinerator designs may increase the remedy costs by $1 to $2 million. Since the cost of the proposed remedy was previously estimated at $73 million, with an accuracy range of -30% to +50%, the cost of the remedy is not significantly affected.

Table 5
COST SUMMARY OF ALTERNATIVE NO. 10
NORTH PARCEL SYSTEM

Cost Items	Short-Term Capital Costs ($1,000's)
LFG Gas Extraction System Improvements	
New Interior	$ 200
Ancillary Items	
Protective Equipment	30
Decontamination and Disposal	3
Startup	3
Health and Safety	2
Construction-Related Equipment	14
Bid Contingency (5%)	13
Scope Contingency (10%)	26
Permitting and Legal (5%)	15
Services During Construction (8%)	24
Engineering Design (9%)	30
TOTAL (Rounded)	$400

Cost Item	Long-Term O&M Costs ($1,000's)
New LFG System	$38
TOTAL (Rounded)	38

Note: Order-of-magnitude level estimates (expected accuracy range of -30 to +50 percent) at annual operation and maintenance costs.

If the emissions requirement for landfill gas destruction cannot practicably be achieved, EPA will invoke the waiver from these requirements under SARA, on the grounds that compliance with these requirements would cause more damage to human health and environment (by preventing collection and destruction of landfill gas at OII) than waiving them.

Initial EPA screening results indicate that exposure to the highest concentrations of pollutants would be expected within approximately 550 yards (one-half kilometer) from the site. Based on this initial screening, a location on the North Parcel farther away from nearby residents is considered to be the most suitable location for the LFG disposal equipment.

Additional modeling will be performed to account for the effects of local topography and meteorology on emissions from the LFG destruction equipment. Detailed modeling will be performed during the design phase to optimize disposal equipment placement. Source testing will be performed once a remedy is implemented in order to collect actual data on emissions and destruction efficiencies.

PHASING OF ALTERNATIVES

It is anticipated that the selected gas control remedy for the OII site will require a phased implementation in order to optimize protectiveness, implementability, cost-effectiveness, and consistency with the final remedy. A conceptual phased implementation approach is described below. Further consideration of the implementation strategy will be required during design and construction of the remedy, and may require modification of this conceptual approach.

PHASE 1A

- The purpose of Phase 1A is to implement perimeter migration control in the areas of highest priority (along the west, south and east boundaries of the South Parcel) to reduce the potential for explosive levels of methane gas to accumulate in nearby residential neighborhoods. This would be the initial phase of perimeter control in these areas, to be complemented by additional well installations, if necessary during Phase 2.

- The perimeter control system will be installed in areas accessible around the boundary of the site (this excludes most of the boundary along the Pomona freeway where no access

road exists). The perimeter system will be designed and installed to be compatible with the final cover for the South Parcel.

- The perimeter system includes multiple completion gas wells (upper and lower screened intervals) and multi-depth gas monitoring probe installations. Extraction wells will be installed in the air dike area. Any potential benefits of using the air dike system in conjunction with the extraction wells will be explored.

- The flare station site will be prepared and a foundation constructed which will be adequate to handle the anticipated equipment needs of the entire gas remedy. Flares and hardware components to provide adequate capacity for the initial phase will be installed.

- Any existing systems included in the selected remedy would also be included in the implementation of Phase 1A.

PHASE 1B

- The purpose of this phase will be to increase the effectiveness of source control at the site. This increased source control may improve perimeter migration control, particularly in the deeper areas of gas migration, and reduce surface emissions.

- Additional interior source control wells will be installed on the top deck of the South Parcel. Installation will be designed to be compatible with the final cover for the South Parcel.

PHASE 2

- The purpose of this phase will be to improve gas control in the priority areas of the landfill perimeter. Cost-effectiveness will be optimized by limiting the number of wells installed during the initial phase, and following up with installation of additional wells only where required to achieve gas migration control during Phase 2.

- Installation of probes and wells in Phases 1A and 1B will also be phased. Additional gas wells and gas probes will be installed based on an evaluation of the effectiveness of the initial gas wells. These additional wells will be installed in areas where gas migration has not been controlled, and

where it is considered to be prudent and consistent with the final remedy to install these wells. Additional flares and hardware will be installed as necessary.

PHASE 3

- The purpose of this phase will be to increase control of areas of high surface emissions prior to placement of the final cover in order to reduce the potential for exposure to the LFG in the ambient air.

- A limited number of shallow slope wells will be installed in areas of particularly high surface emissions. These wells will be designed to be consistent with the final remedy for the site. A limited number of wells will be installed during this phase, since application of final cover should increase the effectiveness of individual wells. Additional flares and hardware will be installed at the flare station as necessary.

PHASE 4

- As the final cover (selected in a future ROD) is installed at the site, it will be integrated with the existing control systems. The perimeter wells will be installed along the boundary with the Pomona Freeway. Additional perimeter wells, slope wells (shallow and, if necessary, deep), and top deck wells will be installed to achieve the CWMB requirement of less than 5 percent methane at the perimeter, and the SCAQMD 1150.1 surface emissions requirements of less than 50 ppm total organic compounds averaged over the surface and less than 500 ppm methane at any point on the surface.

PHASE X

- Expand the systems if necessary to control toxic and carcinogenic compounds in the gas to health based levels. The purpose of this phase will be to provide additional LFG control in areas where levels of hazardous LFG constituents are still being emitted at concentrations that could cause significant impacts to the public health.

PHASE Y

- Install Alternative 10 on the north parcel, once it is determined that the north parcel waste mass will remain in place. This phase will allow integration of the gas control remedy for the north parcel with the south parcel control system.

The selected remedies described in this section are conceptual. Changes in the actual design and phasing approach may occur during design and construction. In addition, although analysis contained in the Feasibility Study and the Administrative Record indicated that resource recovery options were not expected to be cost-effective, EPA may decide to implement a resource recovery component if, in the future, it is determined to be cost-effective,and consistent with EPA's other decision making criteria.

STATUTORY DETERMINATIONS

Protection of Human Health and the Environment

The selected remedy will eliminate the risk of fire or explosion due to landfill gas accumulating offsite by controlling methane concentrations to less than 5 percent at the landfill boundary. Surface emissions and subsurface landfill gas migration will be reduced as will the potential for exposure to toxic and/or carcinogenic compounds contained in the landfill gas at OII. The landfill gas destruction facilities will be located and designed to provide adequate protection of human health and the environment from emissions which could be expected to occur. Monitoring of the selected remedy, once operational, will occur as part of operations and maintenance, the overall RI/FS, and/or 5-year remedy reviews, to ensure adequate protection of human health and environment.

Short-term risks associated with the remedy include risks posed by well installation, and operation and maintenance of the system, with the potential for exposure of workers to explosive levels of methane and high levels of toxic and/or carcinogenic compounds in the landfill gas. Landfill gas emissions from drilling activities should dissipate rapidly and are not expected to cause unacceptable short-term risks offsite. Health and safety activities will be conducted during construction, and operations and maintenance activities to ensure adequate protection of human health and environment. Other short-term risks during construction should be similar to those posed by most

heavy construction projects. Construction activities will be conducted in accordance with applicable health and safety requirements.

Gas wells and probes will be designed to reduce the potential for cross-contamination of groundwater during construction and operation. Collection of leachate from saturated zones encountered by gas wells, and condensate collection from gas pipelines should reduce potential releases of contaminated liquids from the site.

The potential for landfill gas to contaminate groundwater will also be reduced by the increased gas collection afforded by the selected remedy.

No unacceptable short-term risks or cross-media impacts will be caused by implementation of the remedy.

Attainment of ARARs

The selected remedy will be designed to attain the following applicable regulations unless otherwise noted. ARARs were identified from Federal, as well as more stringent promulgated State environmental and public health laws.

Federal regulations apply to the leachate and condensate that will be collected from the gas control system. These liquids will be treated to the POTW pretreatment requirements in compliance with the Clean Water Act at an onsite treatment facility constructed under EPA's Leachate Management Remedial Action. Prior to the treatment plant construction these liquids will be transported to an offsite treatment facility in compliance with the Department of Transportation (DOT) Rules for the Transportation of Hazardous Materials, and in compliance with EPA's offsite disposal policy.

The State of California has the following ARARs which are enforced by various agencies:

1. Hazardous Waste Control Law (Administered by CA DOHS under Title 22, Division 4, Chapter 30) - The hazardous waste management requirements of this law are applicable and will be attained. The closure and post closure requirements will not be attained by this operable unit. A waiver is being invoked for this operable unit since closure and post closure requirements will be addressed by subsequent remedial actions at the site.

2. Solid Waste Management and Resource Recovery Act of 1972 (Administered by the California Waste Management Board and Los Angeles DOHS under Title 14, Division 7) - Requirements for monitoring and reporting for landfill gas migration, and migration control under Title 14, Section 17705 - Gas Control are applicable. A waiver is being invoked for the Title 14 closure and post closure requirements since they will be addressed by subsequent remedial actions at the site.

3. California Air Pollution Control Regulations - Ambient Air Quality Standards for Hazardous Substances (Administered by California Air Resources Board under Title 17, Section 70200.5) - Applicable standard for ambient concentrations of vinyl chloride not to exceed 10 ppb over a 24-hour period.

4. South Coast Air Quality Management District Rules and Regulations (The California Air Resources Board delegates state authority to SCAQMD to enforce air quality in the local basin.)

Regulation IV - Prohibitory Rules

Rule 401 - Visible Emissions - Limits visible emissions from any point source to Ringleman No. 1 or 20 percent opacity for 3 minutes in any hour.

Rule 402 - Nuisance - This rule prohibits the discharge of any material (including odorous compounds) that cause injury, detriment, nuisance, or annoyance to the public, businesses, or property or endangers human health, comfort, repose, or safety. The selected remedy will require application of the final cover in order to adequately control odors at the site. Therefore a waiver is invoked for this ARAR since it will be addressed in subsequent remedial actions.

Rule 403 - Fugitive Dust - This rule limits onsite activities such that concentrations of fugitive dust at the property line shall not be visible and the downwind particulate concentrations shall not exceed 100 micrograms per cubic meter above upwind concentrations.

Rule 404 - Particulate Matter - This rule limits particulate emissions to a range of 0.010 to 0.196 grain per standard cubic foot depending on the volume of total stack gases.

Rule 407 - Liquid and Gaseous Air Contaminants - This rule limits carbon monoxide emissions to 2,000 ppm and sulfur dioxide emissions to 500 ppm. The sulfur dioxide limit does not apply if the fuel meets the provisions of Rule 431.1.

Rule 409 - Combustion Contaminants - This rule limits the emission of combustion contaminants to 0.10 grain per standard cubic foot at 12 percent carbon dioxide.

Rule 431.1 - Sulfur Content of Gaseous Fuels - This rule limits burning of fuel gas that has greater than 800 ppm hydrogen sulfide unless stack gases are cleaned to below the equivalent concentration.

Regulation XI - Source Specific Standards

Rule 1150.1 - Control of Gaseous Emissions from Active Landfills - This rule requires installation of a landfill gas control system and combustion, treatment and sale, or other equivalent method of landfill gas disposal. The rule requires perimeter landfill gas monitoring probes to evaluate offsite migration. It also limits concentrations of total organic compounds to 50 ppm over a certain area of the landfill, and limits maximum concentration of organic compounds (measured as methane) to 500 ppm at any point on the surface of the landfill. A final cover will be required to comply with this Rule and, therefore, a waiver is invoked for this operable unit because subsequent remedial actions will attain this ARAR.

Regulation XIII - New Source Review

Regulation 13 requires that whenever a permit is required for a new piece of equipment or modification to an existing piece of equipment at a facility or a site, that emissions be controlled using best available control technology (BACT) and that emissions be offset by other emissions reductions at the same facility or other nearby facilities. BACT is a series of emissions limits, process, and equipment specific requirements [see definition at 1301(e)]. The SIP is reviewed by the State Air Resources Board and the EPA for compliance under the Federal Clean Air Act. The net allowable cumulative increase in emissions are detailed in SCAQMD Rule 1303 and 1306.

Under SCAQMD Rule 1304(b)(2), there is an exemption from the offset requirements at 1303(b)(2)(C) for a landfill gas control or processing facility. The exemption waives the requirement to find enough criteria emissions offsets if the owner or applicant for the permit has: (1) provided all required offsets available by modifying sources owned; or (2) demonstrated to the satisfaction of the SCAQMD Executive Officer that the owner or applicant neither owns, nor operates other facilities within the district that could be modified to provide such offsets.

The State Implementation Plan (SIP) is reviewed by the State Air Resources Board and the EPA for compliance under the Federal Clean Air Act. However, EPA has not approved the exemption from the offset requirement, nor is such an exemption approvable as part of the SIP (40 CFR 51.165). Therefore, the offset requirement as contained in the SIP applies.

Moreover, on August 31, 1988, a moratorium on construction or modification of major stationary sources of carbon monoxide and volatile organic compounds went into effect (53 FR 1780; 40 CFR 52.24). A major source is defined as one which emits or has the potential to emit in excess of 100 tons per year of a specified pollutant. Flares may be considered to have the potential to emit in excess of 100 tons of CO per year.

Additional ARARs for Resource Recovery Equipment

1. SCAQMD Regulation IV - Prohibitory Rules

Rule 474 - Fuel-Burning Equipment Oxides of Nitrogen - This rule limits the concentration of oxides of nitrogen to a range of 125 to 300 ppm for gaseous fuels depending on maximum gross heat input.

Rule 476 - This rule applies to boilers larger than 50 million BTU per hour. Oxides of nitrogen may not exceed 125 ppm, combustion contaminants may not exceed 11 pounds per hour and 0.01 grains per standard cubic foot.

Future ARARs

Because of the failure of the South Coast Air Basin to attain the ozone and carbon monoxide standard by the statutory deadline, EPA has been required by the courts to promulgate a Federal Implementation Plan (FIP) which would expeditiously achieve those standards. Since EPA has not yet proposed a FIP, no FIP requirements apply to the OII gas control remedial action at the present time. However, EPA may promulgate a final FIP within one year. The FIP will likely contain additional stringent requirements for new and existing sources. Some of these requirements may apply to the OII gas control remedial action. Also, such requirements may constitute ARARs at the time of the 5-year review, and may necessitate further controls.

Cost-Effectiveness

The selected remedy affords overall effectiveness proportional to its cost such that the remedy represents a reasonable value for the money. When the relationship between cost and overall effectiveness of the selected remedy is viewed in light of the relationship between cost and overall effectiveness afforded by the other alternatives, the selected remedy appears to be cost-effective. The selected remedy provides protection of public health and environment that exceeds that of Alternatives 0 through 4, and is equivalent to the protection offered by Alternatives 5 through 8 (when integrated with Alternative 10). The two resource recovery alternatives (6 and 8) were found not to be cost-effective. The benefit to cost ratios for these two alternatives were less than one, indicating that the net costs of implementation and operation and maintenance would be increased rather than reduced by these alternatives. The 30 year present worth costs of Alternatives 5 and 7 (combined with Alternative 10 to provide similar degrees of protection) are estimated at $91 million and $97 million respectively compared to $73 million for the selected remedy. The estimated present worth cost of the selected remedy is equivalent to the estimated present worth cost of Alternative 4 combined with Alternative 10, which provides less control of subsurface gas migration and surface emissions (with the potential for explosive levels of landfill gas to continue migrating offsite) than the selected remedy.

Utilization of Permanent Solutions and Alternative Treatment (or Resource Recovery) Technologies to the Maximum Extent Practicable

The selected remedy utilizes permanent solutions and treatment or resource recovery technologies to the maximum extent practicable. The landfill gas which is collected by the selected remedy will be incinerated in flares. The flares or other gas incinerators represent a permanent solution for landfill gas destruction because the methane is burned and over 99 percent of the hazardous constituents in the gas stream are destroyed. Most of the remaining emissions from the flares are susceptible to ultraviolet degradation.

Several resource recovery options were evaluated in the Feasibility Study, however, it was determined not to be practicable to implement resource recovery technologies at this time. Resource recovery was determined not to be practicable due to the local utility company's (Southern California Edison) electrical capacity surplus, and the low anticipated electrical buy-back rates during the life of a resource recovery project. Other resource recovery technologies which did not involve electrical generation were also evaluated in the FS but were found not to be practicable due to high cost, technical feasibility, market considerations, etc.

If, in the future, the situation changes and resource recovery becomes a viable option at the site, the EPA will reconsider implementing a resource recovery component.

Preference for Treatment as a Principal Element

The selected remedy satisfies the preference for treatment to address principal threats posed by the site (within the scope of the operable unit). It is estimated that 90 percent of the methane gas produced at the site (as well as the associated toxic and carcinogenic compounds contained in the gas stream) will be collected by the selected remedy. This represents a 78 percent reduction in the volume of methane gas currently escaping from the site. The gas will be incinerated using landfill gas flares or other incinerators which have a destruction efficiency of over 99 percent for most of the hazardous compounds in the landfill gas. In addition, leachate and condensate (hazardous liquids) collected by the gas control system will be treated under EPA's Leachate Management Remedial Action. Therefore, the selected remedy will reduce the toxicity, mobility, and volume of the landfill gas, leachate, and condensate through the use of extraction, collection, and treatment.

Additional information concerning EPA's remedy selection criteria is included in the Summary of Comparative Analysis of Alternatives Section of this ROD, and in the OUFS, and the Administrative Record.

AMENDMENT TO DECISION SUMMARY

OPERATING INDUSTRIES, INC.
GAS MIGRATION CONTROL OPERABLE UNIT
RECORD OF DECISION

SCOPE AND ROLE OF OPERABLE UNIT

The Gas Migration Control Operable Unit Record of Decision (hereinafter referred to as the "original gas ROD") at the Operating Industries, Inc. (OII) Superfund site in Monterey Park, California, is being amended to include the design and construction of landfill cover. EPA signed the original gas ROD for this operable unit on September 30, 1988. A copy of the original gas ROD is attached. EPA is addressing the problem of landfill gas (LFG) as an operable unit to expedite the LFG and cover remedial action prior to the selection and implementation of the overall final remedial action for the site.

Integration of the gas control remedy with landfill cover is preferred due to technical and economic advantages resulting from concurrent design and construction, and because an integrated approach will provide for protection of public health and the environment in a shorter time period. Landfill cover is required to: (1) reduce gaseous surface emissions and associated odor; (2) minimize oxygen intrusion into the refuse; (3) reduce surface water infiltration and the subsequent formation of leachate; (4) minimize slope erosion; and (5) improve site aesthetics.

The amended remedy retains the primary components of the original gas ROD; however, the addition of a landfill cover may affect certain elements of the design. For example, it is possible that a different number of wells than that specified in the original gas ROD will be necessary to control landfill gas. Similarly, factors such as well spacing, depth and type will be impacted by the addition of cover and will be reevaluated at the time of design.

The original gas ROD states that the decision to place landfill cover was deferred due to a lack of site-specific knowledge. Additional information about the existing landfill cover and refuse characteristics is now available as a result of the ongoing Remedial Investigation and EPA's experience from operation and maintenance of the landfill systems over the past three years (as part of the Site Control and Monitoring operable unit remedial action).

The addition of landfill cover is an amendment to the remedy selected for the third operable unit, Gas Migration Control, at the OII site. Two previous RODs for Site Control and Monitoring and Leachate Management were signed on July 31, 1987 and November 16, 1987, respectively. The ongoing Remedial Investigation

Feasibility Study (RI/FS) for the overall site remedy is currently scheduled for completion in 1993.

SITE DESCRIPTION

A site description is included in the original gas ROD. The following additional information is pertinent to the selection of landfill cover and its design.

More than 50 years of continuous rainfall data exist from two Los Angeles County Flood Control District (LACFCD) weather stations near the site. The average annual rainfall is approximately 16 inches, with a maximum annual rainfall of approximately 37 inches in 1982-3. Approximately 90 percent of the annual rainfall occurs during the 6-month period of November through April. The estimated probable maximum precipitation (PMP) is estimated to be about 21 inches for a 24-hour storm and 35 inches for a 72-hour storm (Bureau of Reclamation, 1974).

EPA estimates that the OII landfill settlement rates ranged from 3 to more than 4 feet per year between 1974 and 1983. Settlement rates observed from December 1987 to December 1988 were slightly greater than 2 feet per year. Additionally, the upper 10 to 30 feet of existing cover and refuse appear to be undergoing downslope creep at a rate of 2 to 9 inches per year. Geotechnical monitoring using inclinometers, piezometers, surface monuments, and seismic monitoring stations at various locations around the landfill provides additional information regarding the static and dynamic properties of the refuse prism and existing cover.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

The original gas ROD contains a chronology of site enforcement activities through 1988. EPA has undertaken the following enforcement activities since September 1988:

May 1989	A Partial Consent Decree (CD) between the United States, the State of California, and approximately 120 Potentially Responsible Parties (PRPs) was entered in the District Court for the Central District of California, United States, et al v. Chevron Chemical, et al. The Partial Consent Decree resolved claims for some State and Federal past costs, EPA oversight costs, and the implementation of the first two operable units, Site Control and Monitoring and Leachate Management.
July 1989	EPA sent General Notice letters to approximately 91 additional PRPs representing an additional five percent by volume of the

manifested liquid wastes.

The generators noticed to date represent approximately 85% by volume of the manifested liquid waste.

March 1990 EPA extended an offer to the 91 PRPs noticed in July 1989 and to previous nonsettlors for settlement of the same issues as the first CD (past costs to June 1, 1988, liability for the first two operable units, and EPA oversight cost for the two OUs). The offer closed August 3, 1990. The settlement will result in a Second Partial Consent Decree.

COMMUNITY PARTICIPATION

Pursuant to the requirements for public participation set forth in Sections 113(k)(2)(B)(i-v) and 117 of CERCLA, EPA conducted the following activities for the ROD amendment:

- EPA mailed the amended Proposed Plan (dated December 1989), to approximately 1600 interested parties. The amended Proposed Plan presented the preferred alternative of addition of landfill cover to the previously selected gas control remedy.

- A notice of the release and mailing of the Proposed Plan, the time and place of the public meeting, and the dates for the public comment period was published in the Los Angeles Times, San Gabriel edition, on December 15, 1989.

- The public comment period opened on December 11, 1989 and closed on January 12, 1990. Documents from the Administrative Record were placed in the site information repositories for public review during the comment period.

- On January 4, 1990, EPA held a public meeting at a high school near the site to discuss the alternatives evaluated, to present the amended preferred alternative, and to provide an opportunity for public comment. During this meeting EPA solicited written and verbal comments and provided responses to the comments. A transcript of the public meeting, including comments and responses, is part of the Responsiveness Summary for the ROD Amendment.

- EPA received two sets of written comments during the public comment period and addresses these comments in the attached Responsiveness Summary for the ROD

Amendment.

SUMMARY OF SITE CHARACTERISTICS

A summary of the site characteristics relating to the landfill gas control system is included in the original gas ROD. An additional discussion of site characteristics relating to landfill cover is presented below.

The OII landfill is divided by the Pomona Freeway into two areas, a south parcel and a north parcel. The south parcel is approximately 145 acres in size and is characterized by 43 acres of relatively flat top deck and 102 acres of sloped areas. The slopes have two to three intermediate bench roads, 10 to 12 feet wide, to allow access and slope maintenance. Total slope heights vary from 100 to 200 feet with average slope angles ranging from less than 4H:1V (Horizontal:Vertical) to as steep as 1.5H:1V. Locally, slopes do exceed 1.5H:1V in steepness. The majority of the 145-acre south parcel was used for waste disposal whereas approximately 15 acres of the western area of the north parcel were used for waste disposal.

The 145-acre south parcel of the landfill is bounded by the Pomona Freeway to the north, business and residential areas to the west and south, and an oil field to the east. The majority of the perimeter of the landfill abuts the freeway or residential areas which severely limits any expansion of the landfill boundaries to decrease the steepness of the slopes.

The maximum vertical thickness of the landfill on the south parcel is approximately 330 feet. The top of the landfill ranges from 70 to 225 feet above the adjacent ground surface with the elevation of the top deck averaging approximately 620 to 640 feet above mean sea level (msl). The lowest elevation of the bottom of the landfill is estimated to be approximately 300 feet above msl.

The landfill is currently covered by a soil layer of variable thickness which ranges from nearly 0 feet to 25 feet. The cover tends to be thicker on the top deck and thinner on the slopes and consists of varying amounts of clay, sand, and silt. The engineering characteristics of the cover are highly variable and, generally, are not adequate for landfill closure. Surface cracking, depressions, and evidence of erosion exist at many locations around the landfill. The primary deficiencies of the existing cover are that it does not: (1) prevent gaseous surface emissions; (2) prevent oxygen intrusion into the refuse; (3) limit infiltration of surface water; or (4) provide for adequate erosion control and stormwater management.

Landfill gas that is not adequately controlled by the gas control system or by the landfill cover currently in place is

released by venting through the landfill cover, resulting in unacceptable surface emissions of landfill gas on- and off-site. Excessive surface emissions have been documented by grid survey data from the landfill surface. On-site areas with the highest levels of surface emissions have historically been on the slopes. The slopes have a thinner existing cover and have experienced significant erosion which further increases the amount of gaseous surface emissions. As the landfill refuse settles, the resulting cracks and fissures also act as a preferential pathway for surface emissions.

Historically, subsurface fires have been a recurring problem at the OII landfill. These fires have resulted from oxygen intrusion in combination with the high temperatures created during anaerobic decomposition of the refuse. The negative pressure (vacuum) necessary for the operation of gas extraction wells draws oxygen through the surface of the landfill, providing a source of oxygen within the refuse. Another major source of oxygen is supplied by an air dike injection system on the western border of the landfill, designed by OII to inject a curtain of compressed air into the ground to create a barrier to subsurface LFG migration.

Evidence of subsurface fires (e.g., elevated gas well temperatures) has existed for several years in some areas of the landfill. These fires can produce voids within the landfill that, upon collapse, may result in surface settlement depressions and the release of landfill gas. The reduction of oxygen intrusion requires the replacement of the air dike system with gas extraction wells and/or a decrease of the gas extraction system vacuum. Merely decreasing the system vacuum, given the current inadequacy of the existing gas extraction system, would result in a significant and unacceptable increase in off-site gas migration.

Oxygen intrusion into the refuse has also lowered the percent combustibles of the gas stream in the landfill gas extraction system, which could subsequently reduce the destruction efficiency during incineration. In existing areas of thin cover, the vacuum system applied to the gas extraction wells has been decreased or shut off due to elevated temperatures or poor gas quality, thus reducing the radius of influence of the well and the volume of gas extracted. The placement of landfill cover facilitates the extraction of high-quality LFG and will allow the system to operate with maximum efficiency.

The existing landfill cover is highly variable in its thickness and permeability and in its ability to prevent surface water infiltration. The lack of adequate cover allows surface water from rainfall and site irrigation to percolate through the thin cover, cracks, or fissures into the refuse prism. Left uncontrolled, the liquids percolate through the refuse and

increase the amount of leachate in the landfill.

In addition to providing a physical barrier for gaseous surface emissions, oxygen intrusion, and surface water infiltration, the landfill cover forms the physical base for the stormwater management and erosion control systems at the landfill. The site drainage system currently consists of concrete-lined or clay-lined ditches along the toe of the intermediate slopes and on the top deck which drain to asphalt inlet and drop structures. Surface drainage is conveyed off-site in approximately ten locations around the south parcel. Substantial amounts of surface water are conveyed along the shoulder of access roads. Poor control of surface runoff has resulted in significant erosion of cover soil on slopes and access roads.

The existing drainage system is inadequate to prevent slope erosion and off-site sediment transport. An hydrologic analysis is being conducted as part of the Site Control and Monitoring (SCM) remedial action to assist in the design of a comprehensive stormwater management system. Improvements to the site drainage system conducted as part of SCM will be incorporated into the design and construction of the stormwater management system component of landfill cover.

SUMMARY OF SITE RISKS

A discussion of site risks is included in the original gas ROD. The Preliminary Risk Assessment for this operable unit demonstrated the need for landfill gas migration control and landfill cover to stabilize the site, to minimize further contaminant migration, and to quickly achieve significant risk reduction. The Preliminary Risk Assessment is found in Volume 1 Text, Public Comment Draft, Operable Unit Feasibility Study for Landfill Gas Migration Control, at page 4-10.

DESCRIPTION OF ALTERNATIVES

This amendment presents an additional alternative, Alternative 11, for evaluation and comparison with Alternatives 1 through 10 presented in the original gas ROD. The addition of this alternative is the result of public comment on the original gas ROD and additional site-specific knowledge now available to EPA as a result of its presence on-site performing a RI and conducting SCM for the last three years.

Alternative 11 consists of the landfill gas control remedy previously selected in the original gas ROD with the addition of design and construction of landfill cover. The Operable Unit Feasibility Study for Landfill Gas Migration Control, in conjunction with the "Technical Memorandum of Cost Estimates for Landfill Cover Concepts RI/FS," provides a thorough discussion of

the integrated gas control and landfill cover alternative. A summary of the components for Alternative 11 is included below.

TREATMENT COMPONENTS

Alternative 11 includes the treatment components specified for Alternatives 9 and 10 which were presented in the original gas ROD. Alternative 11 provides for the extraction and thermal destruction of an estimated 90 percent of the landfill gas produced by the landfill (original gas ROD, page 37). This represents a 78 percent reduction in the volume of methane gas currently being released from the site. The thermal destruction facility for the landfill gas will meet the 99.99 percent destruction efficiency as required by the Resource Conservation and Recovery Act (RCRA). Liquids (e.g., leachate and condensate) collected by the gas control system will be collected and treated in an on-site treatment plant currently being designed and constructed under the Leachate Management Operable Unit.

CONTAINMENT COMPONENTS

Alternative 11 amends the gas control remedy previously selected by adding the design and construction of landfill cover. The installation of landfill cover will further enhance the collection efficiency of the gas control system, thus reducing the potential for contaminant migration. The cover will be designed to meet applicable or relevant and appropriate requirements (ARARs) for landfill closure, including those under the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901, et seq. which defines general cover system performance standards, as well as more stringent promulgated State landfill cover requirements. The specific components for the cover will be developed during the remedial design stage.

Generally, the cover is designed to: (1) reduce gaseous surface emissions and associated odor; (2) minimize oxygen intrusion into the refuse; (3) reduce surface water infiltration and the subsequent formation of leachate; (4) minimize slope erosion; and (5) improve site aesthetics. Cover design options include characteristic components such as:

1) A base layer placed on the existing cover which acts as a foundation for the cover system;

2) A drainage layer (e.g., gravel, synthetic geogrid) to collect gas or liquids migrating to the surface of the landfill;

3) A barrier layer (e.g., clay, synthetic flexible membrane liner) to prevent gaseous surface emissions and surface water infiltration; and

4) A soil or synthetic layer to control erosion, prevent off-site sediment transport, and improve site aesthetics.

Test cover plots are currently being developed as part of the SCM activities. Information obtained as a result of the construction, operation, and maintenance of the test plots will facilitate the design and construction of a landfill cover which will effectively meet the RCRA cover system performance standards.

The 30-year present worth cost for the gas control system of $62,900,000 was presented in the original gas ROD. Capital costs, operation and maintenance costs, and present worth costs for the landfill cover are estimated in the "Technical Memorandum--Cost Estimates for Landfill Cover Concepts RI/FS," dated December 11, 1989. A range of potential cover designs were identified and evaluated in the Technical Memorandum. Based on the range of cost estimates for the gas control system plus the landfill cover, the 30-year present worth cost, discounted at 5%, for the gas control system and landfill cover is estimated at $125,300,000 to $181,300,000. Significant efficiencies should result from the integrated design and construction of the landfill gas collection system and cover, resulting in a reduction in capital and life-cycle costs.

SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

Tables 1 and 2 provide a summary of the relative performance of the alternatives, comparing present worth costs, effectiveness, and compliance with ARARs. Table 3 presents a more detailed evaluation of the effectiveness of the alternatives.

Table 1
ALTERNATIVES COMPARISON SUMMARY
OH LFG MIGRATION CONTROL

No.	Alternative Description	Effectiveness: Innovative or Resource Recovery Technology	Effectiveness: Estimated Additional LFG Collection (b)	Effectiveness: Probability of Meeting or Exceeding ARARs	Cost Estimate (a): Capital Investment ($ Million)	Cost Estimate (a): Operation & Maintenance (c) ($ Million)
0.	No Action	No	-	No	0	0
1.	Status Quo	No	0%	No	0	1.6
2.	Improved Status Quo	No	0%	No	5.8	1.5
3.	Minimal Gas Extraction with LFG Flaring	No	0%	Partially	15.5	2.0
4.	Intermediate Gas Extraction with LFG Flaring	No	20%	Possibly	23.3	2.5
5.	Maximum Gas Extraction with LFG Flaring	No	45%	High Probability	32.1	3.0
6.	Maximum Gas Extraction with LFG Boiler and Steam Power Generation	Yes	70%	High Probability	46.6	3.4(d) / 3.0(e)
7.	Replacement Gas Extraction with LFG Flaring	No	70%	High Probability	45.3	2.6
8.	Replacement Gas Extraction with LFG Boiler and Steam Power Generation	Yes	70%	High Probability	59.8	1.0(d) / 2.6(e)
9.	Modified Replacement Gas Extraction with LFG Flaring	No	70%	High Probability	27.0	2.3
10.	North Parcel System	No	70%	High Probability	0.4	0.038
11.	Alternatives 9 and 10 with Landfill Cover	No	70% +	High Probability	68.4-118.3	3.7-4.1

Notes:
(a) Base costs are order-of-magnitude level estimates (i.e., the cost estimates have an expected accuracy of -30 to +50 percent).
(b) Percent increase over projected (based on LFG generation model) LFG collected in 1990 using existing LFG facilities.
(c) Operation/Maintenance, net estimated annual costs, 30 years unless noted specifically as (d) or (e), rounded off.
(d) Operation/Maintenance, net estimated annual costs, 0-10 years, rounded off.
(e) Operation/Maintenance, net estimated annual costs, 11-30 years, rounded off.

TABLE 2
Amended to Include Alternative 11

NET PRESENT WORTH OF ALTERNATIVES

Alternative	Project Life	Present Worth Rates ($ in millions) @ 3%	@5%	@10% (interest)
1	30 years	31.1	24.4	15.0
	45 years	37.5	27.2	15.1
	60 years	41.4	28.3	14.9
2	30 years	35.3	29.0	20.0
	45 years	41.6	31.7	20.2
	60 years	45.5	32.9	20.2
3	30 years	54.1	45.7	34.0
	45 years	62.3	49.4	34.3
	60 years	67.6	51.1	34.3
4	30 years	71.5	61.1	46.5
	45 years	82.1	65.9	46.9
	60 years	88.8	68.1	46.9
5	30 years	90.0	77.5	60.0
	45 years	103.0	83.5	60.6
	60 years	111.2	86.2	60.6
6	30 years	94.0	82.2	67.7
	45 years	107.0	88.8	68.4
	60 years	115.3	91.5	68.4
7	30 years	96.1	85.2	69.8
	45 years	107.6	90.4	70.3
	60 years	114.9	92.9	70.3
8	30 years	100.2	90.5	77.5
	45 years	111.6	95.8	78.1
	60 years	119.0	98.0	78.1
9	30 years	71.6	61.9	48.4
	45 years	81.5	66.5	48.8
	60 years	87.9	68.6	48.9
10	30 years	1.1	1.0	0.8
	45 years	1.2	1.0	0.7
	60 years	1.2	1.0	0.7
11	30 years	140.9-198.7	125.3-181.3	103.3-157.0
	45 years	159.1-218.8	134.2-191.1	104.9-158.7
	60 years	170.8-231.8	138.4-195.9	105.3-159.2

Table 3*
EFFECTIVENESS EVALUATION OF ALTERNATIVES

1. Overall Protection of Human Health and the Environment

Effectiveness Criteria	Alternative 11
How Alternative Provides Human Health and Environmental Protection	• Landfill Gas normally released as surface emissions and subsurface migration will be reduced. • Greater reduction than Alternatives 9/10 through addition of landfill cover. • Cover enhances extraction well efficiency.

2. Compliance with ARARs

Effectiveness Criteria	Alternative 11
Compliance with Chemical-Specific ARARs	• Surface emissions control (less than 50 ppm average of methane; 500 ppm maximum at any point): Greater likelihood of compliance with addition of landfill cover than with Alternatives 9/10. • Subsurface migration control (less than 5 percent methane at boundary): Greater likelihood of compliance by enhancing extraction system efficiency than with Alternatives 9/10.
Compliance with Action Specific ARARs	• Odor control: High potential for control of odorous surface emissions with maximum well coverage and landfill cover installation. • Thermal destruction facility will achieve a destruction and removal efficiency of 99.99%.
Compliance with Location-Specific ARARs	No location-specific ARARs apply.

3. Long-term Effectiveness and Permanence

Effectiveness Criteria	Alternative 11
Magnitude of Residual Risk	A quantitative residual risk calculation has not been performed for this operable unit. However, due to greater control of emissions and enhanced gas collection associated with Alternative 11, residual risk is less than that potentially posed by Alternatives 9/10. A quantitative residual risk analysis will be done as part of the final site remedy.

* Please see the attached ROD (9/30/88) for a complete evaluation of Alternatives 1-10.

4. Reduction of Toxicity, Mobility, or Volume Through Treatment

Effectiveness Criteria	Alternative 11
Degree of Expected Reduction in Toxicity, Mobility, and Volume	Placement of cover will allow the other components of the remedy outlined in Alternatives 9/10, (including the treatment component discussed in the original ROD) to work more efficiently. High potential for reduction due to maximum well coverage plus landfill cover.

5. Short-Term Effectiveness

Effectiveness Criteria	Alternative 11
Protection of Community During Remedial Actions	Short term risks posed by construction and/or surface emissions may exist, but will be mitigated by proper controls.
Environmental Impacts	Noise, LFG emissions, erosion, odors, and dust during construction will require engineering controls.
Protection of Workers during Remedial Actions	• Potential contact with hazardous substances may exist, and will require appropriate health and safety procedures. • Physical hazards may exist due to on-slope construction of gas/cover components.
Time Until Remedial Action Objectives are Achieved	• Integrating gas/cover systems gains efficiencies in ease and time of design and construction. Remedial action objectives should be met sooner than with Alternative 9/10. • Without integration, cover would require difficult retrofitting to gas system (e.g. extension of extraction wells). • Time required to implement integrated gas/cover will be longer than implementing gas exclusively but less than implementing gas plus a retrofitted cover.

6. Implementability

Effectiveness Criteria	Alternative 11
Ability to Construct and Operate the Technology	Integrated gas/cover systems are widely used for control of releases at landfills. Broad range of technologies available, both proven and innovative, for system design. Slope steepness will impact the ease with which the cover will be installed; however, this issue will be addressed by considering a variety of cover systems for different portions of the landfill.

Reliability of Technology	Integrated LFG/cover system is a demonstrated and widely-used landfill technology. A broad range of equipment and materials are available, have been used on other landfills, and will be evaluated during system design.
Ability to Monitor Effectiveness of Remedy	Same as Alternatives 9 and 10.
Ability to Obtain Approvals from Other Agencies	Same as Alternatives 9 and 10.

7. Cost

Effectiveness Criteria	Alternative 11
Capital Cost	Higher than Alternatives 9/10.
Operating and Maintenance Cost	Because the landfill cover will be installed together with the gas control components in Alternatives 9/10, it is likely there will be efficiencies gained in both operation and maintenance. Moreover, the original ROD contemplated a cover for the site, and O/M costs would be required for final remedy.
Present Worth Costs	Higher than Alternatives 9/10.

8. State Acceptance

Effectiveness Criteria	Alternative 11
Features of the Alternative the State Supports	State concurs with choice of remedy, and has not identified any features about which it has reservations.

9. Community Acceptance

Effectiveness Criteria	Alternative 11
Features of the Alternative the Community Supports	Community concurs with choice of remedy, and has not identified any features about which it has reservations.

STATE ACCEPTANCE

EPA and the State of California, Department of Health Services, agree on the preferred alternative. Both Agencies have been involved in the technical review and the development of the Proposed Plan. The Department of Health Services issued a Negative Declaration on April 9, 1990 for the Gas Migration Control with Landfill Cover Operable Unit in compliance with the requirements of the California Environmental Quality Act (CEQA).

COMMUNITY ACCEPTANCE

During the public comment period, EPA received two sets of written comments from the community.

1) A local community group Homeowners to Eliminate Landfill Problems (H.E.L.P.) concurs with the preferred alternative to amend the ROD to add landfill cover to the gas remedy.

2) The OII Steering Committee, a group of potentially responsible parties involved at OII, supports the consideration of integration of the cover component of the site remedy with the gas control remedy, but expressed concern about the lack of specificity regarding the exact type of cover design to be implemented. Detailed responses to the issues raised by the OII Steering Committee are included in the Responsiveness Summary section of the ROD.

A transcript of the public meeting, including public statements made during the meeting, is also included in the Responsiveness Summary.

SELECTED REMEDY/STATUTORY DETERMINATIONS

The selected remedy, Alternative 11, for this ROD amendment integrates the design and construction of landfill cover with the landfill gas control remedy previously selected in the original gas ROD. The major components of the amended landfill gas control and cover remedy include:

- Landfill cover designed to: (1) reduce surface gas emissions and odors; (2) prevent oxygen intrusion into the refuse; (3) prevent surface water infiltration; (4) provide erosion control; and (5) to improve site aesthetics;

- Perimeter LFG extraction wells, with placement focused on minimizing off-site LFG migration;

- LFG extraction wells on the top deck of the landfill, with placement focused on maximizing source control of LFG;
- Shallow and deep slope wells with placement focused on reducing surface emissions and controlling intermediate to deep subsurface migration at the perimeter;
- Integrated above-grade LFG headers and condensate sumps;
- LFG monitoring wells at the site boundary;
- Upgraded thermal destruction facility for landfill gas; and
- Pumps in appropriate gas wells, with above-grade collection sumps, to de-water saturated zones.

The addition of landfill cover to this operable unit significantly increases the protection of human health and the environment and will be designed to attain ARARs or a waiver is justified.

PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

The selected remedy protects human health and the environment through extraction and thermal destruction of landfill gas and installation of landfill cover. The thermal destruction will permanently remove 99.99 percent of the contaminants in the landfill gas. The landfill cover will be designed to reduce surface gas emissions and odors; prevent oxygen intrusion into the refuse, which will allow the gas systems to work more effectively; prevent surface water infiltration, which will assist in leachate management; and promote erosion control.

Short-term risks associated with the selected remedy, as addressed in the original gas ROD (at page 31), can be readily controlled. In addition, no adverse cross-media impacts are expected from the remedy.

COMPLIANCE WITH ARARs

The selected amended remedy for the landfill gas migration control and landfill cover operable unit will be designed to attain the following applicable or relevant and appropriate requirements (ARARs), in addition to the ARARs identified in the original gas ROD. These ARARs were identified from Federal, and more stringent promulgated state and local environmental and public health laws.

The amended remedy is an operable unit which only addresses landfill gas migration control and landfill cover. While certain closure and post-closure requirements are applicable, this remedial action does not address all closure and post-closure ARARs. Upon conclusion of the Remedial Investigation and Feasibility Study, additional remedial actions may be selected. EPA currently expects that further actions, including groundwater remediation, may be required. The ARARs for such remedial actions will be identified and addressed at that time.

Federal Requirements

1. Resource Conservation and Recovery Act (RCRA)

The Resource Conservation and Recovery Act (RCRA), Subtitle C, sets forth several applicable requirements for the amended remedy at 40 C.F.R. Part 265, Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, and several relevant and appropriate requirements in 40 CFR part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Strorage and Disposal Facilities.

The Land Disposal Restrictions of RCRA are neither applicable, nor relevant and appropriate to this remedial action. Generally, any movement of hazardous waste will be within the same area of contamination. There will be no residuals from the thermal destruction facility to be redeposited, and any condensate or leachate will be treated on site at the treatment plant currently being designed and constructed under the Leachate Management operable unit.

A. Part 265, Subpart G: Closure and Post-Closure

40 C.F.R. § 265.117: Post-closure care and use of property

Post-closure care requirements must begin after closure of the unit and continue for 30 years after that date. These requirements include (c): post-closure use of the property on or in which hazardous wastes remain after partial or final closure must never be allowed to disturb the integrity of the cover.

B. Part 265, Subpart N: Landfills

40 C.F.R. § 265.310 - Closure and Post-Closure Care

The final landfill cover must be designed and constructed to: (1) provide long-term minimization of migration of liquids through the closed landfill; (2) function with minimum maintenance; (3) promote drainage and minimize erosion or abrasion of the cover; (4) accommodate settling and subsidence so

that the cover's integrity is maintained; and (5) have a permeability less than or equal to any bottom liner system or natural subsoils present.

The 30 year post-closure care of the cover must include: (1) maintenance of the integrity and effectiveness of the cover, including repairs to the cover as necessary to correct the effects of settling, subsidence, erosion or other events; (2) prevention of run-on and run-off from eroding or otherwise damaging the cover; and (3) protection and maintenance of surveyed benchmarks.

C. Part 264, Subpart O: Incinerators

Several of the sections of this subpart are relevant and appropriate requirements for the thermal destruction facility, which meets the RCRA definition of an "incinerator," namely an enclosed device using controlled flame combustion to incinerate hazardous waste.

40 C.F.R § 264.343 - Performance Standards

The remedy will be designed to attain the standards required by this section. The thermal destruction facility must be designed, constructed and maintained to meet the following performance standards:

(1) the facility must achieve a destruction and removal efficiency of 99.99 percent for each principal organic hazardous constituent in the waste feed;

(2) the facility must reduce hydrogen chloride emissions to 1.8 kg/kr or 1 percent of the HCl in the stack gasses before entering any pollution control devices; and

(3) the facility must not release particulate in excess of 180 mg/dscm corrected for the amount of oxygen in stack gas.

40 C.F.R § 264.345 - Operating Requirements

The thermal destruction facility will be operated to meet the following requirements of this section: (1) monitoring of various parameters during operation, including, combustion temperature, waste feed rate, an indicator of combustion gas velocity, and carbon monoxide; (2) control of fugitive emissions by (a) keeping the combustion zone totally sealed against fugitive emission, (b) maintaining combustion-zone pressure lower than atmospheric pressure, or (c) controlling via an alternate means to provide fugitive emissions control equivalent to maintenance of combustion zone pressure lower than atmospheric pressure; and (3) utilization of an automatic cutoff system to stop waste feed when operating conditions deviate.

2. Clean Water Act (CWA)

Clean Water Act National Pollutant Discharge Elimination System (NPDES): 40 C.F.R. Part 125 sets forth requirements for permits for the discharge of pollutants from any point source into waters of the United States. Minimization of the off-site transport of materials and debris to meet the substantive portion of the NPDES permit requirements will be addressed during the Remedial Design phase in the development of the landfill cover grading plan and the design of the site stormwater management and drainage structures.

State Requirements

The State of California has timely identified several ARARs which are applicable to the amended selected remedy in addition to the ARARs identified in the original gas ROD. Moreover, the selected remedy will meet ARARs, as noted below, for which interim waivers were invoked in the original gas ROD pending the addition of landfill cover.

1. South Coast Air Quality Management District, Rules and Regulations (administered by the South Coast Air Quality Management District, as delegated by the California Air Resources Board).

Rule 402 - Nuisance. This rule prohibits the discharge of any material (including odorous compounds) that cause injury, detriment, nuisance, or annoyance to the public, businesses, or property or endangers human health, comfort, repose or safety. The selected amended remedy will be designed to attain this ARAR, waived in the original gas ROD.

Rule 432.1 - A typographical error in the original ROD identified this Rule as 431.1.

Regulation XI - Source Specific Standards - 1150.2

The original gas ROD identified Rule 1150.1, Control of Gaseous Emissions from Active Landfills, as an ARAR for the selected remedy and waived this requirement pending selection of landfill cover. The cover selected by this amended remedy will be designed to meet Rule 1150.2, Control of Gaseous Emissions from Inactive Landfills, which is an applicable state requirement.

Rule 1150.2 - Control of Gaseous Emissions from Inactive Landfills, requires perimeter landfill gas monitoring probes to evaluate off-site migration and limits concentration to total organic compounds to 50 ppm over a representative area of the landfill and maximum concentration of organic compounds (measured

as methane) to 500 ppm, at any point on the surface of the landfill.

2. **Solid Waste Management and Resource Recovery Act of 1972** (administered by the California Integrated Waste Management Board). The following titles of this act are applicable to the landfill cover component of the selected amended remedy.

A. Title 14, California Code of Regulations, Division 7

The following sections of Chapter 3, Minimum Standards of Solid Waste Handling and Disposal, Article 7.8, Disposal Site Closure and Postclosure, are applicable to landfill cover.

1. Section 17773 - Final Cover

The regulation is applicable and the cover will be constructed to meet its requirements. This regulation requires that a minimum thickness and quality of cover be placed over the entire surface of the final lift which meets the standards of Title 23, CCR, Subchapter 15, Section 2581 or that meet the standards set forth for an engineered alternative. The prescriptive standard must be not feasible and the alternative must be consistent with the performance goals of subsection (e) and afford equivalent protection against water quality impairment. Subsection (d) provides the basis for showing compliance with this standard is not feasible.

Subsection (e) sets forth the following minimum performance goals for the thickness and quality of cover: (1) a need to limit infiltration of water, to the greatest extent possible; (2) a need to control landfill gas emissions; (3) the future reuse of the site; and (4) a need to protect the low permeability layer from desiccation, penetration by rodents, and heavy equipment damage.

2. Section 17783 - 17783.15

These sections are applicable to the amended selected remedy, and it will be designed to attain these requirements. These regulations became effective August 1989 and were not promulgated at the time the gas ROD was originally signed. However, the remedy both as originally selected and as amended, will meet these ARARs.

a. Section 17783 - Gas Monitoring and Control During Closure and Postclosure

During periods of closure and postclosure maintenance, landfill gases generated at the facility must be controlled as follows:

(1) The concentration of methane gas must not exceed 1.25% by volume in air within on-site structures;

(2) The concentration of methane gas migrating from the landfill must not exceed 5% by volume in the air at the facility property boundary or an alternative boundary in accordance with Section 17783.5.

(3) Trace gases shall be controlled to prevent adverse acute and chronic exposure to toxic and/or carcinogenic compounds.

Subsection (b) sets forth the period during which monitoring should continue and subsection (d) provides that the monitoring and control systems shall be modified, during the closure and postclosure maintenance period to reflect changing on-site and adjacent land uses. Postclosure land use at the site shall not interfere with the function of gas monitoring or control systems.

b. Section 17783.3 - Monitoring

This section requires that the gas monitoring system shall be designed to meet with the specified site characteristics, and potential migration pathways or barriers, including, but not limited to: (1) local soil and rock conditions; (2) hydrogeological conditions at the facility; (3) locations of buildings and structures relative to the waste deposit area; (4) adjacent land use, and inhabitable structures within 1000 feet of the landfill property boundary; (5) man-made pathways, such as underground construction; and (6) the nature and age of waste and its potential to generate landfill gas.

c. Section 17783.5 - Perimeter Monitoring Network

This section sets forth specific requirements for the location (subsection a), spacing (subsection b), depth (subsection c) and construction (subsection d) of the monitoring wells.

d. Section 17783.7 - Structure Monitoring

This section requires that the design of the monitoring system include provisions for monitoring on-site structures, identifies some methods for monitoring such structures, and requires that structures located on top of the waste deposit area be monitored on a continuous basis.

e. Section 17783.9 - Monitoring Parameters

This section requires that all monitoring probes and on-site structures be sampled for methane and for specified trace gases, when there is a possibility of acute or chronic exposure due to carcinogenic or toxic compounds.

f. Section 17783. 11 - Monitoring Frequency

This section requires a minimum of quarterly monitoring with more frequent monitoring required if results indicate the landfill gas is migrating or accumulating in structures.

g. Section 17783.15 - Control

Subsection (a)(1) requires that all immediate steps be taken when the results of gas monitoring indicate levels of methane in excess of the compliance levels required by Section 17783(a).

Subsection (b) requires that the gas control system be designed to: (1) prevent methane accumulation in on-site structures; (2) reduce methane concentrations at monitored property boundaries to below compliance levels; (3) reduce trace gas concentrations; (4) provide for the collection and treatment and/or disposal of landfill gas condensate at the surface.

Subsection (c) indicates that the gas control systems may include, but are not limited to, the control systems enumerated in subsections (c)(1), (2) and (3).

Subsection (d) provides steps to be taken in the event on-site structure methane levels exceed that specified in Section 17783(a).

Subsection (e) requires that the operator provide for system monitoring and adjustment to ensure that the gas control system is operating at optimum efficiency.

3. Section 17796 - Postclosure Land Use

This regulation sets forth requirements concerning postclosure land use. Subsections (c), (d) and (e) are applicable to this remedial action. Subsection (c) requires that construction improvements on the site shall maintain the integrity of the final cover and the function of the monitoring system(s). Subsection (d) sets forth conditions to be met for construction of structural improvements on top of landfilled areas during the post-closure period. Subsection (e) sets forth building conditions pertaining to on-site structures constructed within 1,000 feet of the waste holding area.

B. Title 22, California Code of Regulations

Article 18: General Facility Standards

Section 67108: Seismic and Precipitation Design Standards

This section is applicable to the landfill cover component

and requires the design of cover systems and drainage control to function without failure when subjected to capacity, hydrostatic and hydrodynamic loads resulting from a 24-hour probable maximum precipitation storm. Additionally, all covers and cover systems which will remain after closure must be designed, constructed and maintained to withstand the maximum credible earthquake without the level of public health and environmental protection afforded by the original design being decreased.

Article 23 - Closure and Post-closure for Interim Status and Permitted Facilities

Section 67211 - Closure Performance Standard

Subsection (b) of this section is applicable to the selected amended remedy and requires that the facility be closed in a manner which controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the ground or surface waters or to the atmosphere. As noted above, this operable unit does not address all aspects of closure; to the extent not addressed by this or earlier operable units, these will be addressed by subsequent remedial actions.

Article 29 - Landfills at Both Interim Status and Permitted Facilities

Section 67418 - Closure and Post-Closure Care of Landfills at Interim Status Landfills

This section requires the design and construction of final cover to meet certain standards which are equivalent to those set forth under RCRA. More stringent, applicable requirements include, subsection (1) which requires the prevention of downward entry of water into the closed landfill throughout a period of at least 100 years, and subsection (5) which requires that the cover be designed and constructed to accommodate lateral and vertical shear forces generated by earthquakes so that the integrity of the cover is maintained.

C. Title 23, California Code of Regulations

Chapter 3, State Water Resources Control Board
Subchapter 15 - Discharges to Land

Three sections of this subchapter are applicable. For the purposes of applying these regulations, the OII Site is considered to be a Class I facility. (See Section 2531(a)(2) of this Title.)

1. **Section 2546: Precipitation and Drainage Controls**

Subsection (a) requires that the cover shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout and overtopping under probable maximum precipitation conditions.

Subsection (c) requires diversion and drainage facilities to be designed and constructed to accommodate the anticipated volume of precipitation and peak flows from surface run off under probable maximum precipitation conditions.

Subsection (d) requires collection and holding facilities associated with precipitation and drainage control systems to be emptied immediately following each storm or otherwise managed to maintain the design capacity of the system.

Subsection (e) requires surface and subsurface drainage from outside of a waste management unit to be diverted from the waste management unit.

Subsection (f) requires cover materials to be graded to divert precipitation from the waste unit, to prevent ponding of surface water over wastes, and to resist erosion as a result of precipitation with the return frequency specified in Table 4.1.

2. **Section 2547: Seismic Design**

This section requires structures which control surface drainage, erosion or gas shall be designed to withstand the maximum credible earthquake without damage.

3. **Section 2581: Landfill Closure Requirements**

The requirements of subsection (a) for cover are applicable. This section requires at least two feet of appropriate materials, (primarily soil-type materials) as a foundation layer and an additional one foot of soil on top of this foundation layer. These requirements will not be met by the selected remedy, and are being waived pursuant to Section 121(d)(4)(B), (C) and (D), 42 U.S.C. § 9621 (d)(4)(B), (C) and (D). Due to the configurations of the OII site, including its steep slopes and direct proximity to both homes and the Pomona freeway, a cover constructed of soil-type materials and with the thickness required by this subsection would result in a greater risk to human health and the environment than the selected remedy. Construction for such a cover is technically impracticable from an engineering perspective; far greater flexibility in types of materials and cover design is required by this site. The remedy selected will attain a standard of performance that is equivalent to that required by this section through an alternative approach which provides for a variety of cover materials.

The landfill cover component will be designed to attain the requirements of Sections 2581(b) and (c). Subsection (b) sets forth grading requirements which provide that closed landfills will be graded and maintained to prevent ponding and sets forth conditions specific to the steepness of slopes. Subsection (c) requires that the surface water be monitored in accordance with Article 5 of this Section.

COST-EFFECTIVENESS

- Of the alternatives evaluated, the selected remedy provides the highest level of protection of human health and the environment in a cost-effective manner. Significant technical and economic efficiencies will be gained from the integrated design and construction of the landfill gas collection system and landfill cover.

UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE

EPA believes the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be used for this operable unit at the OII site. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined the selected remedy provides the best balance in terms of long-term effectiveness and permanence, reduction in toxicity, effectiveness, and reduction in volume achieved through treatment, short term effectiveness, implementability, and cost while considering the statutory preference for treatment as a principal element as well as community input.

Alternative 11 reduces the toxicity, mobility, and volume of the contaminants in the landfill gas, complies with ARARs, or a waiver is justified, provides short-term effectiveness, and protects human health and the environment more effectively and more rapidly than any of the other alternatives considered. The selected remedy is more reliable and can be implemented with less difficulty than implementation of gas control and landfill cover separately, and is therefore determined to be the most appropriate and cost-effective remedy for this operable unit at the OII site.

PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT

By treating the landfill gas using thermal destruction, the selected remedy satisfies the statutory preference for remedies that employ treatment of the principal threat which permanently and significantly reduces toxicity, mobility, or volume of hazardous substances as a principal element. The addition of landfill cover will further increase the efficiency of the gas

control system by reducing surface emissions and preventing oxygen intrusion into the refuse. Complete treatment of the refuse at this landfill is impracticable due to severe implementability problems, the potential for significant short-term risks, and prohibitive costs.

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FINAL
RECORD OF DECISION
FOR
OPERATING INDUSTRIES, INC.
SUPERFUND SITE
MONTEREY PARK, CALIFORNIA

Volume 1

September 1996

SCO100192D1.DOC

Declaration

Site Name and Location

Operating Industries, Inc. (OII)
Monterey Park, California

Statement of Basis and Purpose

This decision document presents the selected remedial action for the Operating Industries, Inc. (OII) Site, in Monterey Park, California, chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the Administrative Record for this site.

The State of California concurs with the selected remedy.

Assessment of the Site

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision (ROD), may present an imminent and substantial endangerment to public health, welfare, or the environment.

Description of the Remedy

This ROD addresses liquids control and contaminated groundwater as well as long-term operation and maintenance of all environmental control facilities at the landfill, excluding those facilities covered under the Gas Migration Control and Landfill Cover ROD, as amended (EPA, 1990a; originally the Gas Migration Control ROD [EPA, 1988b]). Liquids will be controlled at the landfill perimeter to prevent migration of contaminants to groundwater. Contaminated groundwater currently beyond the landfill perimeter will be allowed to naturally attenuate over time. The U.S. Environmental Protection Agency (EPA) has signed three previous RODs for the OII Site. These cover Site Control and Monitoring, Leachate Management, and Gas Migration Control and Landfill Cover. The RODs for Site Control and Monitoring and Leachate Management were interim in nature and not considered permanent. These RODs are no longer applicable beginning with the signing of this ROD, although activities required under those RODs will continue as part of this ROD. The ROD for Gas Migration Control and Landfill Cover selected a final remedial action that represents a

significant component of the permanent site cleanup, but is not included in, or modified by, this ROD.

The major components of the selected remedy for this action include:

- Installation of a perimeter liquids control system in areas where contaminants are migrating from the landfill at levels that cause groundwater to exceed performance standards. Contaminated groundwater beyond the landfill perimeter would be reduced to below cleanup standards through natural attenuation.
- Conveyance of the collected liquids to the onsite treatment plant.
- Onsite treatment of collected liquids using the existing leachate treatment plant, modified as necessary to handle the new liquids. Discharge of treated liquids to the County Sanitation Districts of Los Angeles County sanitary sewer system.
- Implementation of a monitoring and evaluation program to ensure that natural attenuation of the contaminated groundwater is progressing as anticipated, to detect future releases of contaminants from the landfill, and to ensure that perimeter liquids control system performance standards are being met.
- Establishment of institutional controls to ensure appropriate future use of the OII Site and to restrict groundwater use in the immediate vicinity of the OII Site. The institutional controls will supplement the engineering controls to prevent or limit exposure to hazardous substances.
- Interim operation and maintenance of existing site activities (gas extraction and air dike, leachate collection, leachate treatment, irrigation, access roads, stormwater drainage, site security, slope repair, and erosion control), except to the extent that they are addressed under the Gas Migration Control and Landfill Cover ROD.
- Long-term operation and maintenance of all facilities and environmental control components at the OII Site, excluding those covered under the Gas Migration Control and Landfill Cover ROD.

Statutory Determinations

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. Components of the selected final remedy satisfy the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element. The size of the landfill mass precludes a remedy in which all contaminants could be excavated and effectively treated.

Therefore, consistent with the NCP and EPA guidance, including *Guidance for Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites* (EPA OSWER Directive 9355.3-11, February 1991a), the remedy uses containment to address the low-level threat from the landfill.

Because this remedy will result in hazardous substances remaining onsite above health-based levels, a review will be conducted at least once every 5 years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Keith A. Takata

Keith A. Takata
Director of Superfund Division
U.S. Environmental Protection Agency, Region IX

9-30-94
Date

Contents

Section — Page

Declaration i
Site Name and Location i
Statement of Basis and Purpose i
Assessment of the Site i
Description of the Remedy i
Statutory Determinations ii

Part I Decision Summary I-1
1.0 Site Summary I-1
1.1 Site Location and Description I-1
1.2 Physiography and Topography I-1
1.3 Land Use I-3
1.3.1 Historic Land Use I-3
1.3.2 Current Land Use I-3
1.4 Demographics I-7
1.5 Surface Water Hydrology I-7
1.5.1 Regional Hydrology I-7
1.5.2 Surface Water Drainage at the OII Site I-8
1.6 Geologic Setting Summary I-8
1.7 Hydrogeologic Setting Summary I-9

2.0 OII Site History and Enforcement Activities I-10
2.1 Landfill History I-10
2.1.1 Historical Waste Disposal and Landfill Operations I-11
2.1.2 Landfill Development and Thickness I-12
2.1.3 Waste Types and Quantities I-12

2.2 Field Investigations I-12
2.2.1 Hydrogeologic Investigations I-15
2.2.2 Geologic and Geotechnical Investigations I-15
2.2.3 Air Quality Investigations I-16
2.2.4 Surface Water Sampling I-16
2.2.5 Leachate Investigations I-16
2.2.6 Landfill Gas Investigations I-21
2.3 Summary of EPA Actions at the OII Site I-22
2.3.1 Summary of Enforcement Activities I-22
2.3.2 OII Site Operable Units I-24
2.3.3 OII Site Consent Decrees and Administrative Orders I-25

3.0 Highlights of Community Participation I-25

4.0 Summary of Site Characteristics I-26
4.1 Air I-27
4.1.1 Ambient Air I-27
4.1.2 In-Home Air I-27
4.2 Soil I-27
4.2.1 Surface Soil I-28
4.2.2 Subsurface Soil I-28
4.3 Surface Water I-28
4.4 Groundwater I-28
4.4.1 Northwest Area I-33
4.4.2 Southwest Area—Groundwater Contamination I-34
4.4.3 Eastern Area—Groundwater Contamination I-35
4.4.4 West and South Aquifer Systems—Groundwater Contamination I-36

5.0 Summary of Site Risks I-37
5.1 Baseline Human Health Risk Assessment Summary I-37
5.1.1 Identification of Contaminants of Potential Concern I-38
5.1.2 Exposure Assessment I-38
5.1.3 Toxicity Assessment I-45
5.1.4 Risk Characterization Summary I-48
5.1.5 Baseline Human Health Risk Assessment Conclusion I-56
5.2 Baseline Ecological Risk Assessment Summary I-69

6.0 Description of Remedial Alternatives I-70
6.1 Alternative No. 1—No Further Action I-70
6.2 Alternative No. 2—Perimeter Liquids Control (EPA's Selected Remedy) I-76
6.3 Alternative No. 3—Perimeter Liquids Control Plus Source Control I-80
6.4 Alternative No. 4—Perimeter Liquids Control Plus Groundwater Control or Remediation I-83

7.0 Summary of the Comparative Analysis of Alternatives I-88
7.1 Overall Protection of Human Health and the Environment I-89
7.1.1 Alternative No. 1 ....I-89
7.1.2 Alternative No. 2 ....I-91
7.1.3 Alternative No. 3 ....I-91
7.1.4 Alternative No. 4 ....I-92
7.2 Compliance with ARARs I-92
7.3 Long-term Effectiveness and Permanence I-93

7.3.1 Magnitude of Residual Risk I-93
7.3.2 Adequacy and Reliability of Controls I-95
7.4 Reduction of Toxicity, Mobility, and Volume Through Treatment I-97
7.5 Short-term Effectiveness I-98
7.6 Implementability I-102
7.7 Cost I-104
7.8 State Acceptance I-106
7.9 Community Acceptance I-106

8.0 Selected Remedy I-107
8.1 Perimeter Liquids Control Component I-108
8.1.1 Performance Standards and Point of Compliance I-108
8.1.2 Contingency Measures I-112
8.2 Liquids Treatment Component I-112
8.2.1 Performance Standards and Point of Compliance I-113
8.2.2 Contingency Measures I-113
8.3 Groundwater I-113
8.3.1 Performance Standards and Point of Compliance I-113
8.3.2 Contingency Measures I-117
8.4 Environmental Monitoring I-117
8.4.1 Detection Monitoring I-118
8.4.2 Compliance/Performance Monitoring I-118
8.5 Additional Components I-118
8.5.1 Institutional Controls I-118
8.5.2 Site Administration I-120
8.5.3 Operation and Maintenance of Facilities and Environmental Control Systems I-120

00503

8.6 Cost of the Selected Remedy I-121

9.0 Applicable or Relevant and Appropriate Requirements (ARARs) . I-121
9.1 Chemical-Specific ARARs I-129
9.2 Location-Specific ARARs I-130
9.3 Action-Specific ARARs I-131

10.0 Documentation of Significant Changes I-132

11.0 Statutory Determinations I-132
11.1 Protection of Human Health and the Environment I-133
11.2 Compliance with ARARs I-133
11.3 Cost-Effectiveness I-133
11.4 Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable I-134
11.5 Preference for Treatment as a Principal Element I-135

References R-1

Tables

1 Examples of Generic Wastes Permitted for Disposal at OII Landfill I-13
2 Examples of Liquid Wastes Reportedly Disposed at OII Landfill from 1976 to 1984 ..... I-14
3 Selected Chemicals of Potential Concern for Air, Groundwater, and Soil I-39
4 Exposure Parameters for Estimating Exposure for Residential Intake of Ambient Air I-43
5 Parameters for Estimating Residential Exposures from Ingestion of Groundwater Contaminants I-43

00504

6 Parameters for Estimating Chemical Intake for an Adult Resident from Inhalation of Groundwater Volatiles I-44
7 Parameters for Estimating Chemical Absorption from Dermal Contact with Groundwater I-44
8 Parameters for Estimating Intake for Residents and Workers Via Dermal, Inhalation, and Ingestion Exposure to Soil I-46
9 Toxicity Values and Chemical-Specific Parameters for Chemicals of Potential Concern I-49
10 Summary of Leachate Extraction by Strategic Area I-90
11 Approximate Time to Reach Chemical-Specific ARARs in Groundwater....I-94
12 Comparisons of Contaminants Removed Through Liquids Collection/Extraction Reduction in Toxicity, Mobility, and Volume of Contaminants Through Treatment....I-99
13 Comparisons of Treatment Residuals Generated Reduction in Toxicity, Mobility, and Volume of Contaminants Through Treatment....I-100
14 Comparison of Costs I-105
15 Perimeter Liquids Control Chemical Performance Standards and Groundwater Cleanup Standards....I-110
16 Effluent Discharge Limits I-114
17 Approximate Time and Migration Distances to Reach Cleanup Standards in Groundwater Under the Selected Remedy I-116
18 Selected Remedy Cost Estimate Summary I-122
19 Summary of Chemical-Specific ARARs....I-124
20 Summary of Location-Specific ARARs....I-125
21 Action-Specific ARARs....I-126

Figures

1 Landfill Location Map....I-2
2 Property Ownership/Usage Adjacent to OII Landfill I-5
3 Monitoring Well Locations I-17

4 Compounds with Average Ambient Air Concentrations Exceeding Background....I-19
5 Sampling Network for the In-Home Air Monitoring Program I-20
6 Landfill Gas Monitoring Well Locations I-23
7 1992/1993 MCL Exceedance Contours in Shallow or Unconfined Flow Systems....I-29
8 1992/1993 MCL Exceedance Contours in Deep or Confined Flow Systems I-31
9A Total Cancer Risk for Ambient Air Monitoring Station Locations—Residential Adult Reasonable Maximum Exposure Conditions I-53
9B Total Noncancer Hazard Index for Ambient Air Monitoring Station Locations—Residential Adult Reasonable Maximum Exposure Conditions I-55
10 Total Cancer Risk for Surface Soil/Sediment by Area Residential Child Reasonable Maximum Exposure Conditions I-57
11 Total Noncancer Hazard Index for Surface Soil/Sediment by Area Residential Child Reasonable Maximum Exposure Conditions I-59
12 Total Cancer Risk for Individual Shallow Groundwater Wells Using Chemicals of Potential Concern by Well - Residential Adult Reasonable Maximum Exposure Conditions I-61
13 Total Cancer Risk for Individual Deep Groundwater Wells Using Chemicals of Potential Concern by Well - Residential Adult Reasonable Maximum Exposure Conditions I-63
14 Total Noncancer Hazard Index for Individual Shallow Groundwater Wells Using Chemicals of Potential Concern by Well - Residential Adult Reasonable Maximum Exposure Conditions I-65
15 Total Noncancer Hazard Index for Individual Deep Groundwater Wells Using Chemicals of Potential Concern by Well - Residential Adult Reasonable Maximum Exposure Conditions I-67
16 Alternative No. 1: No Further Action I-71
17 Miscellaneous Existing Landfill Features Included in Alternative No. 1 ....I-73

18 Alternative No. 2: Perimeter Liquids Control I-77
19 Alternative No. 3: Perimeter Liquids Control plus Source Control I-81
20 Alternative No. 4: Perimeter Liquids Control plus Groundwater Control I-85

Acronym List

ARARs	applicable or relevant and appropriate requirements
BTEX	benzene, toluene, ethylbenzene, and xylene
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
DTSC	California Department of Toxic Substances Control
EPA	Environmental Protection Agency
ft/day	feet per day
ft/yr	feet per year
gpm	gallons per minute
HELP	Hydrologic Evaluation of Landfill Performance model
hp	horsepower
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
mg/L	milligrams per liter
MOC	USGS Method-of-Characteristics code
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
OII	Operating Industries, Inc.
OSWER	Office of Solid Waste and Emergency Response
PCB	polychlorinated biphenyl
PCE	perchloroethylene
ppm	parts per million
RCRA	Resource Conservation and Recovery Act of 1976
ROD	Record of Decision
SCAQMD	South Coast Air Quality Management District
TBC	to be considered
TCE	trichloroethylene
µg/L	micrograms per liter
$\mu g/m^3$	micrograms per cubic meter
USGS	U.S. Geological Survey

Part I
Decision Summary

1.0 Site Summary

1.1 Site Location and Description

The Operating Industries, Inc. (OII) Site is located at 900 Potrero Grande Drive in the City of Monterey Park, approximately 10 miles east of downtown Los Angeles (Figure 1). The landfill property covers 190 acres and is divided by California Highway 60 (Pomona Freeway). The 45 acres to the north of the freeway are referred to as the North Parcel, and the 145 acres to the south of the freeway are called the South Parcel. The neighboring City of Montebello borders the South Parcel and portions of the North Parcel.

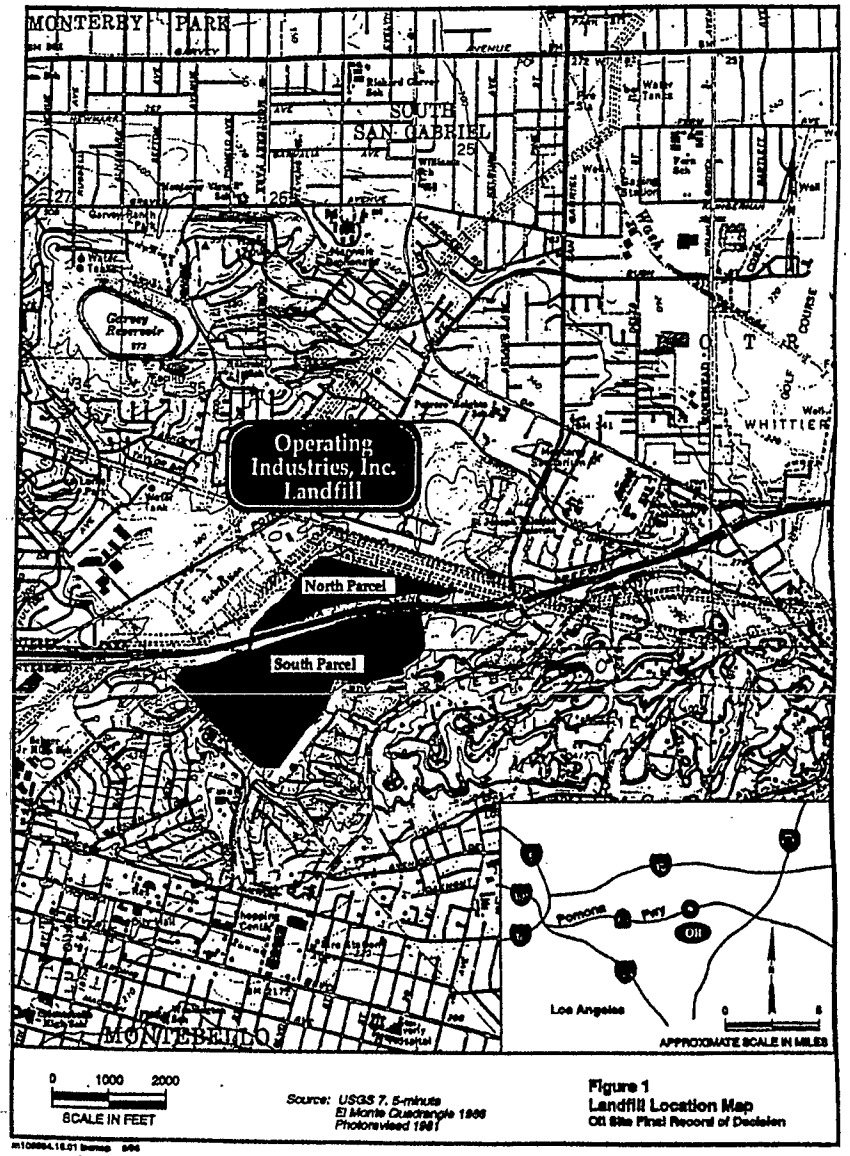
1.2 Physiography and Topography

This section discusses major physiographic and topographic features in the area surrounding the OII Site and within the landfill boundary itself.

The OII Site is located in central Los Angeles County, California, on the northwestern flank of the Montebello Hills (also known as the La Merced Hills). The Montebello Hills are one of a series of low-lying hills that separate the Los Angeles Coastal Plain from the San Gabriel Valley. The elevation of the crest of the Montebello Hills is approximately 570 feet above mean sea level. The San Gabriel Mountains, located approximately 12 miles to the north of the landfill, form the northern boundary of the San Gabriel Valley. Elevations in the San Gabriel Mountains exceed 10,000 feet mean sea level.

The Los Angeles Coastal Plain, to the south of the landfill, is a coastal plain sloping toward the Pacific Ocean, approximately 20 miles away. The Montebello Plain lies within the Los Angeles Coastal Plain just south of the Montebello Hills (and therefore just south of the OII Site) between the Los Angeles River and the Rio Hondo, and is considered by California Department of Water Resources to be a source of groundwater recharge to the Los Angeles Basin (CDWR, 1961).

The landfill was constructed by filling a former quarry pit that was cut into the side and top of a portion of the Montebello Hills. The landfill was ultimately constructed to a height higher than the adjacent Montebello Hills. Elevations at the landfill range from approximately



Source: USGS 7.5-minute El Monte Quadrangle 1966 Photorevised 1981

Figure 1
Landfill Location Map
OII Site Final Record of Decision

380 feet above mean sea level at the North Parcel to 640 feet above mean sea level at the top deck of the South Parcel. The top of the South Parcel is about 150 to 250 feet above the surrounding natural grade, and the maximum depth of the landfill bottom is about 200 feet below the surrounding natural grade (EPA, 1987a).

The South Parcel landfill side slopes are quite steep: the north side of the South Parcel, directly adjacent to Pomona Freeway, is at a slope of about 2 (horizontal) to 1 (vertical) (an angle of approximately 27 degrees). The slopes on the east and south sides of the landfill are at approximately 3 to 1 (an 18-degree angle). The west slope is at approximately 4 to 1 (a 14-degree angle).

1.3. Land Use

This section presents a description of historic and current land use in the vicinity of the OII Site.

1.3.1 Historic Land Use

The Montebello Hills oil field, located to the southeast of the landfill, was developed in the early 1900s. The oil field has provided an abundant source of petroleum and natural gas reserves from petroleum exploration oil wells drilled in the vicinity of the landfill, including some within the current landfill boundary. Throughout its producing history, a significant percentage of the production from the Montebello Hills oil field has been a sodium-chloride brine. Historic maps of the oil field show the locations of apparent "brine ponds" associated with oil field activities in the area south and southeast of the landfill, including along the current southern boundary of the landfill. Later, oil field wastes are reported to have been disposed into the landfill.

Older aerial photographs (pre-1960) show little residential or commercial development near the landfill. By 1968, residential development had moved closer to the landfill; and by the mid-1970s, considerable residential and commercial development had taken place adjacent to the landfill boundary.

1.3.2 Current Land Use

The area surrounding the OII Site is heavily developed with mixed general commercial/industrial and residential land use, with small pockets of open space (Figure 2). Specific land use at and around the landfill is presented below as follows, beginning north of the North Parcel, and progressing clockwise around the landfill. Figure 2 shows approximate property boundaries and ownership/usage of properties adjacent to the landfill.

- A Southern California Edison substation complex occupies a portion of the property to the northwest of the North Parcel. The remainder of the property north of the North Parcel is occupied by two plant nurseries that share a common border with the North Parcel.

- Resurrection Cemetery is located north/northeast of the North Parcel.

- The North Parcel is partially occupied by the following businesses: Recycled Wood Products; Ecology Auto Wrecking; Manhole Adjusting, Inc.; and Aman Brothers Pavement Crushing.

  In addition, the OII Site leachate treatment plant is located on the North Parcel, as are the Environmental Protection Agency (EPA) and OII Landfill Work Defendants' office trailers. Aside from remediation activities and landfill investigations, there is no active land use on the South Parcel.

- The Montebello Town Square, a large shopping complex, occupies the land east of the South Parcel. A small strip on the east end of the landfill contains a landfill gas collection system installed as part of the development to reduce migration of landfill gas toward the shopping complex.

- The Montebello Hills oil field, which contains many active oil production wells, is located to the southeast of the South Parcel.

- On the southeast and south side of the landfill, adjacent land use is mostly low-density residential with pockets of medium-density residential and open space. Many homes in this area are located immediately adjacent to the landfill boundary and share a common property line with the landfill.

- A small piece of property adjacent to the southwest corner of the South Parcel is currently vacant.

- The surface facilities for a Southern California Gas Company underground natural gas storage reservoir adjoin the southwest portion of the South Parcel.

- The remainder of the western boundary of the South Parcel is bordered by residential development, similar to the residential areas south of the South Parcel.

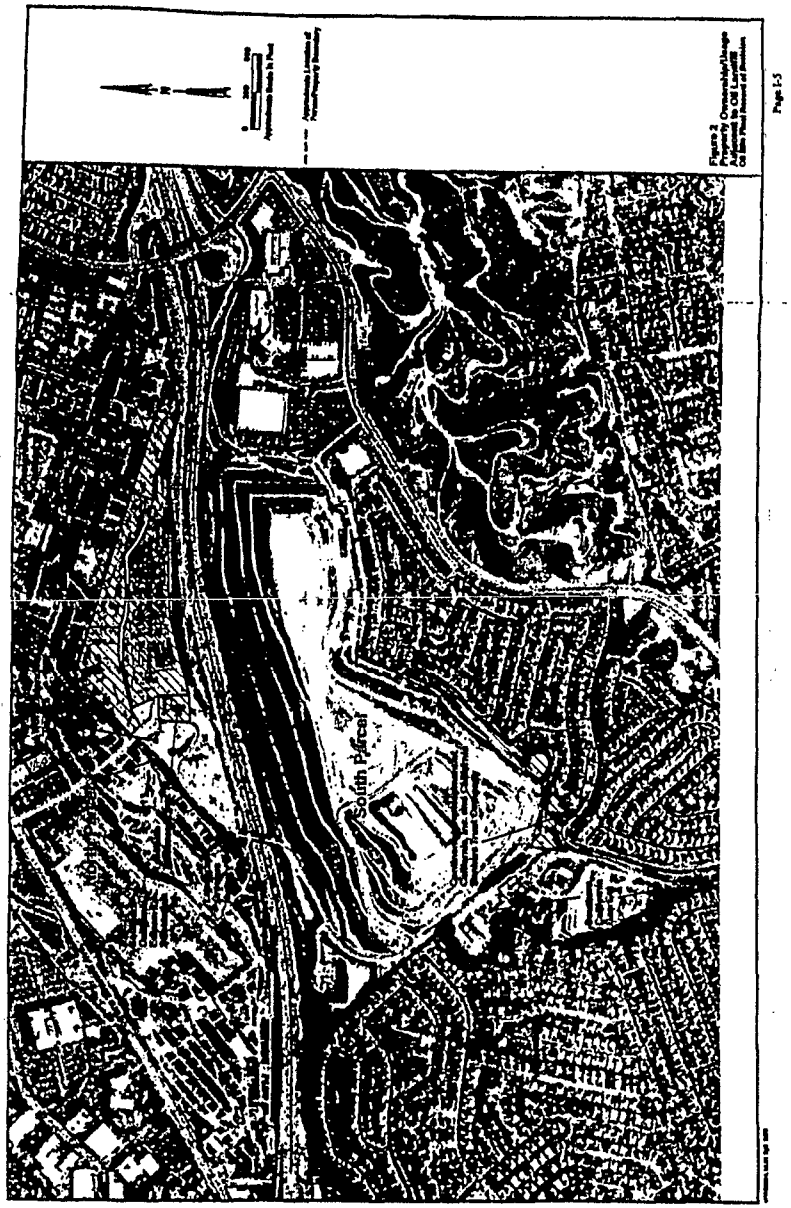


Figure 2
Property Owned/Managed by Operator of Landfill on Site Prior to Closure of Landfill

Page I-5

1.4. Demographics

Demography, as presented in this section, is combined with discussions of land use to identify potential receptor populations for the assessment of health risks associated with the landfill. Population demographics in the census tracts that extend to an approximate 1-mile radius of the landfill boundary are presented. Additionally, there are several subpopulations within the overall population who may be more sensitive to, or receive more exposure to, environmental contamination. These subpopulations are termed "sensitive populations." Sensitive populations in the vicinity of the OII Site include young children, elderly persons, people who spend a significant portion of time in homes in the vicinity of the landfill, and people who work near the landfill.

As reported in the 1990 census, the total population contained within the tracts surrounding the landfill is 35,101 persons (U.S. Department of Commerce, 1990b). The total population of the Cities of Monterey Park and Montebello is 59,570 and 60,740 persons, respectively.

There are two age groups within the overall population of particular sensitivity tc environmental conditions: children under 5 years and adults 65 years or greater. The population of children under 5 years (2,307 persons) and adults 65 years or greater (4,047 persons) together comprise 6,354 persons, or approximately 18 percent of the population in the tracts surrounding the landfill.

Also of importance are persons who are likely to spend a significant portion of time at home in the tracts surrounding the landfill. This number was estimated from the 1990 census to be 13,863 persons, or approximately 39 percent of the population in the tracts surrounding the landfill (U.S. Department of Commerce, 1990b).

1.5 Surface Water Hydrology

This discussion of regional surface water hydrology includes major rivers, drainage patterns, and sources of infiltration such as spreading basins and irrigation. Surface water drainage at the landfill is also discussed.

1.5.1 Regional Hydrology

The regional drainage divide, as reported by the California Department of Water Resources (CDWR, 1966), that separates the Central Basin from the San Gabriel Basin runs directly through the northeast corner of the landfill. The San Gabriel Valley is drained by two major rivers, the Rio Hondo and San Gabriel River. Almost all natural surface water outflow from the San Gabriel Valley, including the Rio Hondo and San Gabriel River, passes through Whittier Narrows, located approximately 2 miles east of the landfill. After passing through

Whittier Narrows, both rivers extend southerly across the Los Angeles Coastal Plain to the Pacific Ocean.

There are numerous dams and spreading basins in the general vicinity of the OII Site that serve as locations for groundwater recharge. Whittier Narrows Dam lies on both the Rio Hondo and San Gabriel River. The area upstream of the dam is a wildlife refuge. Two major spreading grounds lie approximately 1 mile downstream of the Whittier Narrows dam, including the Rio Hondo Spreading Ground (on the Rio Hondo) and San Gabriel River Spreading Ground (on the San Gabriel River). Additional spreading grounds are located several miles upstream in the San Gabriel Valley.

1.5.2 Surface Water Drainage at the OII Site

Surface water present on and in the vicinity of the OII Site is limited to storm water runoff following substantial rainfall events. There are no natural streams on or adjacent to the landfill. Surface water (storm water) runoff from the South Parcel flows to lined swales on the inboard side of each terraced bench road on the landfill side slopes, where it is diverted to the storm water drainage system. Most runoff from the top deck and east, north, and west slopes drains through four main storm drains to concrete, trapezoidal drainage ditches paralleling the Pomona Freeway. Runoff from the south slopes flows through a series of smaller drains into the City of Montebello storm drainage system. All of the runoff gets routed through Los Angeles County storm drains to the rivers and ultimately discharges to the Pacific Ocean (LACDPW, 1987).

1.6 Geologic Setting Summary

Detailed discussions of the regional and site-specific geology are presented in the Draft Remedial Investigation Report (EPA, 1994c). The geologic units in the immediate vicinity of the OII Site are described briefly below.

The Pico Unit, the San Pedro Formation, the Lakewood Formation, and the younger (Holocene) fluvial/alluvial sediments are the geologic units present around the OII Site. The Lakewood and San Pedro Formations have been grouped together because of their similar hydrologic properties and difficulty in distinguishing them in the field.

In the OII Site area, the Pico Unit consists of siltstone; silty sandstone; and very fine-grained sandstone with interbedded medium- to coarse-grained sandstone, fine-grained conglomerate, and occasional marine limestone beds. The siltstone intervals are greater than 500 feet thick at some locations around the landfill; however, these intervals are probably made up of numerous siltstone layers, not one massive unit. The sandstone and conglomerate intervals range in thickness from a few inches to over 200 feet.

The Lakewood/San Pedro Formation unconformably overlies the Pico Unit in the OII Site vicinity. Within the landfill vicinity, the Lakewood/San Pedro Formation consists largely of poorly consolidated sandstones and conglomerates, with lesser amounts of siltstone. Generally, Lakewood/San Pedro sandstones are in contact with Pico Unit siltstones. However, in the eastern portion of the area, Lakewood/San Pedro Formation sandstones are in contact with Pico Unit sandstones. In other areas, such as the western portion of the landfill, Lakewood/San Pedro siltstone may be in contact with Pico siltstone.

The Holocene alluvium consists of unconsolidated sediments ranging in size from clay to cobbles and boulders. The alluvium typically occurs surficially and occupies the topographically low portions of the OII Site vicinity.

1.7 Hydrogeologic Setting Summary

Detailed discussions of the regional and site-specific hydrogeology are presented in the Draft Remedial Investigation Report (EPA, 1994c). Significant hydrogeologic units in the local vicinity of the OII Site include: Pico Unit deep siltstone, Pico Unit sandstones and conglomerates, Pico Unit shallow siltstone (termed the Shallow Silt Flow System in the area southwest of the South Parcel), and Lakewood/San Pedro Formation sandstone. The complex geologic conditions present in the OII Site vicinity (i.e., depositional environment, folding, faulting) have resulted in similarly complex hydrogeologic conditions. The hydrogeologic units and groundwater flow conditions vary considerably in different portions of the landfill.

Two deeper Pico Unit sandstone aquifer systems have been delineated: the South Aquifer and the West Aquifer. The South and West Aquifer Systems are confined beneath Pico Unit shallow siltstone at the western end of the South Parcel. The South Aquifer trends approximately northeast-southwest in a narrow elongated band along the southern boundary of the landfill, and does not appear to be laterally extensive in the northwest-southeast direction. It is unconfined to semiconfined along the southeastern and eastern boundaries of the South Parcel.

The West Aquifer has been detected only along the western boundary of the South Parcel. Although the downgradient extent of this unit is uncertain, it does not appear to be laterally extensive to the west.

Other semiconfined to confined Pico Unit sandstones and conglomerates occur in the vicinity of the North Parcel. These sediments do not appear to correlate with either the South or West Aquifers.

Pico Unit siltstone is generally referred to as Pico Unit deep siltstone when present below the South or West Aquifers. It is referred to as Pico Unit shallow siltstone near the water table

and above the West Aquifer. The Pico Unit shallow siltstone is described as the Shallow Silt Flow System along the western and southern boundaries of the South Parcel for discussions of groundwater occurrence and groundwater flow conditions.

The depth to water in the landfill vicinity varies greatly, and ranges from about 15 to 20 feet at the southwestern corner of the South Parcel to over 200 feet at the southeastern corner of the landfill. In the western portion of the South Parcel, the groundwater table is near (or potentially in contact with) the waste prism. Under the center of the eastern end of the South Parcel, a boring drilled through the waste prism indicated water about 13 feet beneath the waste (OII Landfill Work Defendants, 1995b).

The estimated horizontal groundwater flow velocity in the shallow systems varies greatly in different units, ranging from approximately 0.3 to 1,810 feet per year (ft/yr). The higher estimated velocities are in the unconfined aquifer to the north of the South Parcel. These numbers may be artificially high if other factors such as restrictions in the shallow units are affecting the gradients. The lower velocity estimates are generally for flow in the shallow silt around the southwestern perimeter of the South Parcel. Flow in the silt may be several orders of magnitude higher in preferential flow paths such as fractures or more permeable lenses.

Water level measurements in wells located around the southwestern corner of the South Parcel indicate the presence of a groundwater mound. Because of the low permeability of the siltstone surrounding this area, recharge does not readily flow away from the landfill and therefore creates a localized groundwater mound. Groundwater flow in this area is generally radial, away from the landfill. It also appears that a groundwater mound has developed northeast of the landfill, probably due to irrigation at the Resurrection Cemetery and nurseries surrounding the northern boundary of the North Parcel. Recharge probably infiltrates through the thin Lakewood/San Pedro Formation but cannot readily infiltrate into the lower-permeability Pico Unit siltstones, thereby causing a mound to form.

There is no known use of groundwater within approximately 1.5 miles of the OII Site.

2.0 OII Site History and Enforcement Activities

2.1 Landfill History

This section presents a brief summary of information describing the historical waste disposal and landfill operations, landfill development and thickness, waste types and quantities disposed at the landfill, and landfill development.

2.1.1 Historical Waste Disposal and Landfill Operations

Prior to 1946, the OII property was a sand and gravel quarry. Waste disposal operations at the landfill began on 14 acres in October 1948 by Monterey Park Disposal Company. In January 1952, Operating Industries, Inc. assumed ownership of the landfill; and, by 1958, the landfill had expanded to 218 acres. The size was later reduced to 190 acres when the State of California purchased 28 acres for construction of the Pomona Freeway.

In October 1954, the California Regional Water Pollution Control Board No. 4, Los Angeles Region, first permitted disposal of liquids at the landfill (Resolution 54-15) (CRWPCB, 1954). In March 1976, the Los Angeles Regional Water Quality Control Board (formerly California Regional Water Pollution Control Board No. 4) limited disposal of liquids to a 32-acre area in the western portion of the South Parcel (Order No. 76-30) (LARWQCB, 1976a). This order allowed Operating Industries, Inc. to mix liquids with solid refuse at a ratio of 10 gallons per cubic yard of refuse. In September 1976, Order 76-133 (LARWQCB, 1976b) increased the allowable ratio to 20 gallons per cubic yard.

In 1982, leachate was observed seeping offsite (LARWQCB, 1984). Operating Industries, Inc. stopped accepting hazardous liquid waste in January 1983 and all liquid waste in April 1983. A leachate collection system was installed to collect leachate seeping from the landfill. Leachate generated at the landfill was collected and redisposed by combining it with incoming refuse that was mixed back onto the working face of the landfill (LARWQCB, 1984). This practice continued until September 1984, when the California Department of Health Services classified leachate generated at the landfill as hazardous and prohibited redisposal, effective October 1984. At that time, Operating Industries, Inc. began shipping all leachate offsite for treatment and disposal.

Prior to 1984, Operating Industries, Inc., the landfill operator and owner, performed several landfill control measures. This included installation of the leachate collection system, development of an air-dike air injection system on the west side of the landfill to control subsurface gas migration, installation of gas extraction wells around the perimeter of the landfill, installation of a gas flaring station to burn landfill gas, site contouring, slope terracing and vegetation, and covering of refuse with fill.

Operating Industries, Inc.'s control of the environmental problems and maintenance of the control systems began to diminish significantly in late 1984. In this same time period, EPA began initial site investigations. On May 19, 1986, Operating Industries, Inc. notified the state of its intent to discontinue all site control and monitoring activities except irrigation. By the end of May 1986, the OII Site was added to the National Priorities List. EPA assumed responsibility for site activities on May 20, 1986.

2.1.2 Landfill Development and Thickness

Landfilling operations began in 1948 by filling an existing natural canyon currently occupied by a portion of the Pomona Freeway and north-central portions of the South Parcel. Cut-and-cover filling operations began in the early 1950s. Additional areas were quarried and filled. From the 1950s through the 1970s, the waste disposal activities expanded to cover the current landfilled area. During this time, the height of the landfill was also increased several times, ultimately reaching the current elevation of approximately 640 feet above mean sea level. The thickness of solid waste in the South Parcel ranges from approximately 200 to 325 feet. The North Parcel contains approximately 11 acres of solid waste, ranging in thickness up to 55 feet.

2.1.3 Waste Types and Quantities

Examples of the types of wastes permitted for disposal at the landfill (Monterey Park Resolution 60-58) are listed in Table 1. Table 2 lists examples of liquid wastes reportedly disposed at the OII Site between 1976 and 1984 (EPA, 1987e). A total estimated refuse volume of 38 million cubic yards weighing 22 to 31 million tons was disposed at the landfill over its operating life (EPA, 1988g). More than three-fourths of the refuse was disposed before 1974, before records were maintained for truck counts and delivered weight.

Liquids are excluded from the refuse mass calculations discussed in the preceding paragraph. Liquid wastes were disposed at the landfill throughout its history, until April 1983. More than 300 million gallons of liquids are recorded as having been disposed between 1976 and 1983 (EPA, 1988d). Liquid wastes were reportedly disposed at the landfill prior to 1976, but records were not kept by landfill operators.

2.2 Field Investigations

A large number of field investigations have been performed at, and in the vicinity of, the OII Site over approximately the last 20 years. This section provides an accounting and brief description of the field investigations and monitoring programs that provided data used in geologic, hydrogeologic, and contaminant analyses and interpretations in the Remedial Investigation. Detailed discussions of these investigations are presented in the Draft Remedial Investigation Report (EPA, 1994c).

Section 2.2.1 discusses major hydrogeologic investigations. Section 2.2.2 briefly describes major geologic and geotechnical investigations that have been performed at the landfill.

Table 1
Examples of Generic Wastes Permitted for Disposal at OII Landfill
(Monterey Park Resolution 60-58)
OII Site Final Record of Decision

Natural earth
Rock, sand, and gravel
Paving fragments
Concrete
Brick
Plastic and plaster products
Steel mill slag
Clay base rotary mud
Mud cake from oil field sumps
Street sweepings
Glass
Asbestos fiber and products therefrom
Metals and metal products except magnesium and its alloys
Paper and paper products including roofing and tar paper
Cloth and clothing
Wood and wood products
Lawn clippings, sod, and shrubbery
Cold ashes
Manufactured rubber products
Solid plastic products
Paint sludge received from water-circulating paint spray booths not transported in vacuum tanks
Rotary drilling mud from oil field drilling operations
Cleanings from production tanks
Acetylene sludge
Sludge from automobile wash racks and steam-cleaning products
Mud and water from laundries
Liquid latex waste
Ceramic, pottery, and glaze wastes
Lime and soda water
Paint sludge recovered from water circulated in paint spray
Water containing not more than 0.5 percent molasses
Market refuse (in limited quantities)
Not permitted for disposal (Monterey Park Resolution 60-58): spent acid waste, spent caustic waste, and common chemically stable salts from manufacturing or industrial processes.
Reference: EPA (1987e)

Table 2
Examples of Liquid Wastes Reportedly Disposed at OII Landfill from 1976 to 1984
OII Site Final Record of Decision

(Percent figures are approximate values based on general descriptions appearing on OII Monthly Reports to the LARWQCB)

Mud and water	60%
Mud, water, and oil	12%
Drilling mud	4%
Tank bottom	6%
Latex wastes	2%
Paint sludge	2%
Coolant	1.5%
Carbon black and water	1%
Remaining generic types	11.5%

Alkaline solution	Lint and water
Aluminum sludge and flocculent	Liquor
Animal fat and water	Metal dust and water
Asbestos pulp and water	Mineral water
Asphalt and water	Molasses and water
Brake fluid	Nickel, copper, and water
Brine	Oxides (Al, Pb, Si, Zr)
Burnishing media	Organic wastes
Burner (baghouse) dust	Perlite
Carpet material and water	Petroleum industry sludge
CAT CR catalyst	Plastic dust
Caustic soda	Polymer sludge
Caustic solution	Rain water
Cement and water	Resin, PVC, and water
Ceramic glaze	Rouge and water
Cleaning compound	Rust sludge
Coconut	Sand and water
Corn syrup	Sawdust and water
Creosote	Settling basin sludge
Dairy wastes	Slurry
Diamogion silica	Soap and water
Dough and water	Sodium silicate
FCC fines and water	Starch and water
Fiberglass	Stretford solution
Film gelatin	Sulfur fines in water
Filter clay	Tank sludge
Fish and water	Tar pit sludge
Food-processing wastes	Tile glaze
Glass dust and water	Waste paper
Glue and water	Wastewater
Grease waste and water	Wax (polishing compound) and water
Ink and water	Welding flux
Lime and water	

Reference: EPA (1987e)

Section 2.2.3 summarizes two air quality investigations performed in the vicinity of the landfill. Section 2.2.4 briefly summarizes surface water sampling at the landfill. Finally, Sections 2.2.5 and 2.2.6 describe investigation and sampling of leachate and landfill gas, respectively.

2.2.1 Hydrogeologic Investigations

EPA performed six major hydrogeologic investigations at the OII Site between 1975 and 1993, resulting in the installation of 75 groundwater monitoring wells. Monitoring well locations are shown in Figure 3. Activities conducted as part of these investigations include: drilling and monitoring well installation, formation testing, surface and subsurface soil sampling, groundwater sampling and analysis, and aquifer testing. Data from the hydrogeologic investigations were used extensively throughout the Remedial Investigation.

2.2.2 Geologic and Geotechnical Investigations

EPA performed several geologic and geotechnical investigations that provide additional information regarding the subsurface conditions at or near the OII Site. A brief summary of these follows.

Geologic Mapping and Investigations. There are several published papers and reports pertaining to the geologic conditions in the vicinity of the OII Site. Additionally, EPA conducted focused geological mapping at the OII Site and the surrounding area during several investigations. Also, the OII Landfill Work Defendants have performed geologic mapping of the OII Site and vicinity.

Geotechnical Investigations. EPA performed numerous geotechnical studies related to landfill development, residential and commercial property development, petroleum exploration, and the underground storage of imported natural gas in the vicinity of the OII Site. Geotechnical investigations within the landfill boundary have typically been related to landfill development and construction; these investigations primarily include geologic mapping, material testing, and landfill characterization relative to slope stability and foundation investigations. EPA drilled numerous borings to define the limits of the waste prism and to investigate the type and extent of contamination or landfill gas migration. Since 1987, EPA has conducted geotechnical monitoring of slope stability, including measurements of inclinometers and surveying of surface monuments.

North Parcel Site Characterization. In 1987, EPA performed a surface and subsurface soil investigation at the North Parcel to identify the vertical and lateral soil contamination and the extent of waste on the North Parcel (EPA, 1988l). EPA collected surface soil samples from throughout the auto salvage yard and drilled borings for waste characterization. Shallow and deep soil samples were obtained from all of the borings.

2.2.3 Air Quality Investigations

EPA conducted two air quality investigations as part of the Remedial Investigation for the OII Site. One investigation focused on ambient air in the vicinity of the landfill, and the other investigation focused on air quality in the homes surrounding the landfill.

24-Hour Ambient Air Monitoring. EPA conducted an investigation to collect and analyze ambient outdoor air samples in the vicinity of the landfill (EPA, 1991c). Ambient air sampling was conducted for one year, from September 1989 to September 1990. EPA installed nine air monitoring stations for the study; seven were located along the perimeter of the landfill, and two were located some distance away from the landfill to serve as background locations. Sampling locations are shown in Figure 4.

In-Home Air Monitoring. Between November 1992 and July 1993, EPA conducted an in-home air monitoring program to evaluate whether potentially harmful landfill gas from the OII Site was entering nearby homes (EPA, 1993a). EPA recommended the in-home air monitoring program at the conclusion of the year-long ambient air study described above. EPA used existing methane data from monitoring of water meter boxes and probes to establish the target area for residential sampling. The sampling program included homes along the streets adjacent to the southern boundary of the landfill as well as a small area west of the landfill. EPA took air samples from a total of 197 homes; the locations of these homes are identified in Figure 5.

2.2.4 Surface Water Sampling

Surface water in the form of runoff from the landfill is sampled routinely as part of the site control and monitoring activities at the landfill. In addition, EPA collected two surface water runoff samples from the North Parcel in 1987 as part of a field reconnaissance to identify surface drainage features.

Routine surface water sampling began in February 1990 and continues through the present. For the first three (or more, in some instances) storms of the rainy season, EPA performs surface water sampling within several hours after the start of a storm at designated sampling locations. The majority of the surface water sampling results are included in OII Landfill Work Defendants monthly reports (OII Landfill Work Defendants, 1990 to 1994).

2.2.5 Leachate Investigations

This section provides a brief overview of investigations that have been performed to delineate and characterize leachate at the OII Site.

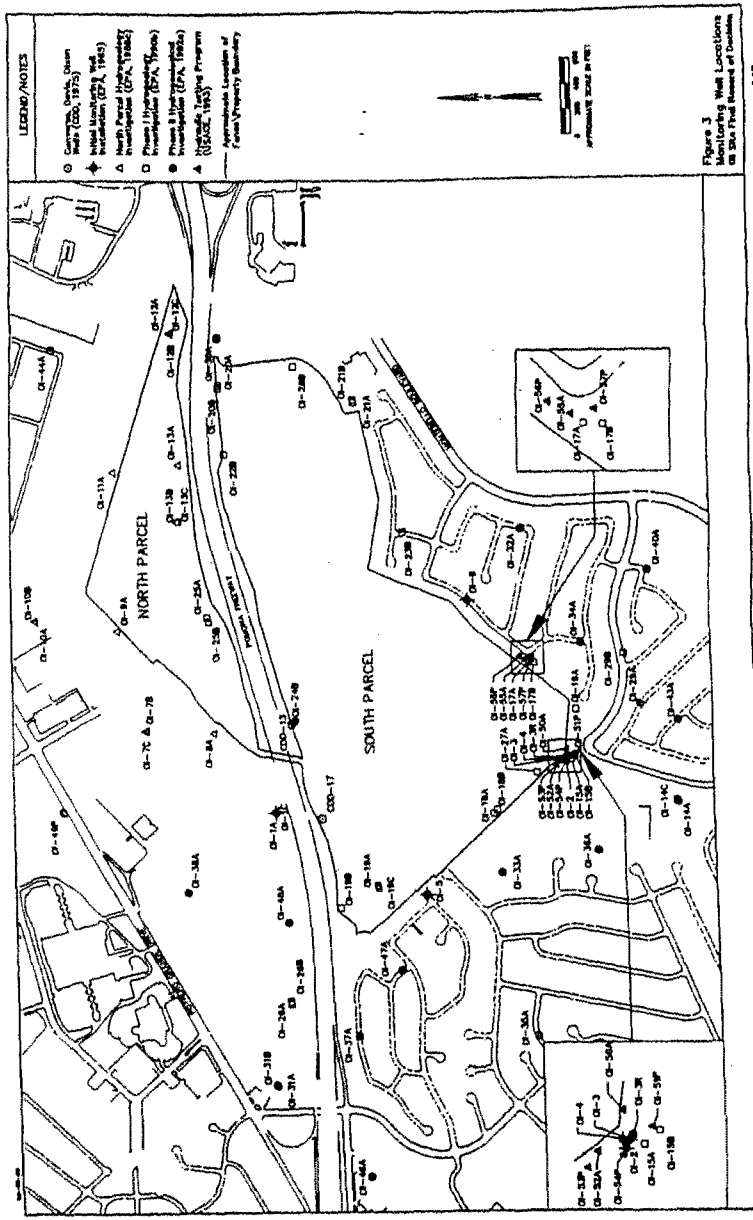


Figure 3
Monitoring Well Locations
OII Site Final Record of Decision
Page 3-17

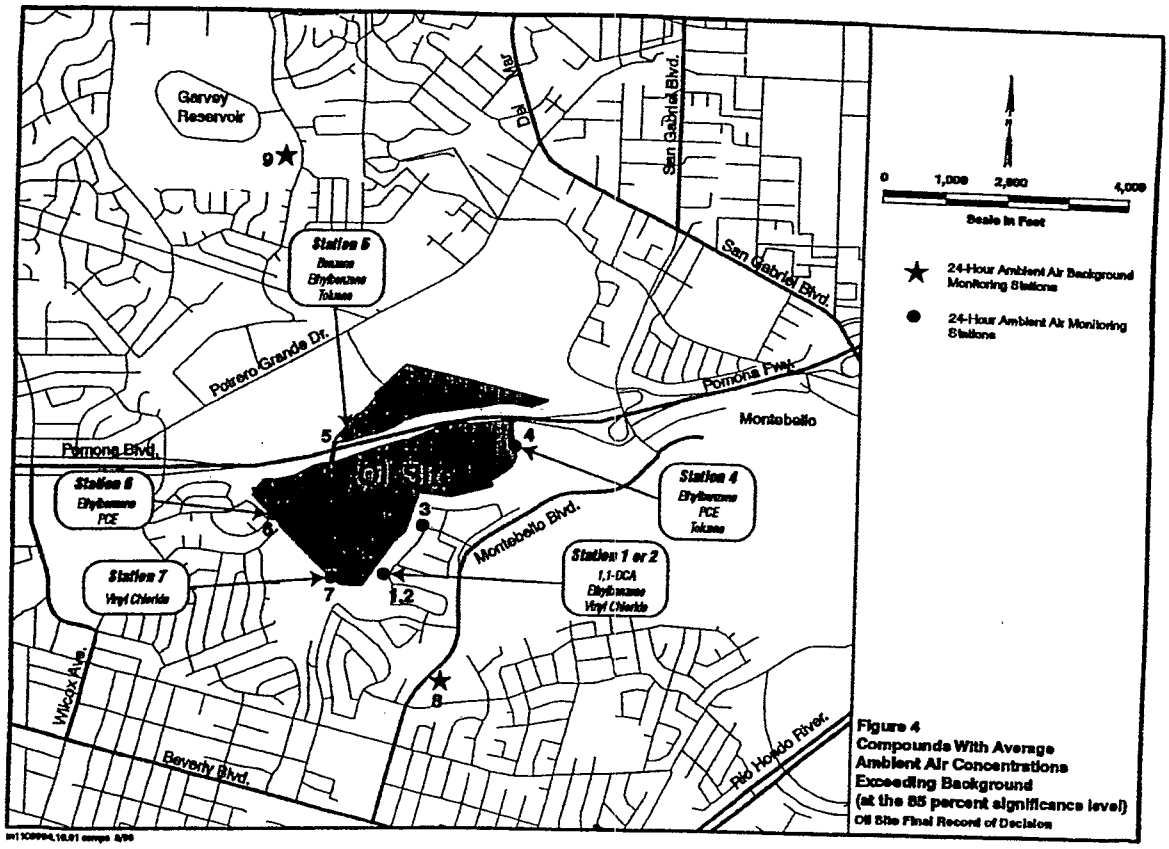


Figure 4
Compounds With Average Ambient Air Concentrations Exceeding Background (at the 85 percent significance level)
Oil Site Final Record of Decision

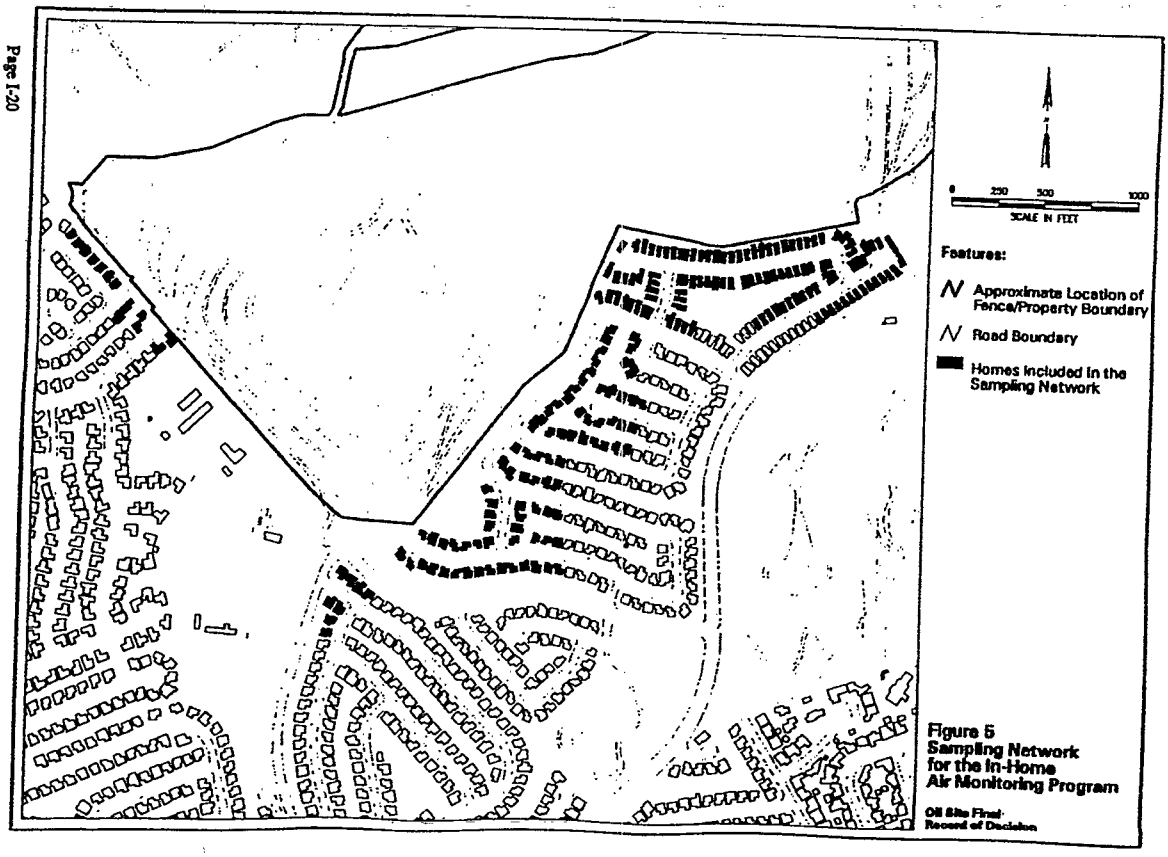


Figure 5
Sampling Network for the In-Home Air Monitoring Program
Oil Site Final Record of Decision

Leachate Seeps Sampling and Analysis. EPA collected leachate samples from leachate seeps in Iguala Park after heavy rains in January 1993. The OII Landfill Work Defendants performed a survey of onsite landfill seeps after the 1992/1993 rainy season to prioritize seepage areas for potential remediation prior to installation of the landfill cover (OII Landfill Work Defendants, 1993a).

Leachate Sampling and Analysis. Since 1983, EPA has periodically collected and analyzed leachate to characterize its chemical composition and source areas. EPA performed its first comprehensive analyses of leachate chemistry in 1986 (EPA, 1986a), and conducted several leachate sampling programs between 1986 and 1989. Liquid samples were collected from various locations in the leachate and landfill gas collection systems on the South Parcel, including sumps, wells, tanks, and two deep interior landfill gas extraction wells. EPA also measured liquid levels in 17 landfill gas extraction wells on the top deck of the landfill.

During soil boring drilling at the North Parcel (EPA, 1988i), EPA collected perched liquids from two borings located in the southwest portion of the North Parcel landfill area. These liquids were encountered at the transition between waste and the underlying native soil.

Since 1990, the OII Landfill Work Defendants have performed several leachate sampling events associated with evaluations of leachate quantity and quality for the leachate treatment plant. Samples have been collected primarily from gas collection and leachate wells, as well as the sumps associated with the leachate collection system.

2.2.6 Landfill Gas Investigations

EPA has collected a large amount of landfill gas data at the OII Site since the mid-1970s. This section provides a brief overview of the major sources of data most relevant to analyses in the Remedial Investigation and Feasibility Study.

Landfill Gas Probes and Wells. Operating Industries, Inc. installed landfill gas monitoring probes along the west, south, and east borders of the South Parcel in 1976 and 1981 and around the North Parcel in 1981. Operating Industries, Inc. installed perimeter gas extraction wells in various phases from 1982 through 1984. Many of the landfill gas probes continue to be monitored routinely for methane and other constituents as part of the ongoing site control and monitoring activities.

Air Dike Wells. In response to a Los Angeles County Health Department order (January 23, 1981), Operating Industries, Inc. installed an air dike system in native material along the south and west borders of the landfill to control landfill-generated methane gas emissions beyond the landfill boundary. EPA installed 26 wells in 1981 to create the air dike. Additional wells and monitoring probes were installed in October 1982. EPA constructed eight gas migration test wells (GMTW-1 through -8) to a maximum depth of 101 feet as part of a testing program for the existing air dike system (OII Landfill Work Defendants, 1992b).

South and North Parcel Landfill Gas Monitoring Wells. EPA installed 15 landfill gas monitoring wells along the western and southern boundaries of the South Parcel in 1987 and 1988 (EPA, 1988h). EPA also installed multiple gas probes in each borehole at various depths, with bentonite seals between the probe levels.

EPA installed 13 landfill gas monitoring wells on the North Parcel in June/July 1987 (EPA, 1987d). Each well contains either two or three probes at depths between 6 and 64 feet. Locations and probe depths for both North and South Parcel landfill gas monitoring wells are shown in Figure 6.

2.3 Summary of EPA Actions at the OII Site

EPA has performed a variety of emergency actions in response to environmental problems at the landfill, including erosion control improvements, installation of a toe buttress for slope stability, surface runoff and drainage improvements, rehabilitation of the main flare station, site security, placement of vented water meter box covers in the areas surrounding the landfill, and installation of control systems in nearby affected residences.

EPA formally began the Remedial Investigation/Feasibility Study at the OII Site in 1986, although field investigations had been initiated in 1984. To efficiently manage the problems at the OII Site and to address the most apparent environmental problems prior to implementation of the final remedy, EPA divided the work into three operable units, as described below. EPA has successfully negotiated five Consent Decrees with various potentially responsible party groups to perform and fund portions of the work specified in the previous RODs for the operable units. In addition, some of the funds from the last two Consent Decrees are to go towards final remedy.

2.3.1 Summary of Enforcement Activities

Prior to EPA involvement, various state and local agencies reported that Operating Industries, Inc. frequently violated waste disposal regulations during the operations at the landfill between 1952 and 1984. Operating Industries, Inc. was notified and/or cited for several of these violations. EPA sent Resource Conservation and Recovery Act of 1976 (RCRA) Section 3007/Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) Section 104(e) notice letters and information requests to Operating Industries, Inc. and individual owners in 1984.

There are approximately 3,950 potentially responsible parties at the OII Site. Since 1984, EPA has sent combined general notice and CERCLA 104(e) letters to potentially responsible

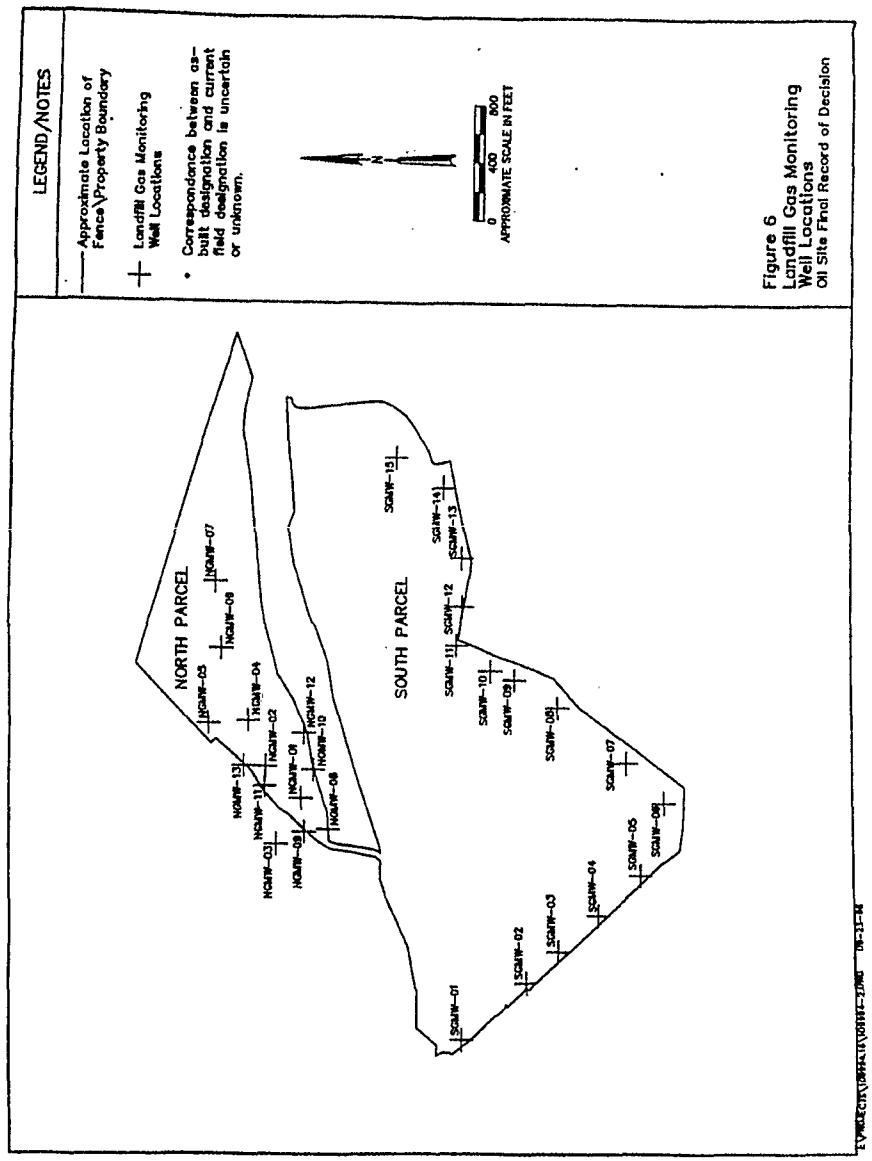


Figure 6
Landfill Gas Monitoring Well Locations
OII Site Final Record of Decision

parties that generated approximately 87 percent (by volume) of the manifested liquid waste for which EPA has records. Various groups of these potentially responsible parties participated in the Consent Decrees described below. The remaining 13 percent of the manifested liquid wastes, reflected in EPA's records, was generated by approximately 3,600 *de minimis* generators.

2.3.2 OII Site Operable Units

The term "operable unit" refers to a discrete action taken at a Superfund site to address specific site problems. At the OII Site, Operable Unit No. 1 pertains to site control and monitoring activities; Operable Unit No. 2 pertains to leachate management; and Operable Unit No. 3 pertains to landfill gas control and landfill cover. EPA has completed individual feasibility studies and signed RODs for each of the three operable units.

Operable Unit No. 1: Site Control and Monitoring. This operable unit addressed the seven major interim environmental control systems and activities at the OII Site that require operation, maintenance, inspection, and monitoring on a continuous basis: gas extraction and air dike systems, leachate collection system, irrigation system, access road system, storm water drainage system, site security, and slope repair and erosion control. In the ROD for Site Control and Monitoring (EPA, 1987a), EPA decided that full-time site control and monitoring should be undertaken, providing daily operation, repair and replacement of control system components when necessary, and system improvements. The ROD for Site Control and Monitoring is interim and ends at the signing of this ROD, although activities required under the Site Control and Monitoring ROD will continue as part of this ROD.

Operable Unit No. 2: Leachate Management. EPA's interim selected remedy for management of leachate collected at the OII Site, as presented in the ROD for the Leachate Management Operable Unit (EPA, 1987b), was treatment of the leachate at a treatment plant located at the landfill. This plant has been built on the North Parcel and consists of a Remote Oil Separation Facility (on the South Parcel), influent storage and equalization, biological reactors, chemical precipitation, sand filtration, granular activated carbon adsorption, effluent storage and discharge, a foul air system, a storm water holding system, and a sludge disposal system. The ROD specified that treated leachate be disposed in facilities operated by the County Sanitation Districts of Los Angeles County. The ROD for Leachate Management is interim and ends at the signing of this ROD, although activities required under the Leachate Management ROD will continue as part of this ROD.

Operable Unit No. 3: Gas Migration Control and Landfill Cover. The Gas Migration Control and Landfill Cover ROD, as amended (EPA, 1990a; originally the Gas Migration Control ROD [EPA, 1988b]), defines a final landfill cover and landfill gas migration control remedy to collect and destroy landfill gas that would otherwise be released from the landfill. (The Gas Migration Control and Landfill Cover ROD is referred to as the Gas Control and Cover ROD throughout this document.) In general, the work specified in the Gas Control

and Cover ROD includes design, construction, operation, maintenance, and monitoring of a landfill gas control system; a landfill cover system; and a surface water management system for the OII Site. The new landfill gas system will likely supplement, partially incorporate, and partially replace the existing landfill gas system. The amendment to the ROD also includes design and construction of a landfill cover to reduce surface emissions of landfill gas, reduce oxygen intrusion into the refuse, reduce surface water infiltration, minimize slope erosion, and improve aesthetics. The Gas Control and Cover ROD is a final ROD and, as such, is a significant component of the final site cleanup, but is not included in or modified by this ROD.

2.3.3 OII Site Consent Decrees and Administrative Orders

Five Consent Decrees have been successfully negotiated with various potentially responsible party groups for performance and funding of various portions of the site cleanup. The first Partial Consent Decree was negotiated for work on Operable Units No. 1 and 2. The Second Partial Consent Decree was negotiated with additional potentially responsible parties to provide funding for the same scope of work as the first Partial Consent Decree. The Third Partial Consent Decree was negotiated for the design and implementation of a major portion of Operable Unit No. 3. The Fourth and Fifth Partial Consent Decrees provide additional funding for ongoing or planned work at the site.

In addition to the Consent Decrees, site cleanup work has been performed under a Unilateral Administrative Order (Unilateral Administrative Order No. 94-01) that EPA issued to three of the previously nonsettling potentially responsible parties. The order required these potentially responsible parties to participate in the collection and treatment/disposal of wastes associated with the OII Site in cooperation with the potentially responsible parties performing work at the site under the Consent Decrees. These three parties subsequently joined the Fifth Partial Consent Decree. Parties responsible for performing work under a Consent Decree are collectively referred to as OII Landfill Work Defendants throughout this ROD.

3.0 Highlights of Community Participation

The Proposed Plan for this remedy, in the form of a fact sheet, was distributed to approximately 3,000 parties on EPA's mailing list for the OII Site. The Proposed Plan, together with the Feasibility Study Report (EPA, 1996) and the Draft Remedial Investigation Report (EPA, 1994c), were also made available in the site vicinity at the Bruggemeyer Memorial Library in Monterey Park, the Montebello Regional Library in Montebello, and the Chet Holifield Library in Montebello. Microfilm of the entire Administrative Record File, containing these three documents and other documents considered or relied upon in

developing the Proposed Plan, is available at the Bruggemeyer Memorial Library. The file is also available at EPA's Regional Office in San Francisco.

Notice of public meeting, availability of the Proposed Plan, and the announcement of a 30-day public comment period were published in the Los Angeles Times newspaper, San Gabriel edition, on May 31, 1996, and the Monterey Park Progress and Montebello News newspapers on May 30, 1996.

EPA held a public meeting on June 12, 1996, near the site to discuss its cleanup plan. At this meeting, EPA representatives made a brief presentation of the Proposed Plan, answered questions, and solicited comments from members of the public. A transcript of the public meeting, including oral comments and responses, is included as Appendix A of this ROD.

EPA extended the public comment period in response to a request from members of the public. A public notice mailed to the entire EPA mailing list extended the original 30-day public comment period to 60 days. EPA received several sets of written comments during the public comment period. These comments are addressed in the Responsiveness Summary, included as Part II of this ROD.

EPA has also held frequent meetings with the public, the state, and local agencies to discuss ongoing activities at the landfill. In addition to the Proposed Plan fact sheet for this remedy, EPA has issued numerous fact sheets between 1985 and 1996 describing investigation and cleanup activities at the OII Site.

This decision document presents the selected remedial action for the OII Site, in Monterey Park, California, chosen in accordance with CERCLA, as amended by Superfund Amendments and Reauthorization Act of 1986 (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The decision for this site is based on the Administrative Record.

4.0 Summary of Site Characteristics

This section summarizes results from environmental sampling conducted at the OII Site during the Remedial Investigation. The nature and extent of landfill-related contamination in air, soil, surface water, and groundwater are discussed.

4.1 Air

EPA conducted a year-long outdoor ambient air study at the OII Site in 1989 and 1990. In 1992 and 1993, EPA implemented an in-home air monitoring program at homes near the OII Site. Results of these programs are summarized below.

4.1.1 Ambient Air

EPA installed nine air monitoring stations for the ambient air study (Figure 4). Seven of the stations were set up to collect samples from air near the boundary of the landfill, and two stations were installed away from the landfill for comparisons to background air.

A statistical evaluation of the results indicated that average concentrations of selected volatile organic compounds adjacent to the landfill exceeded average background concentrations (Figure 4). The stations where at least one volatile organic compound exceeded background are shown in Figure 4. These data indicate that the landfill is impacting air adjacent to the landfill boundary.

4.1.2 In-Home Air

Based on the results of the ambient air study, EPA implemented an in-home air monitoring program to estimate the levels of landfill gas in air inside and outside (ambient) homes near the OII Site. The primary focus of the in-home air monitoring program was to determine whether landfill gas was entering homes through their foundations. EPA measured vinyl chloride in the in-home air study to evaluate landfill gas impacts. EPA collected samples from 197 homes in the neighborhoods surrounding the landfill. Locations of these homes are shown in Figure 5. Vinyl chloride was detected in about 20 percent of the 197 homes sampled, and was only near or exceeded the OII Site-specific action level of 1 part per billion in approximately 4 percent of the homes. Seven homes were determined to require interim gas control measures, which EPA subsequently installed. Supplemental sampling confirmed the effectiveness of the interim gas control systems.

4.2 Soil

EPA collected samples of both surface and subsurface soil at and in the vicinity of the OII Site during several field efforts conducted during the remedial investigation.

The primary soil investigations were conducted on the North Parcel and along the perimeter of the South Parcel. The surface soil investigation along the South Parcel perimeter also included collection of sediment samples from drainages leading away from the landfill.

4.2.1 Surface Soil

Along the perimeter of the South Parcel and on the North Parcel, EPA found isolated, low-level contaminant concentrations in surface soil and sediment. In three areas of limited extent, the concentrations exceeded both preliminary remediation goals (health-based concentrations that are used for risk screening purposes as possible "triggers" for further evaluation) and background concentrations. However, the baseline risk assessment results (summarized in Section 5) indicate that risks associated with this surface soil/sediment are not sufficiently elevated to warrant action for the protection of human health.

4.2.2 Subsurface Soil

In general, only isolated occurrences of contaminants were detected in subsurface soil samples. Along the perimeter of the South Parcel, results indicate that the higher contaminant levels found in subsurface soil samples are in areas where shallow groundwater contamination has also been detected. These areas include the western and southwestern perimeters of the South Parcel and the northeastern corner of the South Parcel. These subsurface samples were collected from greater than 10 feet below ground surface, which is typically the maximum depth evaluated in human health risk assessments.

4.3 Surface Water

Surface water present on and in the vicinity of the OII Site is limited to storm water runoff following substantial rainfall events and periodic irrigation runoff. Storm water runoff samples are routinely collected from all drainages leaving the OII Site. Detections of organic and inorganic constituents in surface water samples occur only sporadically and at generally low concentrations. The surface water management systems to be implemented under the Gas Control and Cover ROD will virtually eliminate the potential for surface water contamination.

4.4 Groundwater

This section provides a summary of pertinent information regarding groundwater contamination originating from the OII Site. The following nature and extent of contamination discussions are divided by general geographic areas and/or aquifers (see Figures 7 and 8).

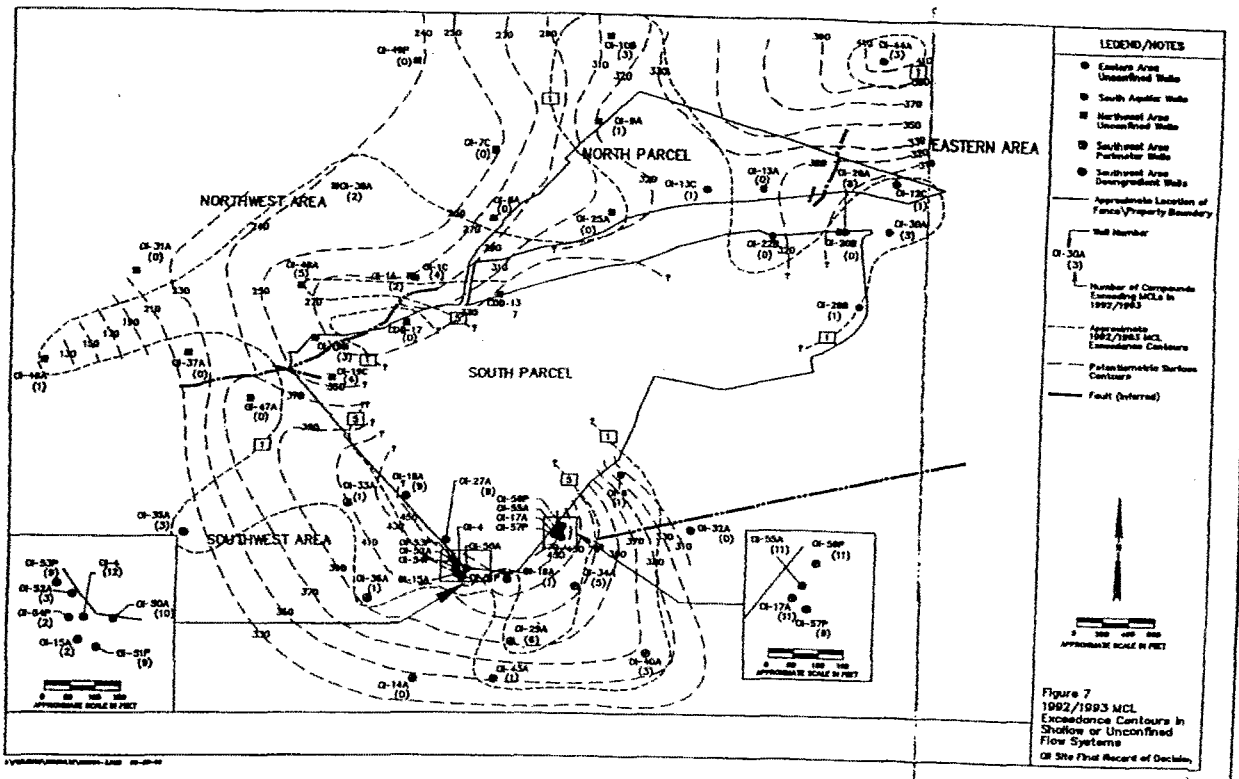


Figure 7
1992/1993 MCL Exceedance Contours in Shallow or Unconfined Flow Systems
OU Site Final Record of Decision

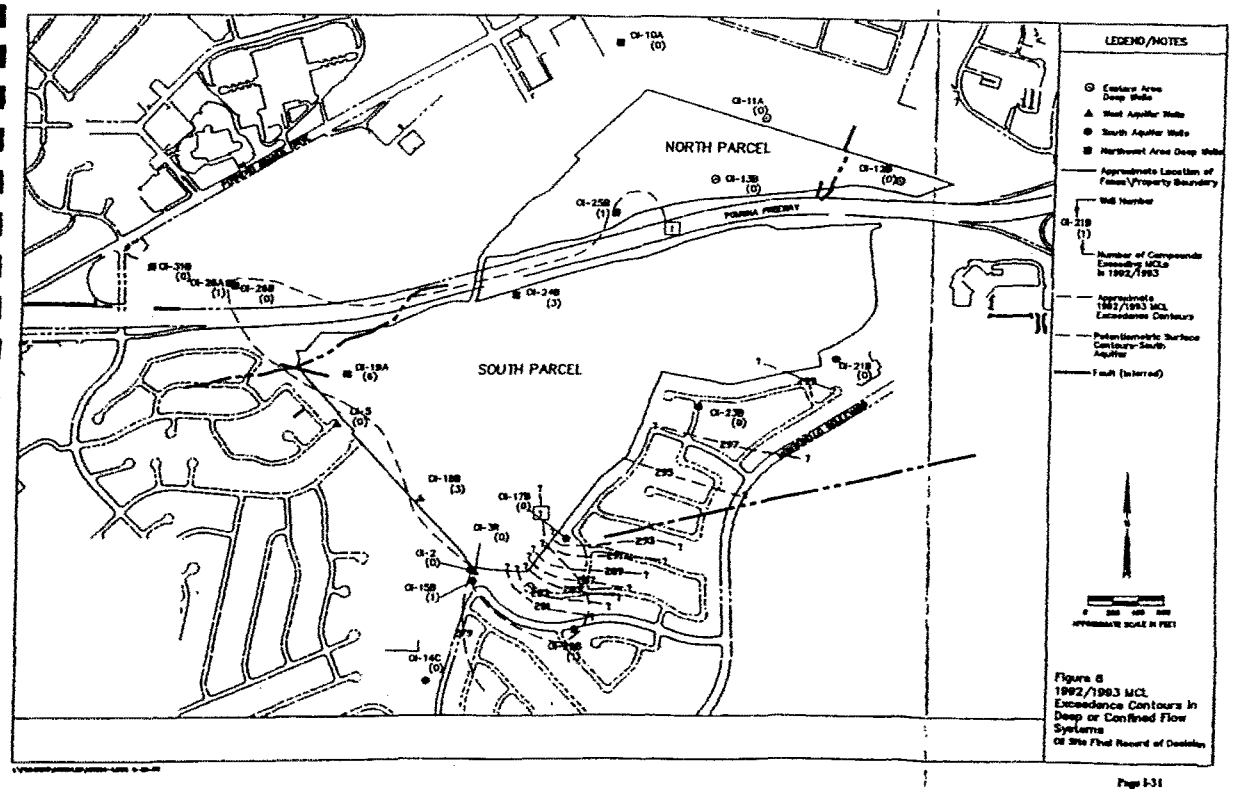


Figure 6
1992/1993 MCL Exceedance Contours in Deep or Confined Flow Systems
OU Site Final Record of Decision

The discussion of the nature and extent of groundwater contamination presented below is summarized from the Draft Remedial Investigation Report (EPA, 1994c) and is based on data from the 1992/1993 monitoring period. The Draft Remedial Investigation Report also provides an in-depth evaluation of all groundwater data collected from 1984 to 1993. For the Feasibility Study Report (EPA, 1996), groundwater quality data from 1994 were also evaluated to identify areas of concern for groundwater and to see if any significant changes had occurred.

4.4.1 Northwest Area

The Northwest Area encompasses the western portion of the North Parcel, the northwest portion of the South Parcel, and the area downgradient (northwest and west) of the two parcels.

Nature and Extent of Groundwater Contamination. EPA evaluated the groundwater contamination in the Northwest Area using the 1992-1993 maximum contaminant level (MCL) exceedances, shown in Figures 7 (shallow or unconfined flow systems) and 8 (deep or confined flow systems).

- 1992-1993 maximum contaminant level exceedances (Figure 7) indicate the presence of one contaminant plume moving approximately due west along the northern boundary of the South Parcel and a second area of contamination on and north of the North Parcel.

- It appears that contaminants exiting the landfill near Wells CDD-13 and OI-19B enter groundwater, which then migrates toward Well OI-46A. This westerly plume is consistent with the groundwater flow directions presented in Figure 7.

- Data from the deeper units in this same area (primarily Wells OI-19A and OI-24B), shown in Figure 8, also show maximum contaminant level exceedances indicating deeper groundwater contamination in the vicinity of the shallow plume source areas.

Contaminant Fate and Transport. Conclusions regarding contaminant transport from the landfill into and through groundwater in the Northwest Area are summarized below.

- The potential physical pathways for contaminants to migrate from the landfill and into the groundwater in this area may be through several small canyons that were excavated prior to the establishment of the landfill and subsequently filled with refuse. These canyons were located approximately along the present northern boundary of the South Parcel. The lithology of basal rock in these canyons is silty sandstone and siltstones that are probably less permeable than the overlying waste or

fill material. This permeability contrast can direct flow from the interior sections of the landfill outward towards the north-northwest.

- While most of the contaminant transport will likely be through the unconfined aquifer system, some migration also occurs through siltstones and deeper, confined units.

4.4.2 Southwest Area—Groundwater Contamination

The Southwest Area refers to the area around the western, southwestern, southern, and southeastern boundaries of the southwestern corner of the South Parcel.

Nature and Extent of Groundwater Contamination. EPA evaluated groundwater contamination in the Southwest Area using the 1992/1993 MCL exceedances, as shown in Figures 7 and 8. As shown in these figures, the perimeter wells exhibit numerous maximum contaminant level exceedances. These data indicate at least two shallow plumes migrating from the Southwest Area of the landfill (Figure 7). The following observations have been made regarding the groundwater plumes.

- The contaminant levels at the fringes of the monitoring well network indicate that impacted water is not likely present considerable distances further downgradient (i.e., less than a few hundred feet beyond the current monitoring wells).

- The west-southwest plume extends at least to Well OI-35A, located about 1,800 feet from the landfill boundary. Contamination present this far downgradient in the Shallow Silt Flow System is not consistent with the horizontal flow velocities calculated for the Shallow Silt Flow System, and is likely indicative of preferential flow through higher-velocity features in the siltstone matrix (such as fractures or sandier intervals) or along the contact between the Lakewood/San Pedro and Pico Units.

- The primary source of contamination in the Southwest Area appears to be subsurface releases along the borders of the landfill.

Contaminant Fate and Transport. Conclusions regarding contaminant transport from the landfill into and through groundwater in the Southwest Area are summarized below:

- The primary pathway for contaminant transport from the landfill into the surrounding regions of the Southwest Area is subsurface releases along the borders of the landfill and subsequent horizontal migration of contaminants through the siltstone, fractures, and sandier intervals in the Shallow Silt Flow System. Additionally, contaminants can migrate directly into groundwater in the Lakewood/San Pedro/Fill unit at the southwest corner of the landfill.

- Following wet periods, contaminated groundwater flow is possible along the contact between the Lakewood/San Pedro Formation (or the Lakewood/San Pedro/Fill unit) and the Shallow Silt Flow System, given the permeability contrast between the two.

- Although there are high contaminant concentrations near the landfill perimeter in the Southwest Area (particularly of organic constituents), migration through the siltstone causes organic constituents to be retarded and concentrations to decrease considerably with distance from the perimeter of the landfill.

- Migration through the siltstone causes organic constituents to be retarded and concentrations to decrease considerably with distance from the perimeter of the landfill. The semivolatile organic compounds are even more retarded that the volatile organic compounds and are not expected to transport as quickly away from the landfill because of their generally high retardation rates. Outside Well OI-35A, there are very few organic compounds detected at the fringes of the shallow plumes in the Southwest Area.

4.4.3 Eastern Area—Groundwater Contamination

The Eastern Area comprises the area to the north, east, and south of the eastern portion of the South Parcel and the area to the north and east of the North Parcel.

Nature and Extent of Groundwater Contamination. The 1992/1993 combined maximum contaminant level exceedances, shown in Figures 7 and 8, indicate one anomalous well and one shallow plume. The following observations have been made regarding groundwater contamination in this area:

- The anomalous well is Well OI-44A, which has three maximum contaminant level exceedances. (This well is anomalous because it appears to have contamination of the type associated with the landfill, but is located upgradient of the landfill according to the available groundwater data.) However, the hydraulic relationship between this well and other wells closer to the landfill in the Eastern Area is not well understood.

- The contaminant plume appears to be small and shallow, moving to the east from the northeast corner of the South Parcel toward Well OI-30A and potentially Well OI-12C. This plume is primarily organic, but does contain inorganic constituents as well. The lack of organic compounds in the other unconfined wells outside Wells OI-20A and OI-30A (located about 400 feet downgradient of Well OI-20A) indicates that the extent of organic contamination in the Eastern Area is limited.

- Based on the suite of contaminants detected in Well OI-20A, it is apparent that liquid-borne contaminants in the northeast corner of the South Parcel are the source of the Well OI-20A plume. However, there are few data regarding the occurrence of liquids on the eastern end of the landfill.

Contaminant Fate and Transport. Conclusions regarding contaminant transport from the landfill into and through groundwater in the Eastern Area are summarized below.

- Coarse-grained aquifer materials in the Unconfined Aquifer System appear to be in contact with the base of the landfill along the eastern end. The most likely contaminant pathways in the Eastern Area are through these coarse-grained, permeable units of the unconfined aquifer that are contacting the waste prism.

- The majority of the contamination emanating from the eastern portion of the South Parcel will migrate into the Unconfined Aquifer System; lesser amounts and concentrations will be transported in the deeper units.

4.4.4 West and South Aquifer Systems—Groundwater Contamination

The South Aquifer trends approximately northeast-southwest in a narrow elongated band along the southern boundary of the landfill, and does not appear to be laterally extensive in the northwest-southeast direction. EPA has detected the West Aquifer only along the western boundary of the South Parcel; it does not appear to be laterally extensive to the west.

Nature and Extent of Contamination. Based on maximum contaminant level exceedances, it appears that fairly isolated, low-level areas of contamination are present in the South and West Aquifers (Figure 8).

In the West Aquifer, organic contamination has been increasing in Well OI-18B and exceeds maximum contaminant levels for three constituents. The extent of the West Aquifer downgradient of the landfill perimeter is not well defined. The source of the West Aquifer contamination could be either direct communication with the landfill beneath the central portion of the South Parcel or vertical transport through the Shallow Silt Flow System.

In the South Aquifer, three wells show maximum contaminant level exceedances (Wells OI-06, OI-29B and OI-15B) (Figure 8). In the South Aquifer, the source could either be contaminants migrating through the vadose zone in the unconfined portions of the unit (at the eastern end of the landfill and in the vicinity of Well OI-6), through vertical migration of contamination through the Shallow Silt Flow System, or through hydraulic connection with the base of the landfill itself (towards the eastern end).

Contaminant Fate and Transport. Groundwater in the South and West Aquifers ultimately flows toward the Central Basin (EPA, 1994c). The Pico Unit South Aquifer System is likely below the Central Basin's Sunnyside Aquifer (the deepest San Pedro Formation drinking water source in the Central Basin) and may represent the lowest fresh-water-bearing unit in the Central Basin. The Pico Unit South Aquifer could potentially be used in the future as a drinking water source, although it is not currently used as such. If the West Aquifer System were continuous across the entire area south and west of the landfill, it appears that it would correspond to an upper portion of the Sunnyside Aquifer. However, the limited available data indicate that the West Aquifer is continuous throughout this area.

5.0 Summary of Site Risks

EPA performed a Baseline Ecological Risk Assessment and a Baseline Human Health Risk Assessment to evaluate whether there are unacceptable human health or ecological risks from potential exposure to chemicals associated with the OII Site. This section summarizes the key components and findings of the Baseline Risk Assessments. The Baseline Risk Assessments are included as Appendixes A (ecological) and B (human health) in the Feasibility Study Report (EPA, 1996). The primary objectives of the risk assessment were:

- To identify the primary causes and relative magnitude of risks to human health or the environment associated with existing or potential contaminant exposure
- To evaluate whether remedial actions are needed to protect human health or the environment
- To support development of the Feasibility Study through preparation of preliminary cleanup goals and providing risk estimates for decisionmaking processes in selecting a remedial alternative

5.1 Baseline Human Health Risk Assessment Summary

In accordance with the streamlined approach for Baseline Risk Assessments at CERCLA municipal landfills, EPA focused the Baseline Risk Assessment for the OII Site on those media beyond the source area: ambient air, groundwater, and offsite soils/sediment. EPA intended the Baseline Risk Assessment to identify those contaminants and media requiring remedial action based on unacceptable risks. The media, pathways, and chemicals addressed under the streamlined approach are discussed briefly below.

Modified No-Action Scenario. For the OII Site, under the modified no-action scenario, rather than a typical no-action scenario, EPA evaluated risks of exposure assuming that currently existing and operating control systems remain in place; and that no additional remedial actions would be constructed or operated. The modified no-action scenario was selected as the basis for the Risk Assessment because the data collected during the remedial investigation were collected while existing systems were operating. Thus, current site conditions (baseline) are best represented by the modified scenario.

5.1.1 Identification of Contaminants of Potential Concern

EPA selected chemicals of potential concern from validated environmental monitoring data collected between 1989 and 1990 for ambient air, 1989 and 1993 for groundwater, and 1987 and 1992 for North Parcel and near-site soil, respectively. For purposes of the Baseline Risk Assessment, these data were assumed to represent current conditions and to reflect an adequate time period to incorporate seasonal or annual variations. Table 3 lists the chemicals of potential concern used in the baseline risk assessment.

5.1.2 Exposure Assessment

This section briefly summarizes the potentially exposed populations, the exposure pathways, and the exposure quantification from the Baseline Human Health Risk Assessment.

5.1.2.1 Potentially Exposed Populations

Potential receptors on the landfill property include authorized workers within the fenced area (the South Parcel and the landfilled portion of the North Parcel) and employees and customers of the commercial operations on the remainder of the North Parcel. Potential receptors in the area surrounding the landfill include workers in the surrounding industrial and commercial facilities and children and adults in the residential areas.

5.1.2.2 Chemical Exposure Pathways

An exposure pathway describes how a receptor could be exposed to contaminants present at a site or released from a site. A complete exposure pathway requires the following elements: a source, a mechanism for release and migration, an exposure medium, a point of potential human contact, and a route of exposure.

Under the streamlined approach, only those exposure scenarios associated with contaminated media beyond the source area (waste prism and its components) were quantitatively evaluated in the Baseline Risk Assessment. The retained exposure pathways include: (1) inhalation of contaminants in ambient air by residents; (2) potential ingestion, dermal contact with, and inhalation of contaminated groundwater by adult residents; and (3) ingestion, dermal contact

Table 3
Selected Chemicals of Potential Concern for Air, Groundwater, and Soil
Off Site Final Record of Decision

Page 1 of 3

Chemical Name	Air	Groundwater	Soil
Organic Constituents			
1,1,1,2-Tetrachloroethane		x	
1,1,1-Trichloroethane	x	x	
1,1,2-Trichloroethane		x	
1,1-Dichloroethane	x	x	x
1,1-Dichloroethylene		x	
1,2,4-Trichlorobenzene		x	
1,2-Dibromoethane			
1,2-Dichlorobenzene		x	
1,2-Dichloroethane	x	x	x
1,2-Dichloroethylene (Total)		x	x
1,2-Dichloroethylene, trans-		x	
1,2-Dichloropropane		x	
1,3-Dichlorobenzene		x	x
1,3-Dichloropropene, trans-		x	
1,4-Chlorotoluene		x	
1,4-Dichlorobenzene		x	
1,4-Dioxane		x	
2,4-Dimethylphenol		x	
2-Butanone		x	x
2-Hexanone		x	
2-Methylnaphthalene		x	x
2-Methylphenol		x	
3,3'-Dichlorobenzidine			x
4,4'-DDD		x	
4,4'-DDE		x	
4,4'-DDT		x	
4-Methyl-2-pentanone		x	x
4-Methylphenol		x	x
4-Nitroaniline			x
Acenaphthene		x	x
Acetone		x	x
Alpha		x	
Anthracene		x	x
Benzene	x	x	x
Benzo(a)anthracene			x
Benzo(a)pyrene			x
Benzo(b)fluoranthene			x
Benzo(g,h,i)perylene			x
Benzo(k)fluoranthene			x
Benzoic acid		x	x
Benzyl alcohol		x	
Benzyl chloride		x	
Beta-BHC		x	
BHC, alpha-		x	
BHC, delta-		x	
BHC, gamma- (Lindane)		x	
bis(2-Ethylhexyl)phthalate		x	x
Butylbenzylphthalate		x	x
Carbazole		x	
Carbon disulfide		x	x
Carbon tetrachloride	x	x	
Chlordane		x	
Chlordane, gamma-		x	

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Table 3
Selected Chemicals of Potential Concern for Air, Groundwater, and Soil
Off Site Final Record of Decision

Page 2 of 3

Chemical Name	Air	Groundwater	Soil
Chlorobenzene	x	x	x
Chloroethane		x	
Chloroform	x	x	
Chloromethane		x	
Chrysene			x
cis-1,2-Dichloroethylene		x	x
cis-1,3-Dichloropropene		x	
Di-n-butylphthalate		x	x
Di-n-octylphthalate		x	x
Dibenzofuran		x	x
Dibromochloromethane		x	
Dichlorodifluoromethane		x	
Dieldrin		x	
Diethylphthalate		x	
Dimethylphthalate		x	
Endosulfan I		x	
Endosulfan II		x	
Endosulfan sulfate		x	
Endrin		x	
Endrin aldehyde		x	
Ethylbenzene	x	x	x
Fluoranthene		x	x
Fluorene		x	
Heptachlor		x	
Heptachlor epoxide		x	
Hexachlorobutadiene			x
Isophorone		x	
Methoxychlor		x	
Methylene chloride		x	x
N-Nitrosodiphenylamine		x	x
Naphthalene		x	x
Pentachlorophenol			x
Phenanthrene		x	x
Phenol		x	x
Purgeable organic halogens		b	
Pyrene		x	x
Styrene		x	x
Tetrachloroethylene	x	x	
Toluene	x	x	x
Total Organic halogens		b	
Trichloroethylene	x	x	x
Trichlorofluoromethane (Freon 11)		x	
Vinyl acetate			x
Vinyl chloride	x	x	x
Xylene, m,p,-		x	x
Xylene, m-		x	
Xylene, o-		x	
Xylenes, p-		x	
Xylenes, total-		x	x

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Table 2
Selected Chemicals of Potential Concern for Air, Groundwater, and Soil
OII Site Final Record of Decision

Page 3 of 3

Chemical Name	Air	Groundwater	Soil
Inorganic Constituents			
Aluminum		x	x
Ammonia nitrogen (as N)		x	
Antimony		x	x
Arsenic		x	x
Barium		x	x
Beryllium		x	x
Cadmium		x	x
Calcium		a	a
Chloride		b	
Chromium (Total)		x	x
Cobalt		x	x
Copper		x	x
Cyanide		x	x
Iron		a	a
Lead		x	x
Magnesium		a	a
Manganese		x	x
Mercury		x	x
Nickel		x	x
Nitrate		x	
Nitrite (as N)		x	
Potassium		a	a
Selenium		x	x
Silver		x	x
Sodium		a	a
Sulfate		b	
Sulfide		b	
Thallium		x	x
Tin			x
Vanadium		x	x
Zinc		x	x

Key:
a: Essential Nutrients
b: Major cation/anion, or other water quality parameter
x: Chemical of Potential Concern

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with, and inhalation of contaminated soil/sediments by workers (North Parcel soil only) and residents. Ambient air and soil/ sediment exposure pathways are currently complete exposure pathways; the groundwater exposure pathway is not currently complete because nearby groundwater is not being used, but could be at some point in the future.

EPA estimated ambient air and soil/sediment exposures for adult and child residents. EPA also evaluated soil from the North Parcel for worker exposure and groundwater for adult residential exposure.

5.1.2.3 Exposure Quantification

Exposure, defined as contact with a chemical or physical agent, is estimated using six factors: chemical concentration at the point of exposure, contact rate, exposure frequency, exposure duration, body weight, and averaging time, as described by the following general equation:

$$\text{Intake} = \frac{\text{Concentration} \times \text{Contact Rate} \times \text{Exposure Frequency} \times \text{Exposure Duration}}{\text{Body Weight} \times \text{Averaging Time}}$$

Exposure, or intake, is expressed as milligrams of chemical per kilogram of body weight per day (mg/kg-day) to normalize for time and body weight. The following presents the parameters and methods used in estimating exposure for each of the selected exposure pathways.

Ambient Air. EPA used air concentrations from the 24-hour ambient air study to calculate chemical intake by inhalation (mg/kg-day) for residential exposures to adults and children. Key exposure parameters are shown in Table 4.

Groundwater. Residents could be exposed to contaminants in groundwater through ingestion, inhalation of volatile organic compounds, or dermal contact with groundwater if used for a water supply.

Ingestion. The parameters used to calculate the intake associated with the ingestion of contaminants in groundwater are shown in Table 5.

Inhalation. Residents could also be exposed to chemicals transferred from tap water to the air from showers, baths, toilets, dishwashers, washing machines, and during cooking. Inhalation of chemicals from groundwater is applicable only for volatile compounds. EPA evaluated risks due to inhalation of volatile organic compounds from groundwater according to the approach that Andelman et al. developed (Andelman et al., 1987). EPA selected the highest volatilization factor of 0.0005 from the Andelman et al. approach. Using the EPA volatilization factor of 0.0005 to convert groundwater concentrations to a corresponding air concentration, EPA calculated the intake associated with the inhalation of chemicals volatilized from groundwater using the parameters presented in Table 6.

Table 4
Exposure Parameters for Estimating Exposure for Residential Intake of Ambient Air
OII Site Final Record of Decision

Description (units)	Reasonable Maximum Child	Reasonable Maximum Adult[a]	Average Value Adult[a]
Exposure point concentration for air (mg/m³)	95% UCL	95% UCL	95% UCL
Body weight (kg)	18[b]	70	70
Inhalation rate (m³/day)	10[c]	20	20
Exposure frequency (days/year)	350	350	350
Exposure duration (years)	9	30	9
Averaging Time (years) - Cancer	70	70	70
Averaging Time (years) - Noncancer	9	30	9

[a]EPA, 1991f, unless otherwise noted.
[b]EPA, 1989b.
[c]EPA, 1994d.

Table 5
Parameters for Estimating Residential
Exposures from Ingestion of Groundwater Contaminants
OII Site Final Record of Decision

Description (units)	Value[a]	Average Value[b]
Exposure point concentration for groundwater (mg/L)	Arithmetic mean	Arithmetic mean
Daily water ingestion rate (L/day)	2	1.4
Exposure frequency (days/year)	350	350
Exposure duration (years)	30	9
Body weight (kg)	70	70
Averaging Time (years) - Cancer	70	70
Averaging Time (years) - Noncancer	30	9

[a]EPA, 1991e.
[b]EPA, 1992f.

Table 6
Parameters for Estimating Chemical Intake for an Adult Resident
from Inhalation of Groundwater Volatiles
OII Site Final Record of Decision

Description (units)	Reasonable Maximum Exposure Value[a]	Average Value[b]
Exposure point concentration in air (mg/m³)	C_wx0.5	C_wx0.5
Exposure point concentration in water (mg/L)	Arithmetic mean	Arithmetic mean
Body weight (kg)	70	70
Averaging Time (years) - Cancer	70	70
Averaging Time (years) - Noncancer	30	9
Exposure frequency (days/year)	350	350
Exposure duration (years)	30	9
Daily inhalation rate (m³/day)	15	15

[a]EPA, 1991e.
[b]EPA, 1992f.

Table 7
Parameters for Estimating Chemical Absorption from Dermal Contact with Groundwater
OII Site Final Record of Decision

Description (units)	Reasonable Maximum Exposure Value[a]	Average Value[b]
Exposure point concentration in water (mg/L)	Arithmetic mean	Arithmetic mean
Exposed skin surface area (cm²/event)	23,000	20,000
Dermal permeability coefficient (cm/hour)	Chemical-Specific[c]	Chemical-Specific[c]
Exposure time (hour/day)	0.25	0.17
Exposure frequency (event/year)	350	350
Exposure duration (years)	30	9
Body weight (kg)	70	70
Averaging time (years)		
Cancer effects	70	70
Noncancer effects	30	9

[a]Cal-EPA, 1992.
[b]EPA, 1992g.
[c]EPA, 1992j.

Dermal Contact. Dermal absorption is typically an insignificant route of exposure in the residential groundwater use setting. However, EPA estimates dermal absorption for chemical contaminants to assure that any potential risks from this exposure pathway are addressed. The magnitude of potential exposure by this pathway is related to the concentration in water, surface area of exposed skin, the dermal penetrability of the contaminant, and frequency and duration of exposure. The parameters in Table 7 were used to estimate exposure through dermal contact.

Soils/Sediments

Ingestion. Exposure through ingestion of contaminants in soil/sediments depends on the concentration in soil, the amount ingested, and the frequency and duration of exposure.

EPA evaluated average and reasonable maximum exposures for both a toddler (0-6 years) and an adult, using the parameters presented in Table 8.

Inhalation. EPA calculated exposure via inhalation of dust and vapors from contaminated surface soil using soil concentration, the soil volatilization factor, the particulate emission factor describing the amount of soil entrained in the air as dust, inhalation rate, and the frequency and duration of exposure. The particulate emission factor expresses the relationship of chemical concentrations adsorbed to soil and concentrations of airborne respirable dust particles and is estimated using EPA default values (EPA, 1991c). The parameters used to estimate intake from inhaling both contaminated dust from soil and volatile compounds from soil are presented in Table 8.

Dermal Contact. Dermal absorption of contaminants in soil/sediments is a function of the concentration in soil, the surface area of exposed skin, the ability of the contaminant to penetrate through the skin, and frequency and duration of exposure.

EPA estimated the absorbed dose from reasonable maximum and average exposure by dermal contact with contaminants in soil using the parameters presented in Table 8. Toddler (0 to 6 years) and adult exposures were calculated for reasonable maximum and average exposure.

5.1.3 Toxicity Assessment

Chemical contaminants may be divided into two groups according to their effects on human health. Contaminants may have carcinogenic effects or noncarcinogenic/systemic effects. Exposure to some of the chemicals detected at the OII Site could potentially result in both types of effects. Carcinogenic effects result in, or are suspected to result in, the development of cancer.

Table 8
Parameters for Estimating Intake for Residents and Workers Via Dermal, Inhalation, and Ingestion Exposure to Soil
OII Site Final Record of Decision

Description	Residents		Workers	
	RME Value[a]	Average Value[b]	RME Value[a]	Average Value[b]
Exposure Point Concentration in Soil	Lesser of the maximum or 95% UCL values	Arithmetic mean	Lesser of the maximum or 95% UCL values	Arithmetic mean
Body Weight (kg):				
Toddler (0-6 years)	15	15	-	-
Adult	70	70	70	70
Soil Ingestion Rate (mg/day)				
Toddler (0-6 years)	200	200	-	-
Adult	100	100	50	50
Inhalation Rate (m^3/day)				
Toddler (0-6 years)	16	16	-	-
Adult	20	20	20	20
Soil-Volatilization Factor (m^3/kg)	Chemical-specific[c]	Chemical-specific[c]	Chemical-specific[c]	Chemical-specific[c]
Particulate Emission Factor (m^3/kg)	4.63×10^9	4.63×10^9	4.63×10^9	4.63×10^9
Skin Surface Area (cm^2)				
Toddler	2,400[d]	2,100[d]	-	-
Adult	5,800[d]	5,000[d]	5,800[d]	5,000[d]
Absorption Factor (fraction)	0.10 (organics)[e] 0.01 (inorganics)	0.10 (organics)[e] 0.01 (inorganics)	0.10 (organics)[e] 0.01 (inorganics)	0.10 organics)[e] 0.01 (inorganics)
Soil-to-Skin Adherance Factor (mg/cm^2)	0.2[d]	0.2[d]	0.2[d]	0.2[d]
Exposure Frequency (days/year)	350	350	250	250
Exposure Duration (years)				
Cancer (adult)	30	9	25	9
Noncancer (adult)	30	9	25	9
Child	6	6	-	-
Averaging Time				
Cancer (adult)	70	70	70	70
Noncancer (adult)	30	9	25	9
Cancer (child)	70	70	-	-
Noncancer (child)	6	6	-	-

[a]EPA, 1991a, unless otherwise noted.
[b]EPA, 1992g, unless otherwise noted.
[c]Inhalation of volatilized chemicals for all COPC with a Henry's Law Constant (HLC) greater than or equal to 1×10^{-6} atm-m^3/mole and a molecular weight (MW) less than or equal to 200 g/mole.
[d]EPA, 1992.
[e]SCAQMD, 1988.

EPA has developed a carcinogen classification system using weight-of-evidence to classify the likelihood that a chemical is a human carcinogen. Definitions for the weight-of-evidence classifications are presented below.

EPA Weight-of-Evidence Classification System for Carcinogenicity	
Group	**Description**
A	Human carcinogen, based on evidence from epidemiological studies.
B1 or B2	Probable human carcinogen. B1 indicates that limited human data are available. B2 indicates sufficient evidence in animals and inadequate or no evidence in humans.
C	Possible human carcinogen, based on limited evidence in animals.
D	Not classifiable as to human carcinogenicity.
E	Evidence of noncarcinogenicity for humans.
Source: EPA, 1986b.	

Noncarcinogenic or systemic effects include a variety of toxicological end points and may include effects on specific organs or systems, such as the kidney, liver, and lungs.

EPA's Carcinogenic Assessment Group has developed cancer slope factors for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals of potential concern. Cancer slope factor(s), which are expressed in units of $(mg/kg\text{-}day)^{-1}$, are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to provide an upper-bound estimate of the excess lifetime cancer risk associated with exposure at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the cancer slope factor(s). Use of this approach makes underestimation of the actual cancer risk highly unlikely. Cancer slope factor(s) are derived from the results of human epidemiological studies or chronic animal bioassays to which animal-to-human extrapolation and uncertainty factors have been applied (for example, to account for the use of animal data to predict effects on humans).

EPA has developed reference doses to indicate the potential for adverse health effects from exposure to chemicals of potential concern exhibiting noncarcinogenic effects. Reference doses, which are expressed in units of mg/kg-day, are estimated threshold levels for daily exposure above which exposure is considered unsafe for humans, including sensitive individuals. Estimated intakes of chemicals of potential concern from environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) can be compared to the reference doses. Reference doses are derived from the results of human epidemiological studies or animal studies to which uncertainty factors have been applied (for example, to

account for the use of animal data to predict effects on humans). These uncertainty factors help ensure that the reference doses will not underestimate the potential for adverse noncarcinogenic effects to occur.

Table 9 presents toxicity values for chemicals of potential concern for both carcinogenic and noncarcinogenic effects. Slope factors and reference doses are specific to the route of exposure. For example, oral slope factors are used to evaluate risk through ingestion of carcinogenic chemicals of potential concern. In cases where route-specific cancer slope factors or reference doses were not available (for example, for the inhalation and dermal routes), oral cancer slope factors or reference doses were used.

5.1.4 Risk Characterization Summary

Information presented in the exposure assessment and the toxicity assessment is integrated in this section to characterize risk to human health from chemicals of potential concern at the OII Site.

For carcinogens, risks are estimated as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to the carcinogen. These risks are probabilities that are generally expressed in scientific notation (e.g., 1×10^{-6} or 1E-6). An excess lifetime cancer of 1×10^{-6} indicates that as a reasonable maximum estimate, an individual has a one in one million chance of developing cancer as result of site-related exposure to a carcinogen over a 70-year lifetime under specific exposure conditions at the OII Site; similarly, an excess lifetime cancer risk of 1×10^{-4} refers to a reasonable maximum estimate of a one in ten thousand chance of developing cancer as a result of the exposure.

EPA uses the general 10^{-4} to 10^{-6} risk range as a "target range" within which EPA strives to manage risks as part of a Superfund cleanup. Although the EPA risk manager may deem acceptable the waste management strategies achieving reductions in site risks anywhere within the risk range, EPA has expressed a preference for cleanups achieving the more protective end of the range (for example, 10^{-6}).

The potential for noncarcinogenic health effects is evaluated by comparing an exposure level over a specified time period (for example, a lifetime) with a reference doses derived for a similar exposure period. The ratio of exposure to toxicity is called a hazard quotient. If the estimated intake (exposure) is greater than the reference doses, the hazard quotient will be greater than one. A hazard quotient greater than one indicates the potential for an adverse noncarcinogenic health effect from exposure to the chemical.

A hazard index is generated by adding the hazard quotients for all chemicals of potential concern within a medium or across all media to which a given population may reasonably be exposed. A hazard index exceeding one indicates the potential for an adverse

Table 9
Toxicity Values and Chemical-Specific Parameters
for Chemicals of Potential Concern
Oil Site Final Record of Decision

Page 1 of 3

Chemical Name	Oral RfD[a] mg/kg-day	Inhalation RfD[a] mg/kg-day	Weight-of-Evidence Classification	Oral Slope Factor kg-day/mg	Inhalation Slope Factor kg-day/mg	Kp[b] cm/hr	ABS[c]	VF[d]
Organic Compounds								
acenaphthene	0.06	0.06	NA	–	–	0.15	0.1	2.11E+05
acetone	0.1	0.1	D	–	–	0.0012	0.1	2.70E+04
aldrin	0.00003	0.00003	B2	17	17.15	0.0016	0.1	–
anthracene	0.3	0.3	D	–	–	0.2258	0.1	2.18E+06
benzene	–	–	A	0.029	0.02905	0.11	0.1	9.60E+03
benzo(a)anthracene	–	–	B2	0.73	0.73	0.81	0	–
benzo(a)pyrene	–	–	B2	7.3	–	1.2	0.1	
benzo(b)fluoranthene	–	–	B2	0.73	0.73	–	0.1	–
benzo(g,h,i)perylene	–	–	D	–	–	0.107	0.1	–
benzo(k)fluoranthene	–	–	B2	0.073	0.073	0.033	0.1	–
benzoic acid	4	4	D	–	–	0.0073	0.1	–
benzyl alcohol	0.3	0.3	NA	–	–	0.0025	0.1	–
benzyl chloride	–	–	B2	0.17	0.17	0.0138	0.1	1.00E+05
bis(2-ethylhexyl)phthalate	0.02	0.02	B2	0.014	0.014	0.033	0.1	–
butanone, 2-	0.6	0.2857	D	–	–	0.005	0.1	3.65E+04
butylbenzyl phthalate, n-	0.2	0.2	C	–	–	0.073	0.1	–
carbazole	–	–	B2	0.02	0.02	0.07967	0.1	–
carbon disulfide	0.1	0.002857	NA	–	–	0.6	0.1	5.10E+03
carbon tetrachloride	0.0007	0.00067	B2	0.13	0.0525	0.022	0.1	5.10E+03
chlordane	0.00006	–	B2	1.3	1.3	0.046	0.1	–
chlorobenzene	0.02	0.005714	D	–	–	0.041	0.1	2.90E+04
chloroethane	–	2.857	NA	–	–	0.008	0.1	2.70E+03
chloroform	0.01	0.01	B2	0.0061	0.0805	0.13	0.1	9.10E+03
chloromethane	0.0036	–	C	0.013	0.0063	0.0042	0.1	2.80E+03
chlorotoluene, p-	0.02	–	D	–	–		0.1	2.10E+04
chrysene	–	–	B2	0.0073	0.0073	0.61	0.1	5.53E+07
ddd, 4,4'-	–	–	B2	0.24	0.24	0.28	0.1	–
dde, 4,4'-	–	–	B2	0.34	0.34	0.24	0.1	–
ddt, 4,4'-	0.0005	0.0005	B2	0.34	0.3395	0.43	0.1	–
di-n-butyl-phthalate	0.1	0.1	D	–	–	0.033	0.1	–
di-n-octyl-phthalate	0.02	0.02	NA	–	–	28.68	0.1	–
dibenzofuran	0.004	–	D	–	–	0.107	0.1	–
dibromochloromethane	0.02	0.02	C	0.084	0.084	0.0039	0.1	–
dibromoethane, 1,2-	–	0.00005714	B2	85	0.77		0.1	2.90E+04
dichlorobenzene, 1,2-	0.09	0.05714	D	–	–	0.061	0.1	5.70E+04
dichlorobenzene, 1,3-	0.089	–	D	–	–	0.087	0.1	5.70E+04
dichlorobenzene, 1,4-	0.22856	0.22856	B2	0.024	0.024	0.062	0.1	6.30E+04
dichlorobenzidine, 3,3-	–	–	B2	0.45	0.45	0.017	0.1	–
dichlorodifluoromethane	0.2	0.05714	D	–	–	0.012	0.1	1.80E+03
dichloroethane, 1,1-	0.1	0.14288	C	–	–	0.0089	0.1	6.20E+03
dichloroethane, 1,2-	–	–	B2	0.091	0.091	0.0053	0.1	9.30E+03
dichloroethene, 1,1-	0.009	0.009	C	0.6	0.175	0.016	0	1.50E+03
(eomers)	0.009	0.009	NA	–	–	0.001	0.1	8.80E+03
dichloroethene, cis-1,2-	0.01	0.01	D	–	–	0.001	0.1	5.90E+03

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Page I-49

00553

Table 9
Toxicity Values and Chemical-Specific Parameters
for Chemicals of Potential Concern
Oil Site Final Record of Decision

Page 2 of 3

Chemical Name	Oral RfD[a] mg/kg-day	Inhalation RfD[a] mg/kg-day	Weight-of-Evidence Classification	Oral Slope Factor kg-day/mg	Inhalation Slope Factor kg-day/mg	Kp[b] cm/hr	ABS[c]	VF[d]
dichloroethene, trans-1,2-	0.02	0.02	D	–	–	0.01	0	8.70E+03
dichloropropane, 1,2-	0.0011	0.0011428	B2	0.068	0.068	0.01	0.1	1.10E+04
dichloropropane, 1,3-	0.0003	0.005714	B2	0.18	0.1296	0.0065	0.1	1.80E+04
dieldrin	0.00005	0.00005	B2	16	16.1	0.016	0.1	–
diethylphthalate	0.8	0.8	D	–	–	0.0048	0.1	–
dimethylphenol, 2,4-	0.02	0.02	NA	–	–	0.0015	0.1	–
dimethylphthalate	10	10	D	–	–	0.0016	0	–
dioxane, 1,4-	–	–	B2	0.011	0.011	0.0004	0.1	5.20E+04
endosulfan	0.00005	0.00005	NA	–	–	0.002	0.1	–
endrin	0.0003	0.0003	D	–	–	0.003	0.1	–
ethylbenzene	0.1	0.2857	D	–	–	1	0.1	1.60E+04
fluoranthene	0.04	0.04	D	–	–	0.36	0.1	–
fluorene	0.04	0.04	D	–	–	0.358	0.1	1.12E+06
heptachlor	0.0005	0.0005	B2	4.5	4.55	0.011	0.1	–
heptachlor epoxide	0.000013	0.000013	B2	9.1	9.1	0.066	0.1	–
hexachlorobutadiene	0.002	0.002	C	0.078	0.077	0.12	0.1	–
hexachlorocyclohexane, alpha-	–	–	B2	6.3	6.3	0.019	0.1	–
hexachlorocyclohexane, beta-	–	–	C	1.8	1.655	0.016	0.1	–
hexachlorocyclohexane, delta-	–	–	D	–	–	0.028	0.1	–
hexachlorocyclohexane, gamma-	0.0003	0.0003	B2 - C	1.3	1.3	0.014	0.1	–
hexanone, 2-	–	–	NA	–	–	0.005	0.1	–
indeno(1,2,3-cd)pyrene	–	–	B2	0.73	0.73	1.9	0.1	–
isophorone	0.2	0.2	C	0.0010	0.0010	0.0042	0.1	–
methoxychlor	0.005	0.005	D	–	–	0.04328	0.1	–
methyl-2-pentanone, 4-	0.05	0.022856	NA	–	–	0.0015	0.1	8.40E+04
methylene chloride	0.06	0.8571	B2	0.0075	0.0016	0.0046	0.1	4.77E+03
methylphenol, 2-	0.05	0.05	C	–	–	0.018	0.1	–
methylphenol, 4-	0.005	0.005	C	–	–	0.01	0.1	–
naphthalene	0.04	0.04	D	–	–	0.069	0.1	1.05E+05
nitroaniline, p-	–	–	NA	–	–	0.014	0.1	–
nitrosodiphenylamine, n-	–	–	B2	0.0049	0.0049	0.0079	0.1	4.31E+03
pentachlorophenol	0.03	–	B2	0.12	0.12	0.65	0.1	–
phenanthrene	–	–	D	–	–	0.23	0.1	2.11E+06
phenol	0.6	0.6	D	–	–	0.0082	0.1	–
pyrene	0.03	0.03	D	–	–	0.3255	0.1	–
styrene	0.2	0.2	C			0.67	0.1	4.03E+04
tetrachloroethane, 1,1,1,2-	0.03	–	C	0.0260	0.0259	0.0256	0.1	3.79E+04
tetrachloroethene	0.01	0.01	C-B2	0.052	0.002	0.37	0.1	1.71E+04
toluene	0.2	0.11428	D	–	–	1	0.1	1.91E+04
trichlorobenzene, 1,2,4-	0.01	0.0025713	D	–	–	0.1	0.1	2.18E+05
trichloroethane, 1,1,1-	0.09	0.2857	D	–	–	0.017	0.1	2.25E+04
trichloroethane, 1,1,2-	0.004	0.004	C	0.0570	0.0560	0.0064	0.1	2.11E+04
trichloroethene	0.006	0.006	B2	0.0110	0.0060	0.2300	0.1	1.12E+04
trichlorofluoromethane	0.3	0.19999	D	–	–	0.017	0.1	3.44E+03
vanadium	0.007	–	NA	–	–	0.001	0	–

Page I-50

MASTRTO2.XLS

00554

Table 9
Toxicity Values and Chemical-Specific Parameters
for Chemicals of Potential Concern
OII Site Final Record of Decision

Page 3 of 3

Chemical Name	Oral RfD[a] mg/kg-day	Inhalation RfD[a] mg/kg-day	Weight-of-Evidence Classification	Oral Slope Factor kg-day/mg	Inhalation Slope Factor kg-day/mg	Kp[b] cm/hr	ABS[c]	VF[d]
vinyl acetate	1	0.05714	NA	–	–		0.1	–
vinyl chloride	–	–	A	1.9	0.294	0.0073	0.1	3.46E+03
xylene, m-	2	0.2	NA	–	–	0.08	0.1	6.07E+04
xylene, mixture	2	0.2	D	–	–	0.08	0.1	6.89E+04
xylene, o-	2	0.2	NA	–	–	0.08	0.1	8.55E+04
xylene, p-	2	0.2	NA	–	–	0.08	0.1	5.99E+04
Inorganic Compounds								
aluminum	1	–	NA	–	–	0.001	0	–
ammonia	0.97	0.02857	D	–	–	0.001	0	–
antimony	0.0004	–	D	–	–	0.001	0	–
arsenic	0.0003	–	A	1.75	15.05	0.001	0	–
barium	0.07	0.00014285	D	–	–	0.001	0	–
beryllium	0.005	–	B2	4.3	8.4	0.001	0	–
cadmium (food)	0.001		B1		6.3	0.001	0	–
cadmium (water)	0.0005	–	B1	–	6.3	0.001	0	–
chromium (hexavalent)	0.005	–	A	–	42	0.001	0	–
chromium (trivalent)	1	–	D	–	–	0.001	0	–
iron	–	–	NA	–	–	0.001	0	–
manganese (food)	0.14	0.0000142	D			0.001	0	–
manganese (water)	0.005	0.0000142	D	–	–	0.001	0	–
mercury	0.0003	0.00008571	D	–	–	0.001	0	–
nickel, soluble salts	0.02	–	D	–	–	0.001	0	–
nitrate	1.6	–	D	–	–	0.001	0	–
nitrite	0.1	–	D	–	–	0.001	0.1	–
selenium	0.005	–	D	–	–	0.001	0	–
silver	0.005	–	C	–	–	0.001	0	–
thallium	–	–	D	–	–	0.001	0	–
tin	0.6	–	NA	NA	–	0.001	0	–
zinc	0.3	–	D	–	–	0.001	0	–

a - Reference Dose
b - Dermal Permeability Coefficient
c - Absorption Factor
d - Volatilization Factor

noncarcinogenic health effect from exposure to the medium or media. The hazard index provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media.

Noncancer hazard indexes and cancer risks were estimated for ambient air, groundwater, and surface soil.

Summary of Estimated Ambient Air Risks. EPA calculated ambient air risk estimates for residential exposure via inhalation. EPA also calculated estimated cancer risks and noncancer hazard indexes for each monitoring station, as shown in Figures 9a and 9b, respectively.

Ambient air was found to present an elevated risk to human health at the monitoring stations around the OII Site. Stations 1, 2, and 7 had the highest cancer risks, exceeding 3×10^{-4}, primarily due to the presence of vinyl chloride, a known landfill contaminant. Other stations had cancer risks falling in the 5.1×10^{-5} to 1.8×10^{-4} range. Excluding the influence of background pollutants, risks at Stations 1, 2, and 7 still exceed 1×10^{-4} under reasonable maximum exposure conditions and Stations 3, 4, and 6 exceed 1×10^{-5}.

Summary of Estimated Soils/Sediment Risks. As recommended for the streamlined approach to conducting remedial investigations at CERCLA municipal landfills, EPA did not sample soils directly overlying the waste prism because these soils will be under the landfill cover after implementation of a final remedy. The cover will prevent future releases of waste and soil from the landfill. EPA used data, from soil samples collected at locations outside the area to be covered, for the Baseline Risk Assessment. EPA collected these samples as part of the near-site surface soil/sediment investigation and the North Parcel investigation soil sampling programs.

EPA evaluated soils and sediments from the North Parcel and near-site sampling areas for child and adult exposure scenarios. Figures 10 and 11 present sample locations and risk assessment results for total cancer risk and total noncancer hazard index, respectively. Under the most health-protective scenario (child reasonable maximum exposure) and the least protective (adult average exposure), all near-site sampled areas but one (Area B under average adult exposure) exceeded a cancer risk of 1×10^{-6}, including the background areas (Pico Background, Lakewood/San Pedro Background, and Freeway Control Area Background). Cancer risks for the Area D, Iguala Park, and Southern California Gas Company sample areas were only slightly greater than background at 1.87×10^{-5} or higher under child reasonable maximum exposure conditions. These compare to background area cancer risks of 1.30×10^{-5} to 1.74×10^{-5} under the same conditions. Noncancer hazard indexes exceeded one for only some areas under the child reasonable maximum exposure scenario (Southern California Gas Facility, Iguala Park, Pico Background, and Area D).

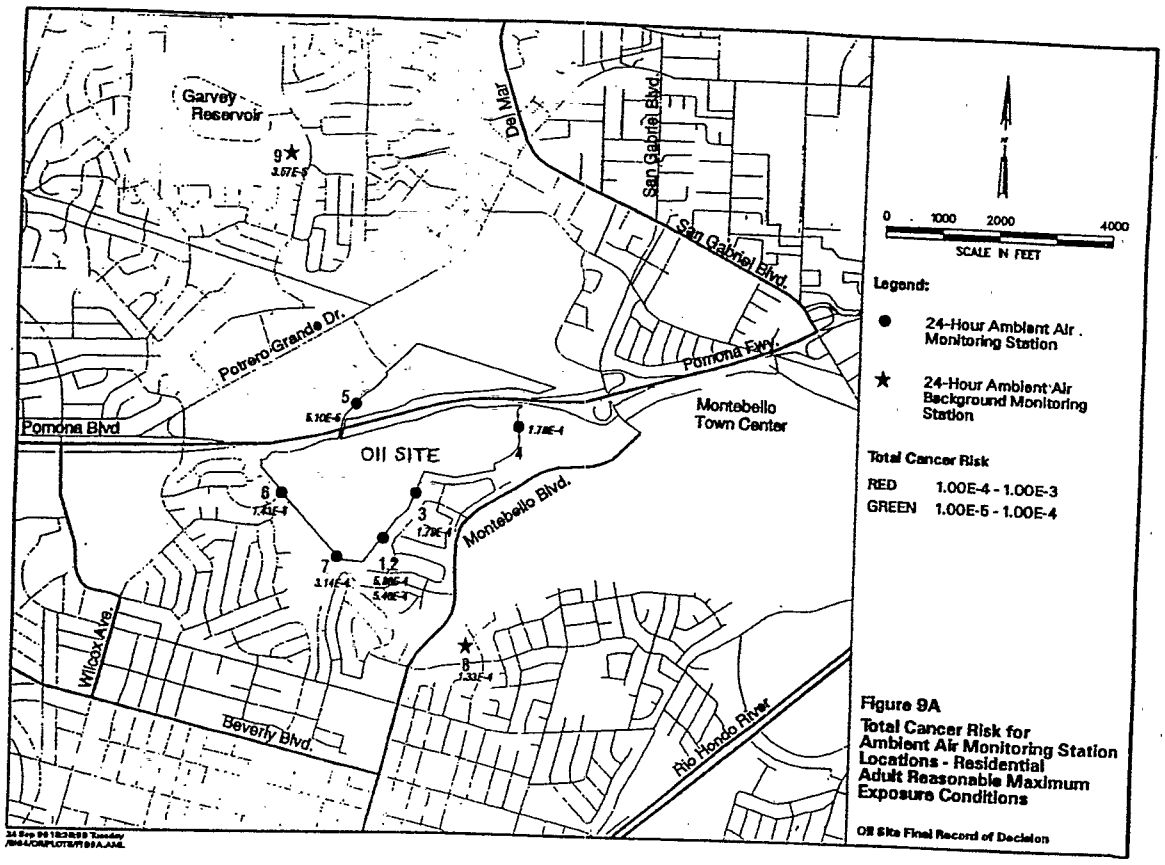


Figure 9A
Total Cancer Risk for Ambient Air Monitoring Station Locations - Residential Adult Reasonable Maximum Exposure Conditions

Oil Site Final Record of Decision

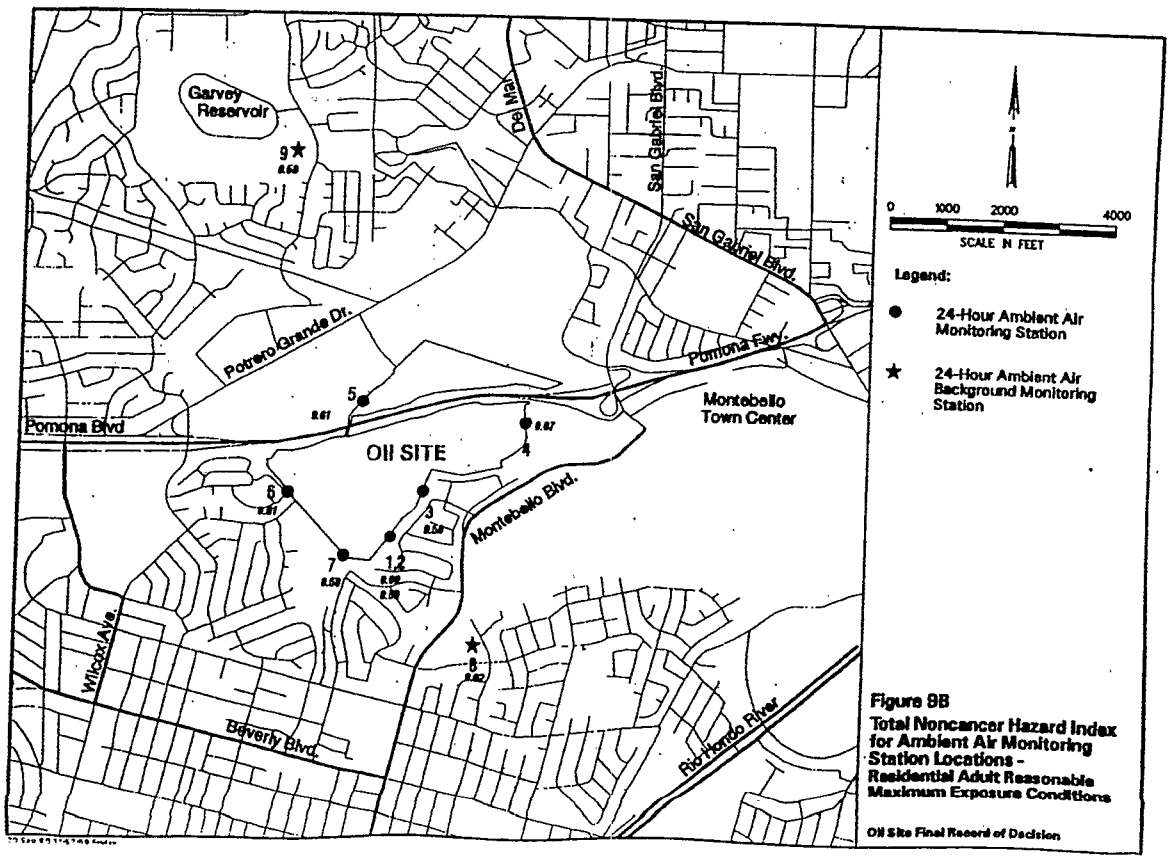


Figure 9B
Total Noncancer Hazard Index for Ambient Air Monitoring Station Locations - Residential Adult Reasonable Maximum Exposure Conditions

Oil Site Final Record of Decision

Noncancer hazard indexes for the Southern California Gas Company Facility and Iguala Park, 1.68 and 1.76, respectively, were only slightly greater than Pico Background, 1.34, under child reasonable maximum exposure conditions.

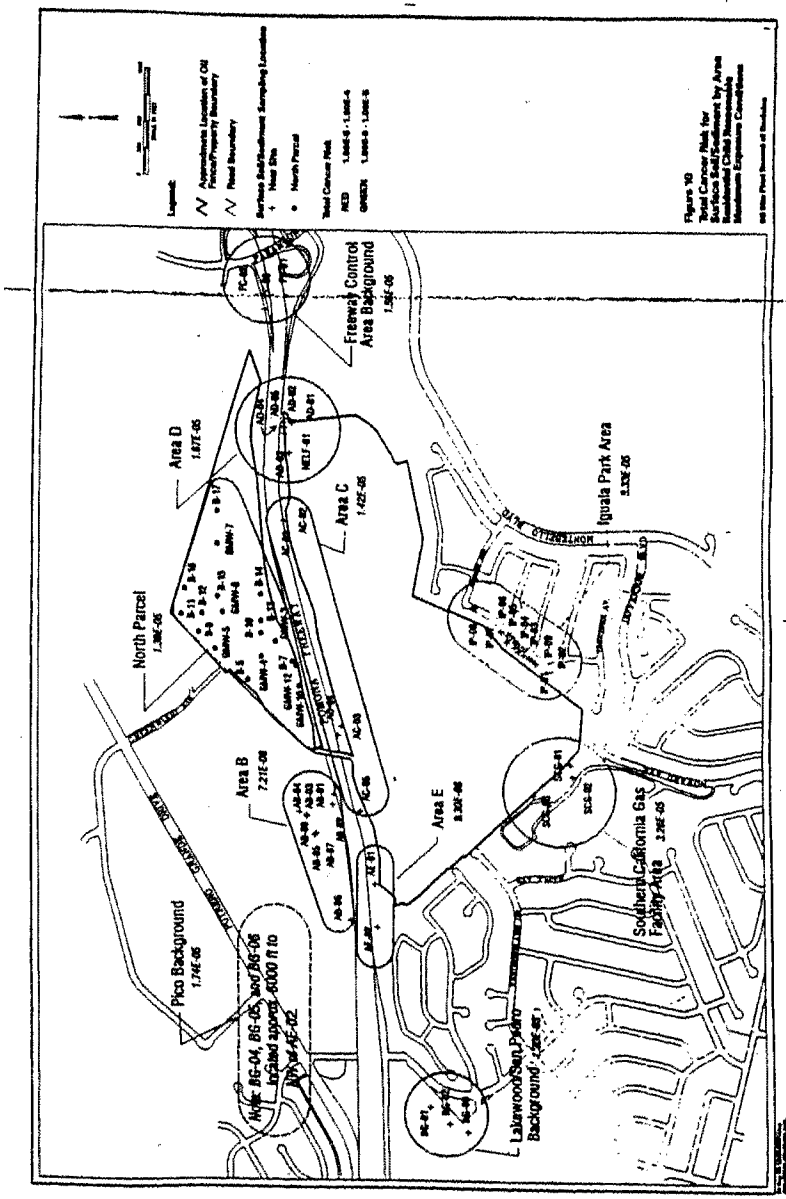
Summary of Estimated Groundwater Risks. Groundwater data are available from monitoring wells installed on or near the landfill. Figures 7 (shallow wells) and 8 (deep wells) show the locations of these groundwater monitoring wells. Groundwater sample results from January 1989 through October 1993 were used to calculate groundwater exposure risks on a well-specific basis. Adult residential receptors were evaluated for potential groundwater exposure via ingestion, volatile inhalation, and dermal contact. Risks were calculated using the reasonable maximum exposure conditions for each of the 72 monitoring wells at the landfill.

For chemicals of concern detected in individual wells, 27 wells exceeded a cancer risk of 1×10^{-4} under reasonable maximum exposure conditions (Figures 12 and 13). Fifty out of 72 wells had associated hazard index values exceeding one (Figures 14 and 15). Twelve wells had hazard index values exceeding 10. The wells with the highest estimated cancer and noncancer risks are generally those wells along the landfill perimeter at the southwest corner of the South Parcel, an area with extensive leachate in the waste prism and numerous exceedances of drinking water standards in the shallow groundwater monitoring wells.

The presence of naturally occurring arsenic, beryllium, and manganese in the OII Site vicinity affects the cancer risk and noncancer hazard index estimates for the groundwater monitoring wells. As discussed in the Feasibility Study Report (EPA, 1996), the estimated cancer risk for arsenic and beryllium is 1.5×10^{-4} using the baseline concentrations presented in the Draft Remedial Investigation Report (EPA, 1994c). Similarly, the hazard quotient for the baseline concentration of manganese is 0.7. Although the estimated "baseline" concentrations are likely somewhat higher than true background, these estimates show how naturally occurring inorganic constituents in the OII Site area complicate the evaluation of site-related risks in groundwater. However, taking these baseline concentrations into consideration, data from 19 wells still indicate site-related risks exceeding 1×10^{-4}.

5.1.5 Baseline Human Health Risk Assessment Conclusion

Actual or threatened releases of hazardous substances from the OII Site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.



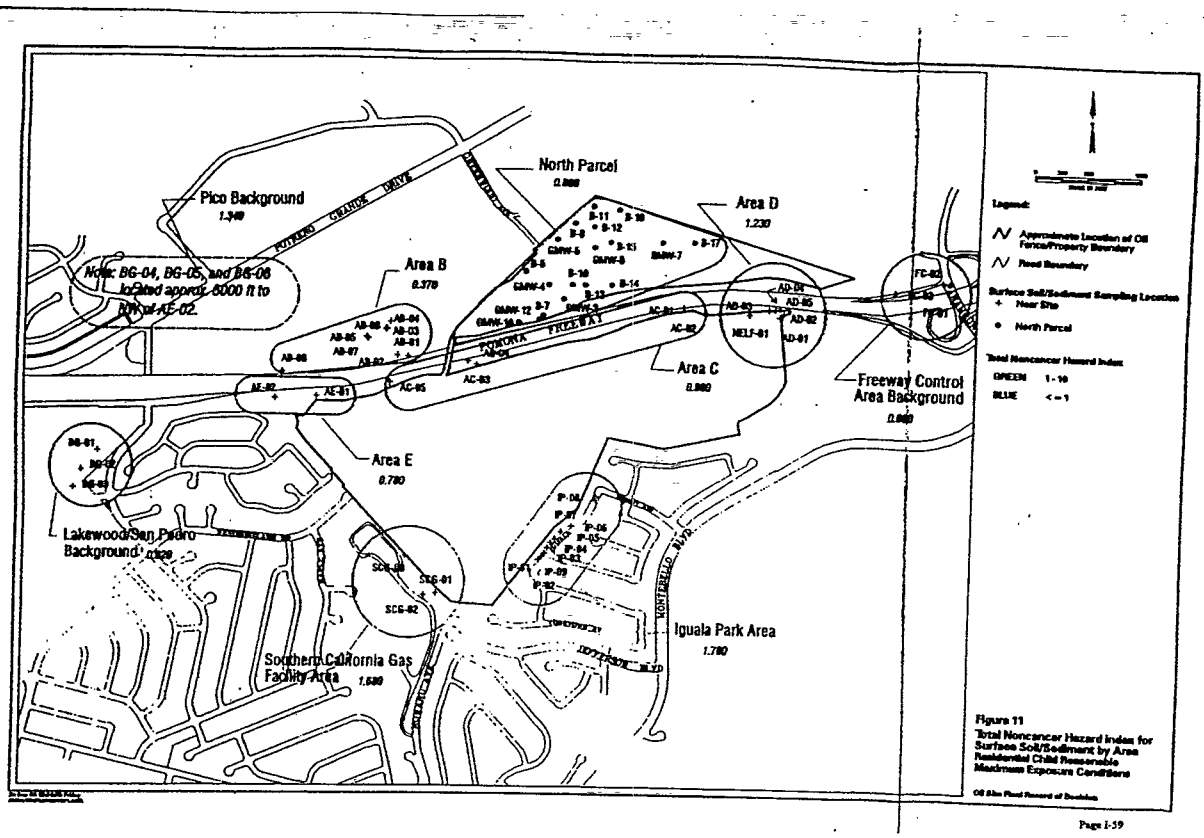


Figure 11
Total Noncancer Hazard Index for Surface Soil/Sediment by Area Residential Child Reasonable Maximum Exposure Conditions

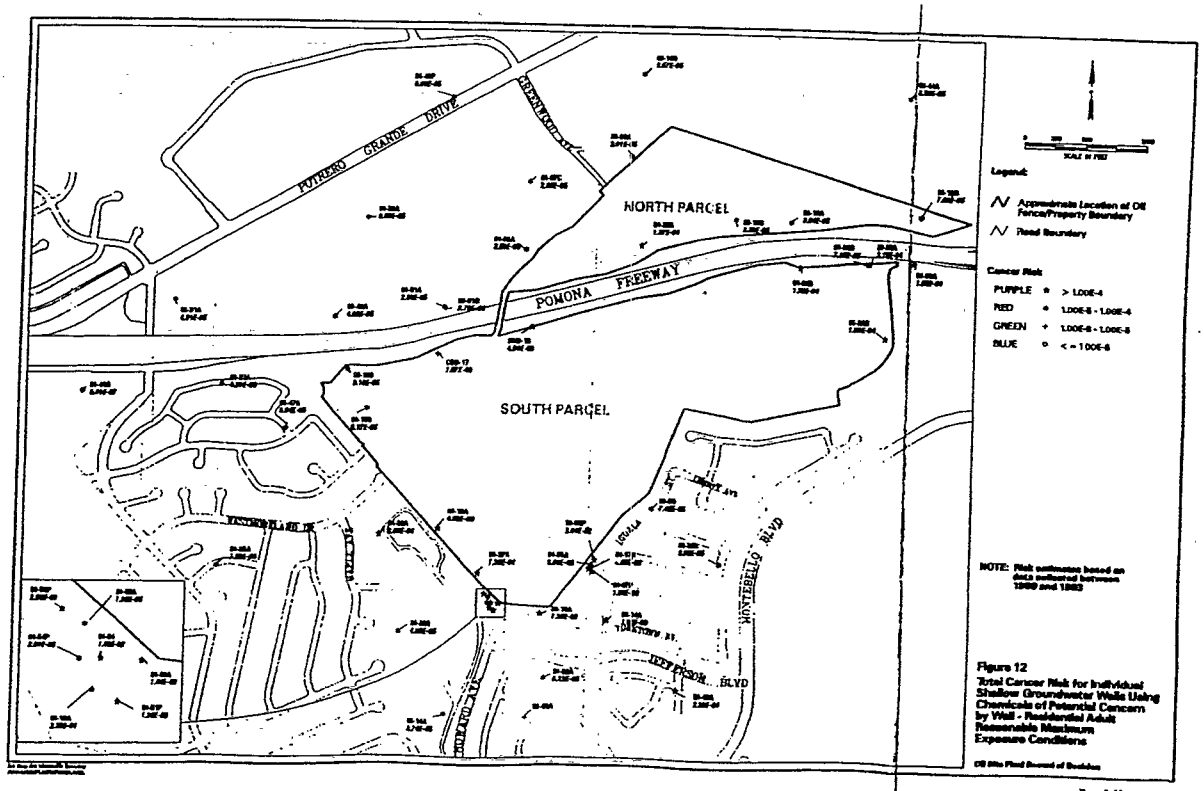


Figure 12
Total Cancer Risk for Individual Shallow Groundwater Wells Using Chemicals of Potential Concern by Well - Residential Adult Reasonable Maximum Exposure Conditions

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005562

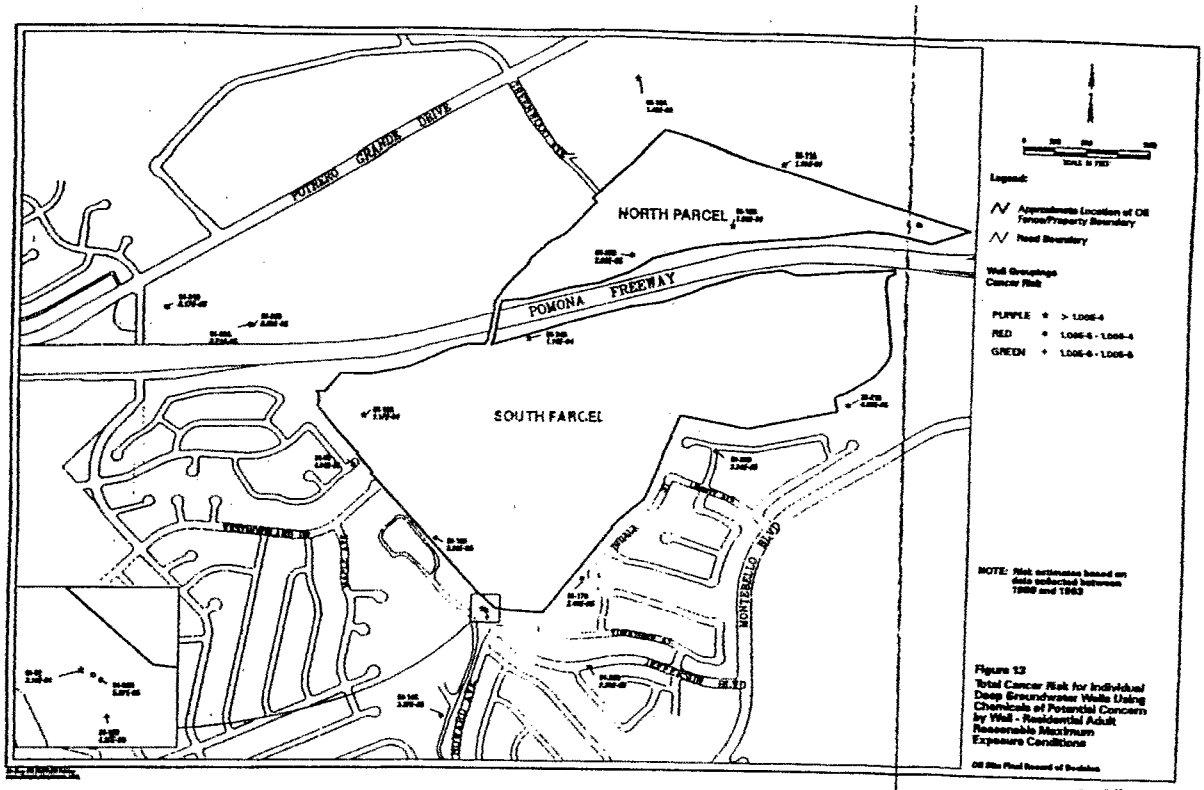


Figure 13
Total Cancer Risk for Individual Deep Groundwater Wells Using Chemicals of Potential Concern by Well - Residential Adult Reasonable Maximum Exposure Conditions

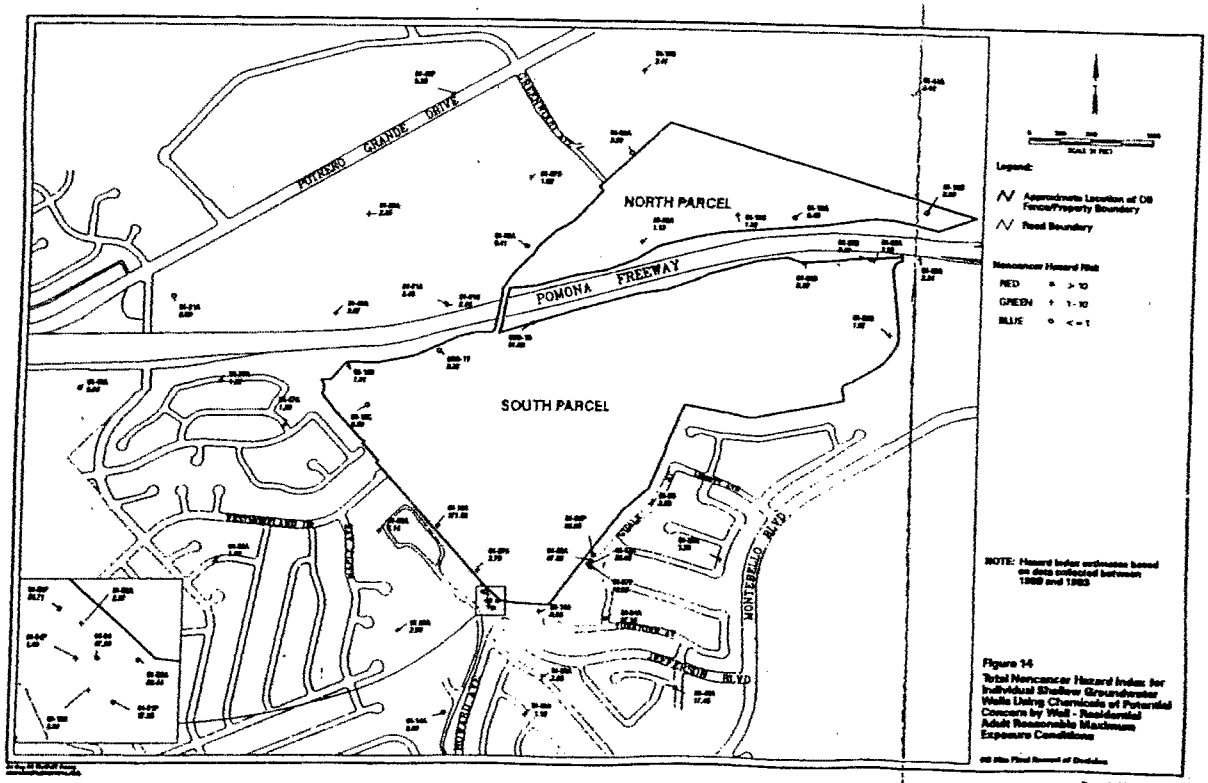
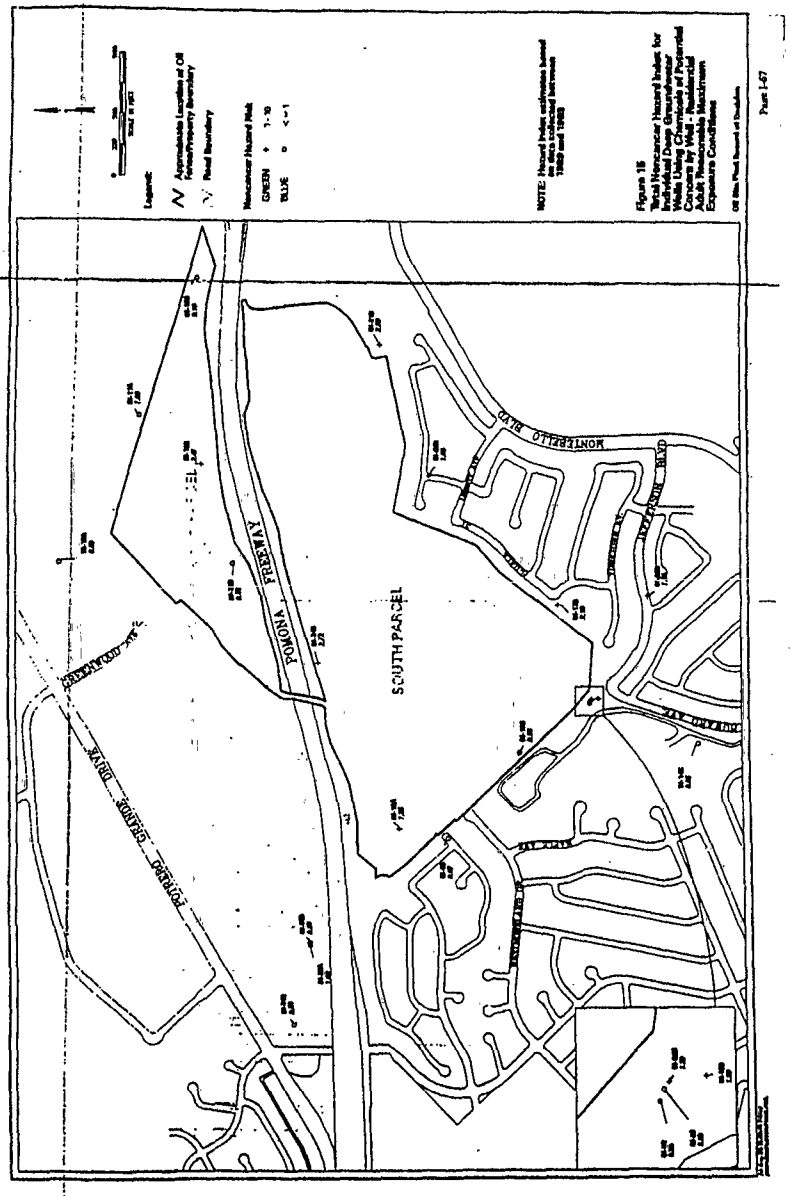


Figure 14
Total Noncancer Hazard Index for Individual Shallow Groundwater Wells Using Chemicals of Potential Concern by Well - Residential Adult Reasonable Maximum Exposure Conditions



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5.2 Baseline Ecological Risk Assessment Summary

The area surrounding the landfill is heavily developed for mixed general commercial and industrial use, and residential use, with pockets of open space. Potential wildlife corridors between the landfill property and undeveloped areas exist, although they have been reduced and fragmented by development of adjacent lands. The primary wildlife corridor between the South Parcel and the undeveloped Montebello Hills oil field located southeast of the landfill is limited and broken by Montebello Boulevard.

Urban and industrial development around the landfill has replaced most native plants with disturbed or landscaped habitats supporting non-native and ornamental plants. Disturbed areas that are not landscaped support grasses and weedy, ruderal plants. During a reconnaissance visit in February 1994, an observer noted signs of plant stress in limited areas adjacent to the landfill at the Southern California Gas facility and in Iguala Park. Signs of plant stress in non-native plants were observed that included discoloration and deformation in actively growing plant tissues including leaf tips and buds, as well as older leaves and stems. The source of the observed plant stress is not known, but observed plant stress was near historical leachate seeps and areas of recent heavy construction activities.

Wildlife observed at the landfill includes lizards, red-tailed hawks, American kestrels, white-throated swifts, Say's phoebe, California towhee, western meadowlarks, loggerhead shrikes, and American goldfinch. Mobile wildlife such as hawks, kestrels, shrikes, and other birds can easily move to and from the landfill using the scattered trees and vegetation for shelter. Other wildlife expected to occur at the landfill include owls, raccoons, and coyotes. These species may move at night and may be less reliant on intact corridors for movement.

Species of special concern that have been observed at the landfill site include white-tailed kite, Cooper's hawk, blue-grey gnatcatcher, and loggerhead shrike (CDM Federal, 1994). The only special-status species observed during the February 24, 1994, reconnaissance visit was a loggerhead shrike (a federal Category 2 Candidate species).

EPA evaluated ecological exposure pathways assuming a "modified no action" scenario. This scenario assumed continued operation of the existing control systems. As part of the streamlining process, exposure to the landfill contents and landfill contaminant sources were not considered complete pathways because the landfill gas migration control and landfill cover systems called for in the Gas Control and Cover ROD will eliminate this pathway.

Ecological pathways of exposure to contaminants released to ambient air were considered incomplete for onsite emissions because of planned installation of the landfill gas collection system and the landfill cover. Offsite exposure to air emissions by terrestrial wildlife and plants was limited to dust emissions from areas that would not be included in the landfill cover.

Exposure of plants to contaminants in groundwater via root uptake is considered incomplete in all areas except in a limited area at the southwestern corner of the South Parcel near the Southern California Gas facility. In this area, groundwater is approximately 15 feet below ground surface adjacent to the site, dropping to more than 75 feet below ground surface approximately 400 feet away from the waste prism. Groundwater levels in all other areas around the OII Site are generally more than 40 feet below ground surface.

Ecological pathways of exposure to contaminants in surface water runoff were considered incomplete for onsite and offsite areas. Surface water runoff in the area is primarily from irrigation, although storm water runoff occurs with significant precipitation events. Surface water transport of contaminants from the site to the surface water/storm water collection systems will be limited or prevented by installation of the landfill cover, thus making offsite exposure unlikely.

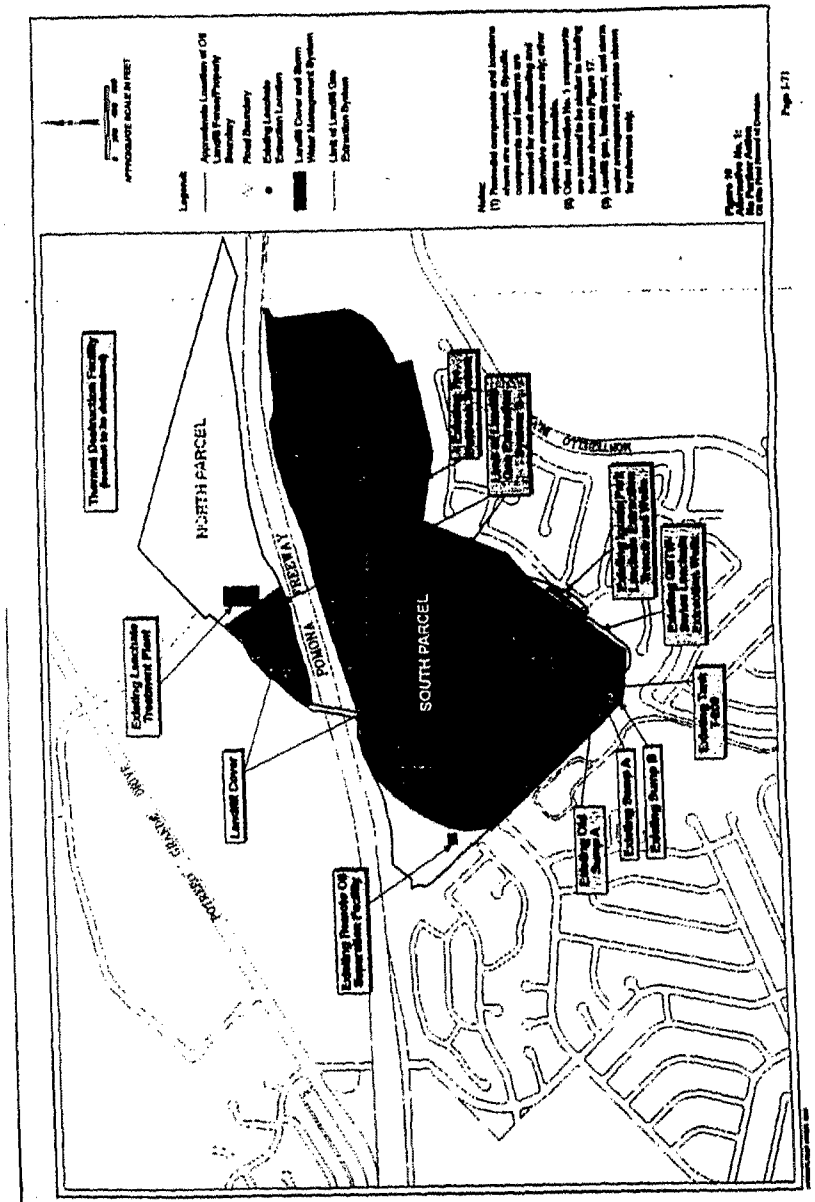
Under the modified no-action scenario, ecological exposure to contaminants in leachate seeps through direct contact are incomplete for both onsite and offsite areas.

6.0 Description of Remedial Alternatives

6.1 Alternative No. 1—No Further Action

Alternative No. 1 consists of implementing remedial measures similar to the leachate management, site control, and monitoring activities currently performed at the site. Alternative No. 1 assumes implementation of the remedial measures stipulated in the Gas Control and Cover ROD. The objective of Alternative No. 1 is to provide an increased degree of protectiveness of human health and the environment than is currently present at the site by continuing to operate; maintain; and, as necessary, improve or replace existing landfill systems. Because the existing system does not control migration of landfill contaminants to groundwater, it would continue to occur in Alternative No. 1. Alternative No. 1 satisfies the NCP requirement for inclusion of a no-action or no-further-action alternative.

Alternative No. 1 Description. Alternative No. 1 includes operation and maintenance of existing site activities (gas extraction and air dike, leachate collection, leachate treatment, irrigation, access roads, stormwater drainage, site security, slope repair, and erosion control), except to the extent that they are addressed under the Gas Control and Cover ROD. Landfill gas and landfill cover components were selected as part of the Gas Control and Cover ROD and are not reselected or modified in this ROD. Implementation of the Gas Control and Cover ROD is assumed in the analysis of this alternative. Major remedial components of Alternative No. 1 are presented in Figures 16 and 17, and are described below. Specific



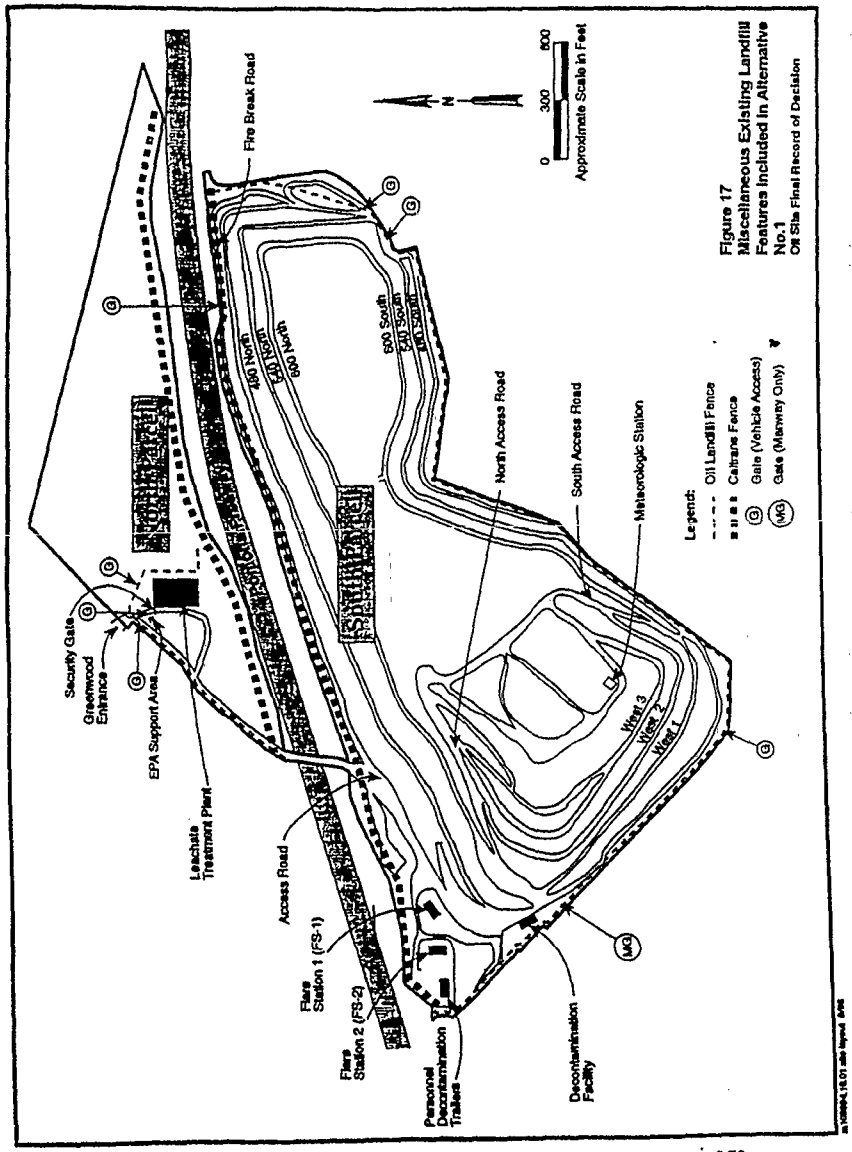


Figure 17
Miscellaneous Existing Landfill Features Included In Alternative No. 1
Oil Site Final Record of Decision

remedial alternative components or technologies presented in this section are intended only to serve as representative examples of possible measures that could be taken to achieve the objectives of Alternative No. 1 and to estimate costs. Other viable remedial measures may be evaluated as part of the remedial design activities for the site.

Leachate Collection, Conveyance, and Landfill Liquids Treatment. The objective of leachate management for Alternative No. 1 is to control and prevent leachate from migrating offsite as surface seeps. Leachate management for Alternative No. 1 would consist of operation and maintenance of the existing leachate collection system and, if necessary, upgrades or replacement to improve operability, maintainability, and reliability of the system. Leachate management is currently performed in select areas of the South Parcel only; there is no leachate management on the North Parcel.

The existing South Parcel leachate collection and conveyance system is intended primarily to capture leachate on the landfill slopes and near the landfill boundary (EPA, 1994c). The existing system would be operated and maintained until the landfill cover is operational. Active near-surface leachate collection may cease if the completed landfill cover is adequate to manage liquids that are currently collected in those systems and if surface seeps cease. Leachate is currently, and would continue to be, collected from existing extraction wells in the interior portions of the South Parcel. Leachate would also continue to be collected from other existing perimeter leachate collection systems such as the Iguala Trench.

Leachate, condensate, and other liquids collected would be conveyed to the existing leachate treatment plant (Figure 16). Operation and maintenance of the leachate treatment plant should be required under Alternative No. 1. Constituent concentrations would be reduced to below discharge limits so that the treated landfill liquids could be discharged to the County Sanitation Districts of Los Angeles County sanitary sewer system. After discharge to the County Sanitation Districts of Los Angeles County system, the landfill liquids would undergo additional treatment downstream in the municipal sewer treatment system. The total treatment plant influent flow rate for Alternative No. 1 is estimated at approximately 5.5 gallons per minute (7,850 gallons per day).

The Alternative No. 1 treatment process would consist largely of the existing OII Site leachate treatment plant with some minor process enhancements (polymer addition to the sequential batch reactors). However, these treatment processes serve only as examples of processes that could be appropriate to treat landfill liquids.

Limited initial leachate treatment system operating data suggest that effluent from the sequential batch reactors would meet discharge requirements without further treatment. However, pesticides are capable of passing through biological processes, such as the sequential batch reactors. Because current operating data are limited, and because there is a potential for pesticide pass-through, use of the existing sand filtration and carbon adsorption units has been assumed for cost definition of Alternative No. 1.

Administration, Institutional Controls, Site Security, and Facility Maintenance. This section addresses a broad range of remedy components not specifically covered by other control activities. Many of the administration, site security, and facility maintenance activities described in this section are similar to activities currently performed as part of site control and monitoring activities.

Administration. The purpose of administrative activities would be to manage staff, order equipment, and perform other administrative functions to ensure that performance standards are met. Health and safety monitoring and enforcement, employee training, budget administration, administration building operation and maintenance, performance reporting, and payment of applicable taxes would also be included in this remedial activity. Other miscellaneous activities are included in this section, including meteorological monitoring and collection and conveyance of decontamination water to the leachate treatment plant.

Institutional Controls. Institutional controls would be used as appropriate to supplement engineering controls for short- and long-term management to prevent or limit exposure to hazardous substances, pollutants, or contaminants, and to ensure the effectiveness of remedial actions. The primary objectives of institutional controls are to (1) limit human exposure to potentially contaminated materials onsite (e.g., leachate, landfill contents, and groundwater); (2) prevent trespassing onto the landfill; and (3) protect the integrity of the landfill closure and remedial action components.

North Parcel Areas Not Used as a Landfill or for Site-Related Facilities. EPA determined that no landfill-related risks are posed by soils in the areas of the North Parcel not containing landfill-related wastes nor used for site facilities (the "nonlandfill areas"). Therefore, no further action is required for soils in the nonlandfill areas. Institutional controls and, potentially, engineering controls will be required for contaminated groundwater and, potentially, liquids control on the North Parcel.

Site Security. The purpose of site security activities at the OII Site is to limit access to the site and protect the integrity and operation of the implemented control systems. This activity would be accomplished through use of guards, fences, gates, lighting, and alarms.

Facilities Maintenance. Facilities at the OII Site included in this section are: access roads, road and identification signs, buildings, utilities, aesthetic landscaping, equipment, and trucks. Activities associated with these facilities would include routine maintenance and operation. These activities would be in addition to operation and maintenance of specific landfill components described above.

Postconstruction Environmental Monitoring. The objective of the Alternative No. 1 environmental monitoring program would be to collect sufficient information to assess the degree of protectiveness provided by the environmental control systems and to determine

whether performance standards are being met. Additionally, routine monitoring would be performed to facilitate efficient operation and maintenance of the landfill control components. The objective of long-term groundwater monitoring would be to evaluate changes to groundwater contaminant concentrations and to the lateral and vertical extent of groundwater contaminant migration.

6.2 Alternative No. 2—Perimeter Liquids Control (EPA's Selected Remedy)

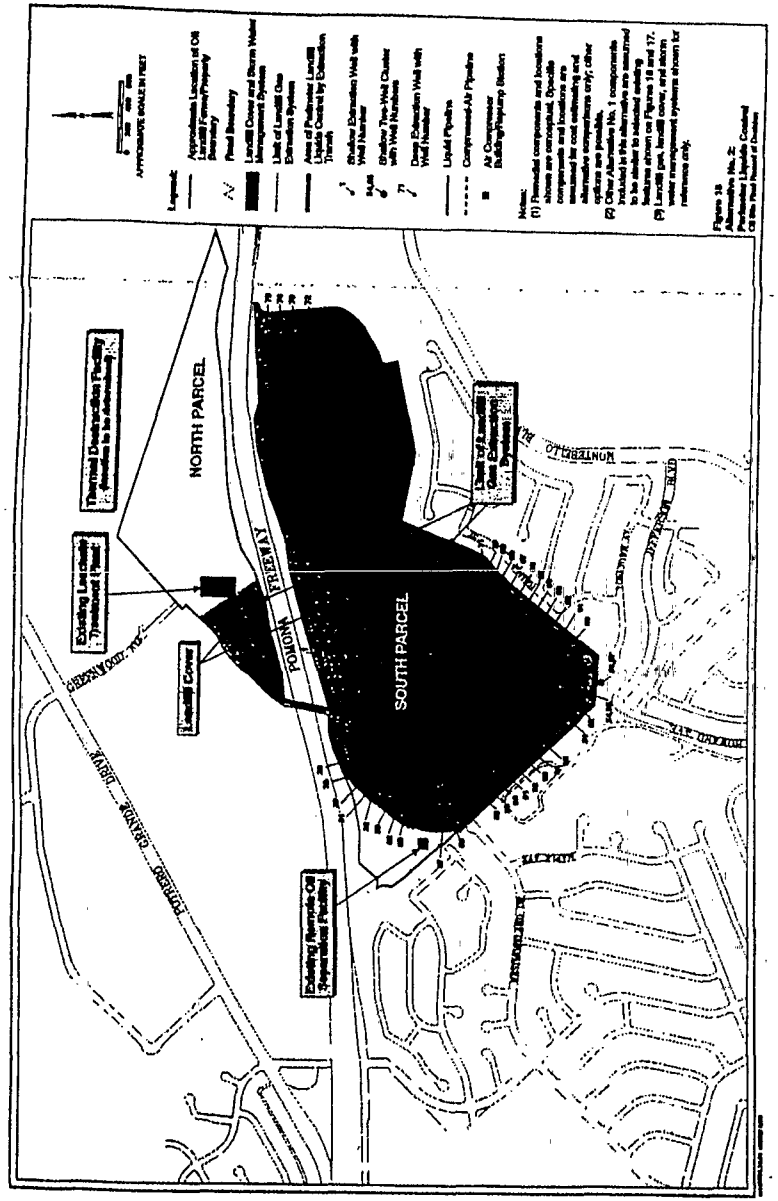
Alternative No. 2 includes construction of new liquids control systems along the perimeter of the landfill in areas of known or suspected landfill liquids migration, and treatment and discharge of liquids collected in these systems. Alternative No. 2 incorporates all components of Alternative No. 1, except for portions of the existing leachate collection systems after the perimeter liquids control system is operational.

The objective of Alternative No. 2 is to provide control of liquids at the landfill perimeter, as well as to attain the objectives of Alternative No. 1. This alternative would prevent migration of contaminants from the landfill to groundwater at the landfill perimeter at levels that impair water quality and/or represent a threat to human health and the environment. By preventing further offsite landfill liquids migration, this alternative minimizes further groundwater contamination from landfill liquids. Perimeter liquids control would also protect human health and the environment by minimizing offsite exposure to landfill contaminants, minimizing volatilization of landfill contaminants into air, and preventing additional near-site soil contamination. Contaminant concentrations in groundwater beyond the landfill boundary would be reduced to below cleanup standards through natural attenuation. Groundwater would be monitored to ensure that natural attenuation is progressing as anticipated. Institutional controls would be used to prevent exposure to contaminated groundwater.

Alternative No. 2 Description. EPA assessed available monitoring data to determine areas in which perimeter liquids control may be needed. The areas of concern include the western perimeter of the South Parcel; the northwest corner of the South Parcel; and, to a more limited extent, the far eastern perimeter of the South Parcel.

A representative conceptual design for Alternative No. 2 is illustrated in Figure 18. Other technologies and extraction configurations are possible and may be explored during remedial design. This section presents a description of the conceptual design of Alternative No. 2 used for evaluations in the Feasibility Study.

Applicable Components of Alternative No. 1. All of the components from Alternative No. 1 would be included in Alternative No. 2. The perimeter liquids control system may make portions of the leachate collection system included under Alternative No. 1 unnecessary.



Perimeter Liquids Control, Conveyance, and Treatment. A perimeter liquids control system would be installed in areas where contaminant levels in groundwater exceed performance standards.

The conceptual design of the perimeter liquids control system at the OII Site includes 95 extraction wells (shallow and deep) in addition to an extraction trench system along the western and southwestern boundary of the South Parcel. Landfill liquids collected under this alternative would be pumped to the existing leachate treatment plant for treatment. The estimated perimeter liquids extraction rate for this alternative would be 190,100 gallons per day (132 gallons per minute). In addition, about 3,750 gallons per day (2.6 gallons per minute) of landfill liquids (including condensate and other liquids) would be collected.

EPA's evaluations indicate that the existing leachate treatment plant, with some modifications as necessary, would be adequate to treat liquids in Alternative No. 2. The treated liquids would be discharged to the County Sanitation Districts of Los Angeles County sanitary sewer system. After discharge to the County Sanitation Districts of Los Angeles County sanitary sewer system, the liquids would undergo additional treatment in the municipal sewer treatment system.

Remedial Design Investigation. Prior to final design of a perimeter liquids control system, a remedial design investigation would be performed to better characterize both the actual areas where contaminants are migrating beyond the landfill perimeter and the hydraulic properties of the various aquifers or formations at the landfill perimeter. In addition, some additional delineation of the contaminated groundwater areas would be required. The conceptual remedial design investigation would consist primarily of installation and testing of new monitoring wells and collection of liquids samples.

Postconstruction Environmental Monitoring Program. As in Alternative No. 1, EPA would implement a long-term, postconstruction environmental monitoring program with this alternative to collect sufficient information to assess the degree of protectiveness provided by the environmental control systems and to determine whether performance standards were being met. In addition to the monitoring described in Alternative No. 1, the two main objectives of Alternative No. 2 environmental monitoring are (1) to evaluate the effectiveness and performance of the Alternative No. 2 perimeter landfill liquids control system by monitoring liquid levels and contaminant concentrations downgradient of the control systems and (2) to evaluate changes to groundwater contaminant concentrations through natural attenuation and to the lateral and vertical extent of groundwater contamination after placement of the remedial measures.

6.3 Alternative No. 3—Perimeter Liquids Control Plus Source Control

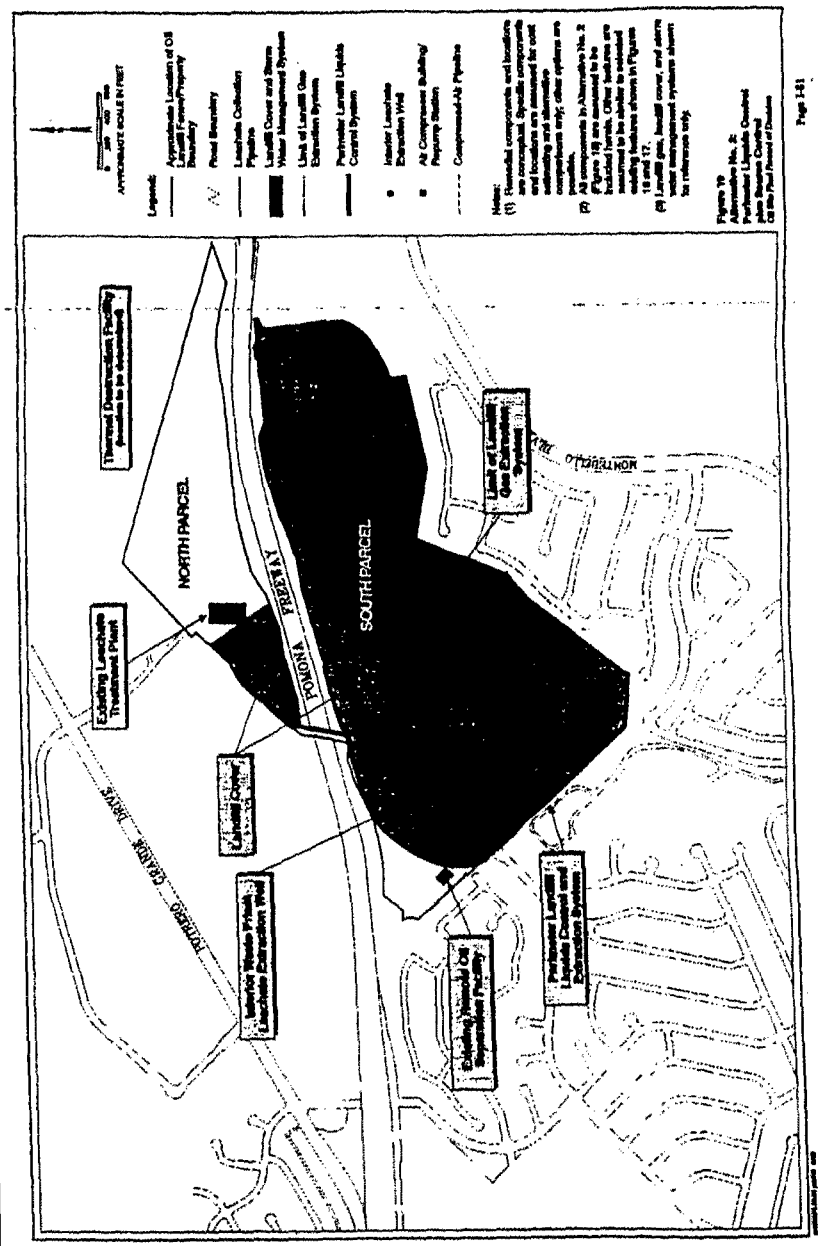
Alternative No. 3 includes new leachate extraction and conveyance systems located within the interior of the waste prism and treatment and discharge of the collected leachate, and incorporates all components of Alternative No. 2.

The objective of Alternative No. 3 is to provide enhanced control of landfill liquids over that presented in Alternative No. 2; to provide additional reduction in toxicity, mobility, and volume; and to potentially reduce the long-term management of liquids, as well as to attain the objectives of Alternative No. 2. In Alternative No. 3, leachate extraction within the waste prism would remove some of the liquids that are currently migrating or that may migrate towards the perimeter of the landfill. One potential benefit of interior leachate extraction would be to provide additional assurances that landfill contaminants would be contained, especially for any areas where perimeter liquids control would be technically challenging. Extracting leachate from the interior of the landfill may reduce the period of time required to operate the perimeter liquids control system, and it may reduce the long-term flow rate into the perimeter system. Extracting interior leachate would also potentially reduce long-term management of liquids at the site, potentially satisfying the NCP goal of reducing the need for long-term management through removal and destruction of toxic and/or mobile contaminants to a greater extent than Alternative No. 2.

Alternative No. 3 Description. EPA interpreted various landfill data to provide a basis for estimating the location of potentially saturated zones, the volume of leachate present and potentially extractable, its ability to migrate, potential migration pathways, and potential impacts to groundwater. EPA targeted potentially saturated zones for leachate extraction that were considered a potential threat to groundwater. The total volume of leachate targeted for extraction is approximately 113 million gallons. This represents about 76 percent of the total potentially extractable leachate (estimated at 145 million gallons), but only about 13 percent of the estimated total volume of leachate in the waste prism (871 million gallons).

Figure 19 illustrates a representative conceptual design for Alternative No. 3. Other technologies and extraction configurations are possible. A description of the conceptual design of Alternative No. 3 follows.

Interior Leachate Extraction, Conveyance, and Landfill Liquids Treatment. Vertical extraction wells are assumed to be the most effective technology for interior leachate extraction in Alternative No. 3. The number of wells assumed for a particular area is influenced by the saturated thickness, geometry of the bottom of the extraction area, and the anticipated well yield and targeted extraction volume (i.e., the quantity of leachate each well is anticipated to produce compared to the total volume to be extracted).



Alternative No. 3 would involve collection and treatment of both interior leachate (estimated to be approximately 20.5 gallons per minute initially) and perimeter liquids (estimated at about 135 gallons per minute). The existing leachate treatment system would be augmented with new process equipment for perimeter liquids (Alternative No. 2) because separate treatment of the more concentrated interior leachate would almost fully utilize the existing process equipment. The two treatment streams would be combined into the existing outfall and discharged to the County Sanitation Districts of Los Angeles County sanitary sewer system. After discharge to the County Sanitation Districts of Los Angeles County sanitary sewer system, all of the liquids would undergo additional treatment in the municipal sewer treatment system.

Remedial Design Investigation. Implementation of Alternative No. 3 would require additional field investigations of the extent of extractable leachate, hydraulic properties of the waste prism, and sustainable yields of extraction wells because of the inherent complexity of the waste prism.

Postconstruction Environmental Monitoring. The objective of the Alternative No. 3 postconstruction environmental monitoring program would be to collect sufficient information to assess the degree of protectiveness provided by the environmental control systems and to determine whether remedial objectives and performance standards are met.

6.4 Alternative No. 4—Perimeter Liquids Control Plus Groundwater Control or Remediation

Alternative No. 4 includes control of contaminated groundwater, and, as an option, remediation of contaminated groundwater. It also incorporates all components of Alternative No. 2, or, as an option, Alternative No. 3. The objective of Alternative No. 4 is to control areas of contaminated groundwater exceeding cleanup standards, as well as to attain the objectives of Alternative No. 2, or, as an option, Alternative No. 3. Alternative No. 4A is intended to contain and prevent further migration of contaminated groundwater. Alternative No. 4B is intended to contain and, where feasible, remediate or restore groundwater within a shorter time period through more aggressive groundwater collection.

Alternative No. 4 Description. EPA used data from existing shallow and deep monitoring wells at the OII Site to define the areas of concern potentially requiring groundwater control at the downgradient boundary.

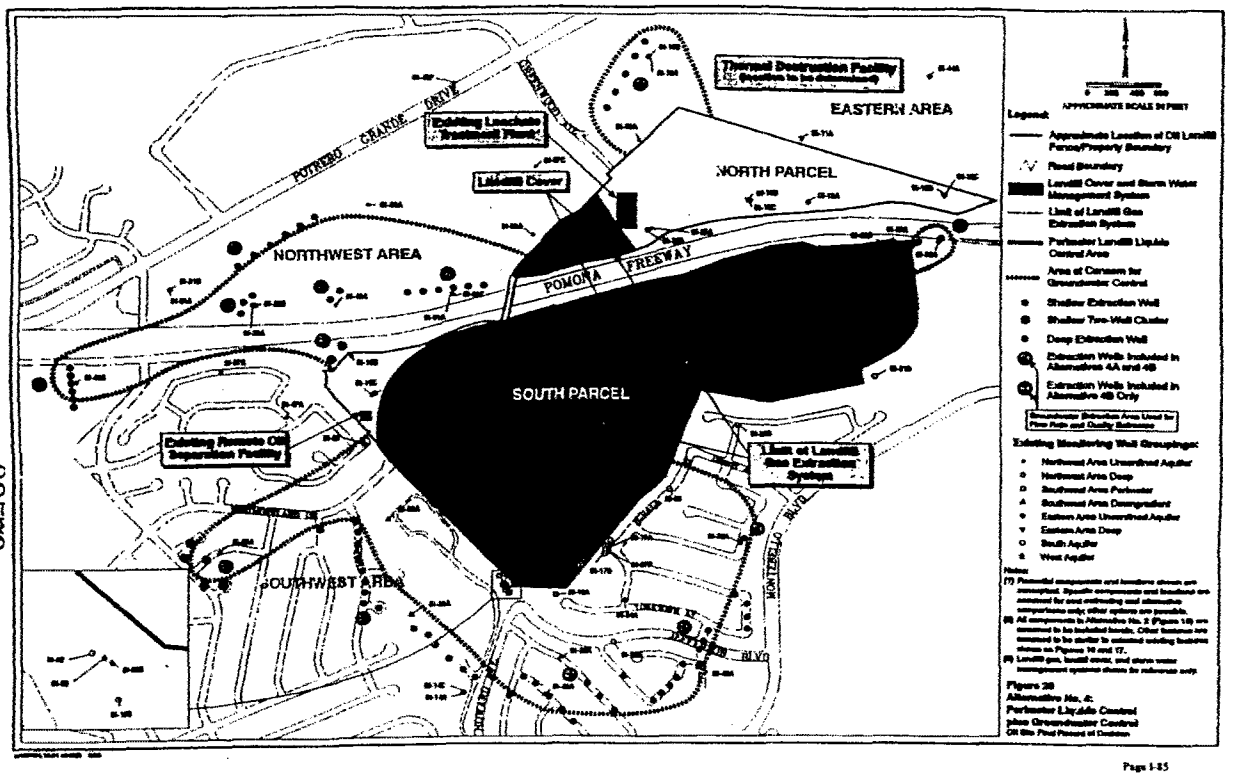
A conceptual design for Alternative No. 4 is illustrated in Figure 20. Other technologies and extraction configurations are possible. A description of the conceptual design of Alternative No. 4 follows.

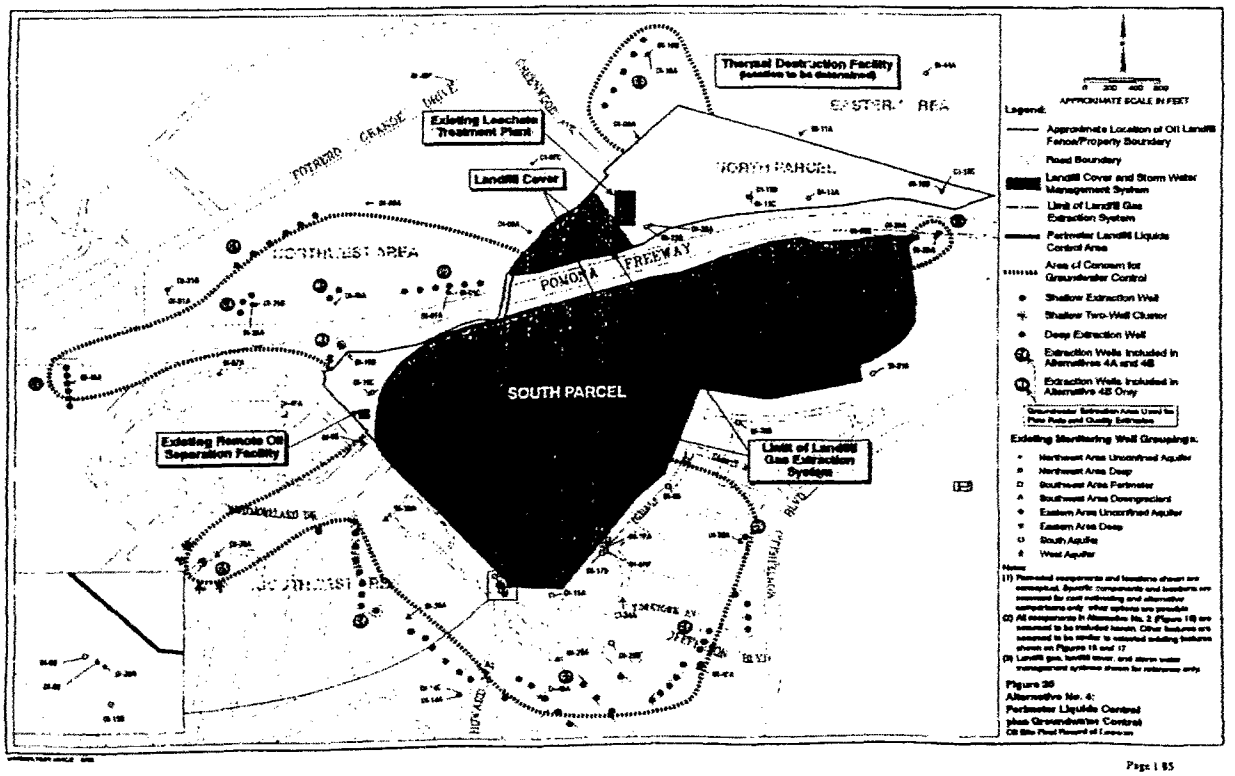
All Components of Alternative No. 2 or Alternative No. 3. As discussed above, Alternative No. 2 includes perimeter liquids control. Alternative No. 3 adds extraction of leachate from the interior of the landfill. For purposes of discussion herein, it has been assumed that Alternative No. 4 would include all remedial components from Alternative No. 2. However, if Alternative No. 4 were selected for this remedy, it could also include leachate extraction from some or all of the Alternative No. 3 extraction areas.

Control or Control/Remediation of Contaminated Groundwater. Alternative No. 4A includes control of contaminated groundwater in the following locations: northwest and west of the northwestern corner of the South Parcel, north of the North Parcel, west of the western perimeter of the South Parcel, south and southeast of the southwestern corner of the South Parcel, and east of the northeastern corner of the South Parcel. Alternative No. 4B consists of groundwater control at all of the above areas plus additional extraction in the Northwest Area to more aggressively collect and possibly restore contaminated groundwater within a shorter time period. Assumed depths of collection are based upon known or suspected depths of contamination, recent depth-to-water measurements, and interpreted thickness of confined units.

EPA used groundwater extraction from vertical extraction wells as the representative technology for groundwater containment in the Feasibility Study. The purpose of the extraction wells would be to prevent contaminated liquids from migrating beyond (i.e., downgradient of) the control boundary. Assumed extraction well locations are shown in Figure 20. The estimated groundwater extraction rate for Alternative No. 4A is about 526,600 gallons per day (366 gallons per minute); and for Alternative No. 4B, it is estimated to be 892,900 gallons per day (620 gallons per minute).

Disposal Options for Treated Groundwater. The Feasibility Study evaluated five different options for discharge of the extracted and treated groundwater. These are sanitary sewer discharge, aquifer injection discharge, surface water discharge, irrigation reuse discharge, and deep well injection discharge. The deep well injection discharge option was eliminated as a feasible discharge option in the Feasibility Study. The remaining four discharge options were incorporated into Alternative No. 4. The total flow rates for discharge under Alternatives No. 4A and 4B would be 501 and 755 gallons per minute, respectively. This would include the perimeter liquids (135 gallons per minute) and the groundwater (366 gallons per minute in Alternative No. 4A and 620 gallons per minute in Alternative No. 4B). It has been assumed in all discharge options that the perimeter liquids portion of Alternative No. 4 (135 gallons per minute) would be discharged to the sanitary sewer.


Thermal Destruction Facility
EASTERN AREA
Existing Leachate Treatment Plant
POTRERO GRANDE DRIVE
Landfill Cover
NORTH PARCEL
NORTHWEST AREA
POMONA FREEWAY
SOUTH PARCEL
Existing Remote Oil Separation Facility
Limit of Landfill Gas Extraction System
SOUTHWEST AREA
MONTEBELLO BLVD
Legend:
Approximate Location of Oil Landfill Fence/Property Boundary
Road Boundary
Landfill Cover and Storm Water Management System
Limit of Landfill Gas Extraction System
Perimeter Landfill Liquids Control Area
Area of Concern for Groundwater Control
Shallow Extraction Well
Shallow Two-Well Cluster
Deep Extraction Well
Extraction Wells Included in Alternatives 4A and 4B
Extraction Wells Included in Alternative 4B Only
Existing Monitoring Well Groupings:
Northwest Area Unconfined Aquifer
Northwest Area Deep
Southwest Area Perimeter
Southwest Area Downgradient
Eastern Area Unconfined Aquifer
Eastern Area Deep
South Aquifer
West Aquifer
Figure 20
Alternative No. 4:
Perimeter Liquids Control
plus Groundwater Control
Page 1-85


Thermal Destruction Facility
Existing Leachate Treatment Plant
POTRERO GRANDE DRIVE
Landfill Cover
NORTH PARCEL
POMONA FREEWAY
SOUTH PARCEL
Existing Remote Oil Separation Facility
Limit of Landfill Gas Extraction System
Legend:
Approximate Location of Oil Landfill Fence/Property Boundary
Road Boundary
Landfill Cover and Storm Water Management System
Limit of Landfill Gas Extraction System
Perimeter Landfill Liquids Control Area
Area of Concern for Groundwater Control
Shallow Extraction Well
Shallow Two-Well Cluster
Deep Extraction Well
Extraction Wells Included in Alternatives 4A and 4B
Extraction Wells Included in Alternative 4B Only
Existing Monitoring Well Groupings:
Figure 20
Alternative No. 4:
Perimeter Liquids Control
plus Groundwater Control
Page 1-85

Conveyance. The purpose of the Alternative No. 4 groundwater extraction conveyance system is to transport groundwater from the collection systems to the treatment plant. The conveyance system for Alternative No. 4 extraction would begin at each well and extend to the connection at the treatment plant.

Additionally, a conveyance system would be needed to transport treated liquids from the treatment plant to facilities for each of the four discharge options considered. For sanitary sewer discharge, an additional pipeline would be needed to transport the treatment plant discharge to the County Sanitation Districts of Los Angeles County system at Wilcox Avenue. In addition, in Alternative No. 4B, a pipeline would be needed downstream of the Wilcox Avenue connection to provide additional capacity. Injection wells (likely located northwest of the North Parcel) and associated pipelines would be needed for the aquifer injection discharge option. Discharge under the surface water discharge option would likely be into a drainage in the nursery adjacent to the North Parcel, or potentially into the drainage channel on the south side of the Pomona Freeway. For the irrigation reuse discharge option, a pump station would be required to supply the treated groundwater to the potential recipients of treated water at an appropriate pressure for use in their system. Potential recipients include the surrounding nurseries, cemetery, golf course, and the landfill itself.

Groundwater Treatment. Because discharge standards vary between various discharge options, EPA assumed and evaluated a treatment system for each discharge option. EPA added representative unit processes as required to meet the differing discharge requirements. The perimeter liquids treatment component of Alternative No. 4 would be identical to that presented for Alternative No. 2, so this component is not discussed again in this section.

The conceptual groundwater treatment system consists primarily of new units located at or adjacent to the existing plant because the perimeter liquids would use much of the existing leachate treatment plant capacity.

Remedial Design Investigation. The objective of the remedial design investigation for Alternative No. 4 would be to collect hydrogeologic and lithologic data to refine the design of the proposed groundwater control or remediation systems prior to implementation. For the conceptual remedial design investigation, the types of data that would need to be collected (in addition to those addressed by the Alternative No. 2 remedial design investigation) include the lateral and vertical extent of contamination, hydraulic properties of the affected hydrogeologic units in the offsite areas, potential migration pathways to offsite areas, and long-term sustainable yields of extraction wells.

Postconstruction Environmental Monitoring. Alternative No. 4 incorporates all of the monitoring discussed in Alternative No. 2, except that the offsite groundwater monitoring component would be modified. The objectives of groundwater monitoring in the offsite areas under Alternative No. 4 are to evaluate the effectiveness and performance of the groundwater

control/restoration systems and to assess groundwater contaminant migration after the placement of these systems.

7.0 Summary of the Comparative Analysis of Alternatives

This section compares the remedial alternatives described in Section 6. The comparative analysis provides the basis for determining which alternative presents the best balance of EPA's nine Superfund evaluation criteria provided in 40 Code of Federal Regulations Part 300.430 (listed below). The first two cleanup evaluation criteria are considered *threshold criteria* that the selected remedial action must meet. The five *primary balancing criteria* are balanced to achieve the best overall solution. The two *modifying criteria*, state and community acceptance, are also considered in remedy selection.

Threshold Criteria

1. **Overall Protection of Human Health and the Environment** addresses whether an alternative provides adequate protection from unacceptable risks posed by the site.

2. **Compliance with Applicable or Relevant and Appropriate Requirements** (ARARs) addresses whether an alternative attains specific federal and state environmental requirements and state facility siting requirements or provides grounds for a waiver.

Primary Balancing Criteria

3. **Long-term Effectiveness and Permanence** refers to the degree to which an alternative provides reliable protection of human health and the environment over time.

4. **Reduction of Toxicity, Mobility, or Volume Through Treatment** refers to the degree to which an alternative uses treatment to reduce the health hazards of contaminants, the movement of contaminants, or the quantity of contaminants at the site.

5. **Short-term Effectiveness** addresses the degree to which human health and the environment will be adversely impacted during construction and implementation of an alternative.

6. **Implementability** refers to the technical and administrative feasibility of an alternative. This includes technical difficulties and uncertainties and the

availability of materials and services. It also includes coordination of federal, state, and local government efforts.

7. Cost evaluates the estimated capital, operation and maintenance, and indirect costs of each alternative in comparison to other equally protective alternatives.

Modifying Criteria

8. **State Acceptance** indicates whether the state agrees with, opposes, or has concerns about the preferred alternative.

9. **Community Acceptance** includes determining which components of the alternatives interested persons in the community support, have reservations about, or oppose.

The strengths and weaknesses of the alternatives were weighed to identify the alternative providing the best balance with respect to the nine evaluation criteria.

7.1 Overall Protection of Human Health and the Environment

The NCP requires that all alternatives be assessed to determine whether they can adequately protect human health and the environment, in both the short term and long term, from unacceptable risks. These risks can be mitigated by eliminating, reducing, or controlling exposure to hazardous substances, pollutants, or contaminants. Overall protection of human health and the environment draws on the assessments of other evaluation criteria, especially long-term effectiveness and permanence, short-term effectiveness, and compliance with ARARs. Reduction of toxicity, mobility, and volume is another important criterion for this overall evaluation. An overall summary of the criteria, as they relate to protectiveness of human health and the environment, is presented in Table 10.

7.1.1 Alternative No. 1

Of all the alternatives, Alternative No. 1 is the least protective of human health and the environment. Because landfill contaminants would continue to migrate into the groundwater, Alternative No. 1 would not protect groundwater resources nor adequately protect future human exposure to contaminated groundwater. Alternative No. 1 would not comply with ARARs for landfill closure and groundwater protection, which require that landfill contaminants not escape from the landfill into groundwater and other media and require cleanup of groundwater to acceptable levels. Also, Alternative No. 1 would also fail to meet CERCLA Section 121(d), which generally requires groundwater remedies affecting potential drinking water sources to attain drinking water standards.

Table 10
Comparison of Overall Protection of Human Health and the Environment
OII Site Final Record of Decision

Evaluation Criteria	Alternative No. 1	Alternative No. 2	Alternative No. 3	Alternatives No. 4A and 4B
Long-Term Effectiveness and Permanence				
Magnitude of Residual Risk				
Leachate	Med.	Med.	Low	Med.
Groundwater	Med.	Med.	Med.	Med.
Adequacy and Reliability of Controls				
Engineering Controls	Med	Med./High	Med./High	Med./High
Institutional Controls/Monitoring	Low/Med.	Med.	Med.	Med./High
Reduction in Toxicity, Mobility, and Volume Through Treatment				
Estimated Volume of Constituents Removed Through Collection/Extraction				
Inorganic Constituents (tons)	2,700	4,800	11,450	(4A) (4B)
Organic Materials (tons)	1,500	2,370	4,780	10,500 30,900
Volatile and Semivolatile Organic Constituents (tons)	40	11	63	12 16
Treatment Residuals Generated (tons)	610	160	1,080	160 - 760 840 - 1,660
Short-Term Effectiveness				
Risk to Community During Implementation	Med.	Med.	Med.	High
Protection of Workers	Med.	Med.	Med.	Med.
Time Until Remedial Objectives Achieved[a]	4 to 6 years	5 to 7 years	5 to 7 years	5 to 7 years
Environmental Impacts	Low	Low	Low	Low
Compliance With ARARs				
Chemical-Specific ARARs	No	Yes[b]	Yes[b]	Yes[b]
Time Until Chemical-Specific Remedial Goals Achieved: Inorganics	Unknown (many tens of years longer than Alt. No. 2)	Estimated to range from about 50 years in some areas up to 150 years +/- 50 years in other areas	Estimated to range from about 50 years in some areas up to 150 years +/- 50 years in other areas	Estimated to range from about 20 years in some areas up to 60 years +/- 20 years in other areas
Time Until Chemical-Specific Remedial Goals Achieved: Organics	Unknown (many tens of years longer than Alt. No. 2)	Estimated to be less than 50 years	Estimated to be less than 50 years	Estimated to be less than 50 years
Location-Specific ARARs	Yes	Yes	Yes	Yes
Action-Specific ARARs	No	Yes	Yes	Yes

[a] For groundwater, the times listed only represent the time until remedial objectives are partially met, through institutional controls and perimeter control (except for Alternative No. 1, which does not have perimeter control); remedial objectives would not be fully met until cleanup goals are achieved (cleanup times are given under chemical-specific ARARs).
[b] There is a potential that inorganics in the Southwest Area may not meet ARARs in a reasonable time (the estimated range of cleanup times is provided above and in Table 11).

Each of the alternatives incorporates institutional controls to protect human health. Alternative No. 1 relies on institutional controls to protect human health from exposure to constituents in groundwater for the longest amount of time and over the largest area. This is because the source would not be controlled and would continue to contaminate groundwater. Due to the lack of perimeter liquids control, the extent of the area that would require institutional controls cannot be reliably predicted, nor can the length of time that institutional controls would be required. These uncertainties make implementation of institutional controls for this alternative more difficult than for any other alternative. Accordingly, Alternative No. 1 is less protective of human health and the environment for groundwater than the other alternatives.

7.1.2 Alternative No. 2

Alternative No. 2 would be significantly more protective of human health and the environment than Alternative No. 1 because, by containing contaminants at the landfill perimeter, there would be no further impact to groundwater. Alternative No. 2 would meet landfill closure and chemical-specific ARARs pertaining to the offsite migration of landfill contaminants and to groundwater cleanup (which are not met by Alternative No. 1). The period of time over which institutional controls would be required is substantially less than Alternative No. 1. The area over which institutional controls would be needed would also be substantially less than Alternative No. 1, although it could potentially extend an additional 600 feet up to 1,000 ±500 feet beyond the current extent of contamination. Alternative No. 2 would comply with all ARARs, although there is a potential that groundwater cleanup for inorganic constituents in the Southwest Area may take an excessive amount of time to reach cleanup standards (because of the complex subsurface conditions).

7.1.3 Alternative No. 3

Alternative No. 3 would have similar protectiveness of human health and the environment as Alternative No. 2. For groundwater, Alternative No. 3 would be almost identical to Alternative No. 2 because the perimeter liquids control system will prevent migration of contaminants to groundwater. Institutional controls would be required for the same amount of time and over the same area as Alternative No. 2. Extracting and treating interior leachate may achieve a slightly higher degree of long-term protectiveness and may reduce the magnitude of residual risk from leachate contained within the landfill. However, the large majority of leachate (approximately 87 percent) would remain onsite under this alternative. Removing a portion of the contaminant source may also slightly enhance the effectiveness of the perimeter liquids control system in preventing migration of contaminants to groundwater, because the amount of leachate migrating to the perimeter may be reduced. Therefore, from a contaminant migration perspective, Alternative No. 3 may be slightly more protective of the environment than Alternative No. 2. Alternative No. 3 would comply with all ARARs, except potentially for groundwater cleanup of inorganics in the Southwest Area (as described above for Alternative No. 2).

7.1.4 Alternative No. 4

Alternative No. 4 would provide the same level of long-term protection from exposure to contaminated groundwater as Alternatives No. 2 and No. 3, except for inorganic contamination. It would be more protective overall than the other alternatives because inorganic contamination would not spread and because extraction of contaminated groundwater would enhance natural attenuation of the inorganic contamination. Alternative No. 4 would have the least reliance on groundwater monitoring and institutional controls because its groundwater control component would minimize the size of the contaminated area (and thus the area required for institutional controls). Active extraction of contamination would achieve cleanup standards for inorganic constituents sooner than other alternatives and therefore minimizes the time required for institutional controls (although institutional controls would still be required for up to 60 years +/- 20 years).

Alternative No. 4 would cause significantly increased impacts on the community surrounding the landfill during remedy implementation because of the large-scale construction activities in the adjacent neighborhoods. These include installation of numerous extraction wells and conveyance systems in residential streets. These construction activities would cause significant noise and disrupt traffic patterns. The alternative would also have long-term adverse impacts, including potential leaks or spills of contaminated groundwater, significant ongoing operation and maintenance activities, and ongoing traffic disruptions.

Alternative No. 4 would comply with all ARARs, although, as with Alternatives No. 2 and 3, there is the potential that groundwater cleanup of inorganic constituents in the Southwest Area may take an excessive amount of time (because of the complex subsurface conditions).

As discussed previously, it is possible that all or portions of the Alternative No. 3 interior leachate extraction systems could be incorporated into Alternative No. 4. The combination of interior leachate extraction plus groundwater control/remediation (Alternative No. 4B) would provide the highest degree of protectiveness of human health and the environment of all the alternatives.

7.2 Compliance with ARARs

This section presents a comparison of alternatives with respect to compliance with chemical-specific, location-specific, and action-specific ARARs.

Chemical-Specific ARARs. Chemical-specific ARARs are health- or risk-based numeric values or methodologies that, when applied to site-specific conditions, result in the establishment of numeric values of the acceptable amount, or concentration, of a chemical that may be found in, or discharged to, the ambient environment. Alternative No. 1 would not meet chemical-specific ARARs pertaining to groundwater cleanup. This is because the landfill

source would not be contained and natural attenuation would not effectively reduce either organic or inorganic constituents to cleanup standards within an acceptable time frame. Alternatives No. 2, 3, and 4 would meet chemical-specific ARARs, with the possible exception of inorganic constituents in groundwater in the Southwest Area. Because of the complex groundwater flow conditions and low-permeability formation, there is a potential that inorganic constituents in the Southwest Area may take an excessive amount of time to meet cleanup standards (cleanup of inorganics could require up to 150 +/- 50 years under Alternatives No. 2 and 3 and 60 +/- 20 years in Alternative No. 4). The estimated cleanup times for both organic and inorganic constituents are shown in Table 11 for each of the alternatives.

Location-Specific ARARs. Location-specific ARARs are restraints placed on activities in or impacts on specific areas. It is expected that all of the alternatives would comply with all location-specific ARARs.

Action-Specific ARARs. Action-specific ARARs are technology- or activity-based requirements or standards that apply to specific remedial activities that are conducted as part of the selected remedy. Actions related to the OII Site include construction activities, such as the extraction trench or groundwater extraction wells and leachate collection and treatment systems, and landfill closure requirements. All alternatives involve operation and maintenance of site control systems, and discharges from the treatment systems. With the exception of Alternative No. 1, site control systems in all alternatives could be designed, constructed, and operated to meet federal and state action-specific ARARs. Alternative No. 1 would not meet the federal and state ARARs pertaining to landfill closure, such as the prevention of contaminant migration away from the landfill and protection of groundwater.

7.3 Long-term Effectiveness and Permanence

Long-term effectiveness is evaluated through two criteria: the magnitude of the residual risk remaining after the remedy is implemented and the adequacy and reliability of engineering and institutional controls.

7.3.1 Magnitude of Residual Risk

The magnitude of residual risk is typically gauged by the risks remaining from untreated waste at the conclusion of remedial activities. EPA's guidance on streamlining the remedial investigation/feasibility study for CERCLA municipal landfills recognizes that containment technologies are generally appropriate for landfills containing municipal waste, and that complete treatment of all hazardous constituents (including the landfill contents) is generally

Table 11
Approximate Time to Reach Chemical-Specific ARARs in Groundwater
OII Site Final Record of Decision

Area	Alternative No. 1	Alternative No. 2 (and Alternative No. 3)[a]	Alternative No. 4[b]
Organic Constituents[c]			
Northwest Area	Unknown[d]	12	12
Southwest Area - Western LW/SP	Unknown[d]	25	25
Southwest Area - Western Shallow Siltstone	Unknown[d]	33	33
Southwest Area - Southeast	Unknown[d]	43	43
Eastern Area	Unknown[d]	18	18
Inorganic Constituents[e]			
Northwest Area	Unknown[d]	56	20[f]
Southwest Area[g]	Unknown[d]	About 150 years +/- 50 years	About 60 years +/- 20 years
Eastern Area	NA[h]	NA[h]	NA[h]

[a]For natural attenuation modeling purposes, Alternatives No. 2 and 3 are assumed to have essentially the same impacts on groundwater.
[b]Alternatives No. 4A and 4B are the same except for inorganic constituents in the Northwest Area, where the time to MCLs in Alternative No. 4B would be less than 20 years.
[c]Using vinyl chloride in modeling.
[d]Contaminant levels would not reach MCLs until the landfill source is depleted (many decades). Once the source is gone, the time to reach MCLs would be similar to Alternative No. 2.
[e]Using antimony in modeling. Note that the inorganic modeling was fairly conservative and the times presented may be closer to upper-bound estimates.
[f]Inorganic model results were obtained from the southeast segment of the Southwest Area. These results are also assumed to be representative of inorganic transport in the other two segments in the Southwest Area. Note that uncertainty in the distribution of inorganic contamination and complexities in the groundwater flow conditions (especially over longer times and with greater distances from the landfill) leads to uncertainty in the simulation results, thus a range of years is shown for inorganic constituents in the Southwest Area.
[g]Inorganic constituent modeling not performed; primarily organic contamination in the area.
[h]NA = Not applicable.

impracticable. None of the remedial alternatives include removal of the landfill contents, and all of the alternatives use a containment technology to prevent exposure to the contents.

Groundwater Contamination. For Alternatives No. 2, 3, and 4, it has been estimated that the magnitude of residual site-related risk in groundwater will be significantly reduced through perimeter liquids control; natural attenuation; and, for Alternative No. 4, control of groundwater beyond the landfill perimeter. Alternative No. 3 could slightly reduce the residual risk to groundwater over Alternative No. 2 by enhancing effectiveness of the perimeter liquids control system. The potential reduction is only considered slight, because the perimeter liquids control system would still inhibit migration of mobile contaminants to groundwater even if they were not actively extracted from the waste prism. Because the cleanup standards would be met in a shorter time-frame under Alternative No. 4, the risk reduction would be realized sooner. However, the eventual risk reduction would be the same for all three alternatives. In Alternative No. 1, the magnitude of site-related risk would initially increase because there would be additional influx of contaminants from the landfill to groundwater. Eventually, the site-related risk in groundwater would diminish in a similar fashion as the other alternatives; however, it is estimated that this would take many additional decades under Alternative No. 1.

Even with the site-related contaminants reduced to their cleanup standards, the estimated overall risks in groundwater could still exceed 10^{-4} because of naturally occurring levels of inorganic constituents, primarily arsenic, in the OII Site vicinity. However, Alternatives No. 2, 3, and 4 would reduce the site-related risks in an acceptable time frame (with the possible exception of the Southwest Area). Alternatives No. 2, 3, and 4 would be more protective of any future use of or exposure to groundwater in the OII Site vicinity, although there is no currently known use of this groundwater.

Leachate. Varying degrees of residual risk associated with leachate will remain at the landfill, depending on the alternative. Over the 30-year evaluation period, Alternative No. 3 would provide a slightly higher reduction in residual risk from leachate than the other three alternatives because an estimated 13 percent of the total leachate present in the landfill would be actively extracted. The reduction in residual risk would be only slightly higher than the other alternatives because a considerable volume of leachate (about 87 percent of the total) would remain onsite.

7.3.2 Adequacy and Reliability of Controls

This evaluation criterion pertains to the adequacy and suitability of controls that are used to manage treatment residuals or untreated wastes that remain at the site. The main controls used in the alternatives for the OII Site consist of containment or control systems and institutional controls.

Containment, Conveyance, and Treatment Technologies. The technologies included in Alternatives No. 1 through 4 (e.g., perimeter liquids control, leachate extraction, and groundwater extraction) are generally considered adequate and reliable, if properly designed, constructed, monitored, operated, and maintained.

Institutional Controls. All of the alternatives would rely on institutional controls to limit human exposure to potentially contaminated materials, prevent trespassing, and protect the integrity of the landfill closure and remedial action components within the landfill boundary. All of the alternatives would rely on groundwater monitoring and institutional controls to ensure that groundwater is not used until cleanup standards are met. (Again, no current groundwater use is known to occur in the landfill vicinity.) The adequacy and reliability of institutional controls are highly dependent on enforcement and maintenance by state and local regulators and adequate definition of the area of contamination over which institutional controls are required. Institutional controls can be subject to changes in the political jurisdiction, legal interpretations, and the level of enforcement, as well as to changes in the need for water resources. Institutional controls would only be effective with a high degree of certainty in the short term, because regulators of the institutional controls cannot ensure the effectiveness or enforceability beyond a number of years. Therefore, alternatives that rely on institutional controls for shorter time frames and smaller, well-defined areas are generally considered more reliable than those with long time frames and larger, less well-defined areas.

Duration of Institutional Controls. For institutional controls, the primary difference between the alternatives is the duration that the controls would be relied upon, the area over which they would be required, and the degree to which the area can be defined. Table 11 presents a comparison of the time to reach cleanup standards (after which time institutional controls are not necessary). Institutional controls would be required for the longest time in Alternative No. 1 (likely for many tens of years longer than Alternatives No. 2 and 3). For Alternatives No. 2 and 3, the maximum time required for institutional controls could be as high as 150 ±50 years (for inorganic contaminants in the Southwest Area). For Alternative No. 4, institutional controls would be required in the Southwest Area for up to about 60 +/- 20 years.

Area of Institutional Controls. Inorganic exceedances of cleanup standards define the area required for institutional controls, because inorganic constituents have migrated further than organic constituents in the OII Site vicinity. Simulation results used to estimate inorganic contaminant transport are summarized in the following paragraph. Inorganic transport simulation results are somewhat uncertain because of complex transport conditions at the OII Site that are difficult to model and because of uncertainties in the distribution of inorganic contamination.

For Alternative No. 4, groundwater with inorganic contaminants above cleanup standards would be contained at the approximate downgradient extent of currently known contamination. This would define the area requiring institutional controls for Alternative No. 4. In Alternatives No. 2 and 3, the inorganic constituents could potentially travel up to 600 feet (Northwest Area)

Risk to Community During Remedial Action Implementation. Effects on the community during remedial actions are related to risks that result from implementation, such as dust during excavation or construction, increased vehicular traffic, air quality impacts from the release of gas, and noise.

Because there are no significant components to construct, Alternative No. 1 would have the fewest short-term, construction-related impacts. Installation of the perimeter liquids control system in Alternative No. 2 would slightly increase noise, dust, and vehicular traffic. Construction activities would primarily be onsite. Releases of landfill gas to the atmosphere could occur during excavation of the extraction trench but should not pose a risk to the community due to monitoring and implementation of mitigation measures to reduce emissions, as necessary. Effects to the community under Alternative No. 3 would be similar to, or slightly increased over, Alternative No. 2 because of installation of extraction wells within the waste prism.

Alternative No. 4 would present significantly greater impacts to the community because of the large-scale construction activities associated with installation of numerous extraction wells and conveyance systems throughout the surrounding neighborhoods. The greatest impacts would be in residential neighborhoods in the Southwest Area, where construction activities would occur in streets, sidewalks, and driveways. These activities are expected to cause significant increases in noise and dust from drilling and trenching operations, as well as significant disruptions to traffic flow patterns. There is also the potential for spills or leaks of contaminated groundwater in the neighborhoods under this alternative.

Protection of Workers During Remedial Action. There is a potential for adverse health effects on workers from exposure to hazardous substances during construction of any of the alternatives. If activities adhere to the site-specific health and safety plan and all regulatory requirements, this potential is minimized. Alternative No. 3 has a greater risk of exposure than the other alternatives because of the extensive installation of leachate extraction wells into the waste prism.

Construction-related accidents and injuries would likely increase in proportion to the amount of activities. As such, Alternative No. 4 has the most construction activities and thus would have the highest potential for accidents and injuries. Alternative No. 1 has the least construction of the alternatives and therefore would likely result in the fewest accidents and injuries. Alternatives No. 2 and 3 are fairly similar in the magnitude of construction, although Alternative No. 3 does add extraction wells and conveyance systems for interior leachate extraction. These two alternatives have significantly more construction than Alternative No. 1 and significantly less construction than Alternative No. 4.

Time Until Remedial Action Objectives Are Achieved. In general, the remedial action objectives relate to protection of human health and the environment by preventing exposure to

landfill-related contaminants and preventing the release of landfill-related contaminants to the media of concern.

Short-term remedial action objectives for groundwater would be met when institutional controls, which reduce the potential for exposure, were activated.

Long-term (permanent) remedial action objectives for groundwater would be met when groundwater contaminant levels, through a combination of natural attenuation, perimeter liquids control, and control of groundwater beyond the landfill boundary (depending on the alternative), reach cleanup standards and institutional controls are no longer necessary. EPA used modeling of contaminant transport and the natural attenuation processes to estimate the approximate time to reach cleanup standards and the distance contamination would travel during that time. These results should be viewed only as tools for comparing and contrasting the relative merits of each alternative. In general, the modeling is somewhat conservative and likely gives values that are closer to upperbound estimates for times and distances (especially for inorganic constituents). Local variability in the landfill source or hydrogeologic parameters may result in contaminants actually reaching cleanup standards sooner or later and migrating shorter or longer distances than predicted by the model.

Table 11 shows the estimated times until cleanup standards are achieved based on the simulation results. As shown in the table, the time to reach cleanup standards in Alternative No. 1 is unknown. However, the time will likely be many decades longer than the times estimated for Alternatives No. 2, 3, or 4. There is a considerable reduction in the time to meet cleanup standards for inorganic constituents in groundwater in Alternative No. 4 (ranging from 20 to 60 +/- 20 years) compared to Alternatives No. 2 and 3 (ranging from 56 to 150 ±50 years). EPA's modeling indicates that there would be no difference in the time to meet cleanup standards among Alternatives No. 2, 3, and 4 for organic constituents.

Environmental Impacts. Potential environmental impacts associated with remedy implementation include releases of landfill gas to the air, soil erosion and silt buildup, and loss of wildlife habitat. Potential landfill gas releases and erosion and siltation impacts can be mitigated through proper placement of control measures and regular inspection during construction to maintain their effectiveness. Overall, all the alternatives are considered to have equal construction-related environmental impacts.

7.6 Implementability

This evaluation criterion addresses the technical feasibility, the availability of services and materials, and the administrative feasibility of each of the alternatives. The technical feasibility includes the ability to construct and operate the technology and the relative ease of undertaking the remedial action and the ability to monitor its effectiveness. The availability of services and materials addresses the availability of the necessary equipment, technologies, services, and

other resources to construct the remedial action. The administrative feasibility considers the activities needed to coordinate and obtain approvals from other agencies.

Technical Feasibility. All of the alternatives are technically feasible and implementable. Fairly standard and proven construction techniques could be used to install the remedial components associated with the alternatives. The remedial measures could employ technologies, services, and materials that are proven, reliable, and generally available; no significant technical difficulties are anticipated for construction of the remedial components. The analysis of individual alternatives, described below, identifies some issues to be clarified.

Alternative No. 1 would be the easiest to implement because it requires the fewest construction and operational elements. Alternatives No. 2, 3, and 4 all include the installation of a perimeter liquids control system around portions of the landfill. Construction of an extraction trench and installation of extraction wells may be difficult because of existing belowgrade utilities, buried refuse along the trench alignment, and limited access between the landfill and the perimeter of the site. These difficulties may increase costs; however, the cost increase would be the same for all three alternatives.

Alternative No. 3 includes installation of extraction wells within the landfill. Some construction difficulties are anticipated, but wells are implementable. Landfill gas and leachate extraction wells have previously been installed into the landfill and pumped at the OII Site. It may be difficult to locate the extraction wells in the desired locations because of access difficulties. Because of the increased construction and operation issues associated with these wells, Alternative No. 3 is considered to be slightly less implementable than Alternative No. 2.

Alternatives No. 4A and 4B are considered the most difficult to implement, given the significant construction and operational requirements associated with the offsite extraction and conveyance systems. Construction in the residential areas adjacent to the landfill would require considerable more accommodation and coordination with local residents. Anticipated significant construction difficulties include access and availability of rights-of-way, presence of buried utilities, proximity to homes, and extensive disruption to the community.

Availability of Services and Materials. All alternatives could employ technologies that have proven reliable either at the OII Site or other sites. The equipment and personnel necessary to design and construct the alternatives are considered generally available for projects of this magnitude from a number of contractors, although some specialty contractors would likely be needed. All alternatives are considered approximately equal when considering the availability of services and materials.

Administrative Feasibility. All alternatives would require administrative effort, including implementation of institutional controls and coordination with other offices and agencies. Institutional controls are discussed above. In summary, institutional controls would be the most difficult to implement in Alternative No. 1 because the maximum extent of the inorganic

contamination (and thus the area requiring institutional controls) is unknown, and the institutional controls would be required for the longest time. The institutional controls would be the easiest to implement in Alternative No. 4 because the area requiring institutional controls matches the current extent of contamination, and the controls would be needed for the shortest time. Institutional controls would be slightly more difficult to administer under Alternatives No. 2 and 3 than under Alternative No. 4.

Outside of institutional controls, Alternative No. 1 is considered the easiest to administratively implement. The existing leachate treatment plant already has a discharge permit, and the remaining permits or approvals are not anticipated to require significant coordination among the approval agencies.

Alternatives No. 2 and 3 would use the existing treatment plant to treat additional quantities of landfill liquids collected at the perimeter or from within the landfill. These alternatives also assume discharge to the sewer. A revision to the existing discharge permit would be needed to address the increased volume of liquids to be discharged.

Alternatives No. 4A and 4B would require the construction of extraction wells and conveyance systems in offsite areas. Gaining access and approval for the construction may prove problematic and cause significant delays. In the event voluntary access could not be acquired, access to the private properties would be sought through legal mechanisms, potentially a time-consuming and relatively unpredictable process. In addition, these alternatives would require extraction and discharge of significant amounts of groundwater. Acquisition of the necessary permits to pump and discharge the groundwater may be difficult. These activities would require considerable coordination with the Regional Water Quality Control Board and the water districts that oversee water rights. Because of these reasons, Alternatives No. 4A and 4B would be the most difficult to implement administratively.

7.7 Cost

A summary of estimated costs for the four alternatives is presented in Table 14. The table breaks down the capital, operation and maintenance, and net present worth cost estimates by costs common to all alternatives (interim operations and maintenance) and those costs that are alternative-specific. An overview of the cost analysis performed, as well as detailed cost breakdowns for each alternative, are presented in the Feasibility Study Report (EPA, 1996).

A cost component common to all alternatives is the interim operation and maintenance costs to operate the site for an estimated 5 years while the systems required by the Gas Control and Cover ROD and new systems required by this ROD are being implemented. This component totals $46,350,000. The Feasibility Study Report (EPA, 1996) provides additional detail on the derivation of this cost.

Table 14
Comparison of Costs
(in thousands)
OII Site Final Record of Decision

Alternative	Capital Cost	Annual O&M	Net Present Worth: Interim O&M	Net Present Worth: Capital Cost	Net Present Worth: Present Worth O&M	Total Net Present Worth
1	$ 2,800	$ 6,030	$ 46,350	$ 2,800	$ 92,700	$ 142,000
2	$ 17,600	$ 6,360	$ 46,350	$ 17,600	$ 97,600	$ 162,000
3	$ 25,500	$ 7,850	$ 46,350	$ 25,500	$ 120,700	$ 193,000
4A - Sewer Discharge	$ 30,100	$ 8,680	$ 46,350	$ 30,100	$ 133,400	$ 210,000
4A - Aquifer Discharge	$ 35,600	$ 10,360	$ 46,350	$ 35,600	$ 159,900	$ 241,000
4A - Surface Water Discharge	$ 35,000	$ 10,550	$ 46,350	$ 35,000	$ 162,200	$ 244,000
4A - Irrigation Discharge	$ 35,600	$ 10,590	$ 46,350	$ 35,600	$ 162,600	$ 245,000
4B - Sewer Discharge	$ 34,900	$ 9,510	$ 46,350	$ 34,900	$ 146,200	$ 227,000
4B - Aquifer Discharge	$ 46,200	$ 12,210	$ 46,350	$ 46,200	$ 187,700	$ 280,000
4B - Surface Water Discharge	$ 43,700	$ 12,190	$ 46,350	$ 43,700	$ 187,400	$ 277,000
4B - Irrigation Discharge	$ 44,300	$ 12,230	$ 46,350	$ 44,300	$ 188,000	$ 279,000

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As shown in Table 14, the operation and maintenance costs are by far the largest portion of the estimated costs for each alternative. As would be expected, Alternative No. 4 has the highest alternative-specific capital cost, annual operation and maintenance costs, and net present worth costs. The estimated Alternative No. 4 net present worth costs range from $210 to $279 million, depending on the extraction and discharge option (Table 14). Alternative No. 1 has the lowest estimated total net present worth cost, $142 million. Alternative No. 2, at $162 million, costs an additional $20 million over Alternative No. 1. Alternative No. 3 costs an estimated $193 million, an additional $31 million over Alternative No. 2. As described throughout Section 7, significant additional benefits would be realized in choosing Alternative No. 2 over Alternative No. 1, at an additional cost of around $20 million (a 14 percent increase). On the other hand, substantial additional benefits are not apparent in choosing either Alternative No. 3 or 4 over Alternative No. 2, at an estimated increase in costs of between $31 and $119 million.

Certain components of the cost estimates may include overlap with costs associated with the Gas Control and Cover ROD. As implementation of both this remedy and landfill gas control and landfill cover systems progresses, there would likely be opportunities to realize cost savings over the estimates presented herein, particularly if the same entity is implementing both components and the design and implementation of both is occurring concurrently.

7.8 State Acceptance

In a letter dated September 6, 1996, the State of California (Cal-EPA Department of Toxic Substances Control) concurred with EPA's selected remedy for the OII Site.

7.9 Community Acceptance

EPA received 10 sets of comments from individuals, organizations, and agencies on EPA's Remedial Investigation, Feasibility Study, and Proposed Plan for this remedy at the OII Site. These comments, and EPA's responses to the comments, are presented in the Responsiveness Summary in Part II of this ROD.

Some of the comments received from the community expressed support for EPA's proposed remedy; others did not. Several of the commentors recommended that EPA select remedial Alternative No. 3. EPA has determined that the preferred alternative presented in the Proposed Plan (Alternative No. 2) is the most appropriate remedy and provides responses to those commentors that preferred other alternatives in the attached Responsiveness Summary.

8.0 Selected Remedy

After considering CERCLA's statutory requirements, the detailed comparison of the alternatives using the nine criteria, and public comments, EPA, in consultation with the State of California, has determined that the most appropriate remedy for the OII Site is Alternative No. 2: Perimeter Liquids Control. The selected remedy addresses liquids control and contaminated groundwater as well as long-term operation and maintenance of environmental control facilities at the landfill. Liquids will be controlled at the landfill perimeter to prevent migration of contaminants to groundwater. Contaminated groundwater currently beyond the landfill perimeter will be allowed to naturally attenuate over time. This remedy meets the two Superfund threshold evaluating criteria, overall protection of human health and the environment and compliance with ARARs, and provides the best balance of the remaining Superfund evaluation criteria. The major components of the selected remedy for this action include:

- Installation of a perimeter liquids control system in areas where contaminants are migrating from the landfill at levels that cause groundwater to exceed performance standards. Contaminated groundwater currently beyond the landfill perimeter would be reduced to below cleanup standards through natural attenuation.
- Conveyance of the collected liquids to the existing onsite treatment plant.
- Onsite treatment of collected liquids using the existing leachate treatment plant, modified as necessary, to handle the new liquids. Discharge of treated liquids to the County Sanitation Districts of Los Angeles County sanitary sewer system.
- Implementation of a monitoring and evaluation program to ensure that natural attenuation of the contaminated groundwater is progressing as anticipated, to ensure that perimeter liquids control system performance standards are being met, and to detect future releases of contaminants from the landfill.
- Establishment of institutional controls to ensure appropriate future use of the OII Site and to restrict groundwater use in the immediate vicinity of the OII Site. The institutional controls will supplement the engineering controls to prevent or limit exposure to hazardous substances.
- Interim operation and maintenance of existing site activities (gas extraction and air dike, leachate collection, leachate treatment, irrigation, access roads, stormwater drainage, site security, slope repair, and erosion control), except to the extent that they are addressed under the Gas Control and Cover ROD.

- Long-term operation and maintenance of all facilities and environmental control components at the OII Site, excluding those covered under the Gas Control and Cover ROD.

Figure 18 shows some of the conceptual components of the selected remedy.

These measures are in addition to EPA's previous decision to build and operate a landfill gas migration control system, landfill cover, and surface water management system, as outlined in the Gas Control and Cover ROD. These components are not reselected or modified in this ROD, and remedial design of these systems is already underway. The selected remedy, in conjunction with the Gas Control and Cover ROD, addresses all contaminated media at the OII Site.

EPA will review the selected remedy no less often than every 5 years after the initiation of the remedial action to ensure that human health and the environment are being protected by the implemented remedy. As part of the review, EPA will evaluate whether the performance standards specified in this ROD remain protective of human health and the environment. EPA will continue reviews until no hazardous substances, pollutants, or contaminants remain at the OII Site above levels of concern for human health and the environment.

The following sections describe the remedial objectives and performance standards for the various components of the selected remedy. Using performance standards, rather than specifying particular technologies or actions, allows for more flexibility during remedial design and remedial action. This approach can be much more efficient and cost-effective in instances where uncertain or variable conditions are present, such as the subsurface conditions around portions of the OII Site.

8.1 Perimeter Liquids Control Component

The remedial action objective of the perimeter liquids control component of the selected remedy is to prevent migration of contaminants from the landfill to groundwater at levels that impair water quality and/or represent a potential threat to human health and the environment. The technologies necessary to achieve this objective and comply with the performance standards described below will be selected during remedial design.

8.1.1 Performance Standards and Point of Compliance

Perimeter liquids control will be required in areas where contaminants migrate from the landfill at levels causing groundwater to exceed chemical performance standards. The chemical performance standards for perimeter liquids control for each contaminant of

concern are shown in Table 15. The list of contaminants of concern presented in Table 15 has been selected from the list of chemicals of potential concern from the Baseline Risk Assessment (Table 3), based on additional evaluation of groundwater monitoring data. These standards have been set based on ARARs (state or federal drinking water MCLs, to the extent that they are above baseline), as available. If an MCL is not currently available for a specific contaminant of concern, health-based criteria have been used for the performance standards. Compound-specific health-based criteria are based on either a cancer risk of 1×10^{-6} or a noncancer hazard index of 1.

There are several segments around the landfill perimeter where available groundwater monitoring data indicate that performance standards are being exceeded. These areas include:

- Along the northwestern perimeter of the South Parcel in the vicinity of Well CDD-13, to a depth of approximately 70 feet
- Along the northwestern perimeter of the South Parcel in the vicinity of Well OI-24B, at a depth of approximately 130 to 150 feet
- Along the northwestern perimeter of the South Parcel in the vicinity of Wells OI-19A and OI-19C, to a depth of approximately 180 feet
- Along the northeastern perimeter of the South Parcel in the vicinity of Well OI-20A, to a depth of approximately 170 feet
- Along the western perimeter of the South Parcel between Wells PE-3 and PE-7, to a depth of approximately 200 feet
- Along the western perimeter of the South Parcel in the West Aquifer in the vicinity of Well OI-18B, at a depth of approximately 280 to 300 feet
- At the southwestern corner of the South Parcel between Wells OI-53P and OI-50A to a depth of approximately 80 feet
- Along the southern boundary of the South Parcel between Wells OI-16A and PE-13 to a depth of approximately 175 feet

Perimeter liquids control is required in each area where groundwater exceedances of performance standards have been confirmed or are confirmed in the future. At a minimum, perimeter liquids control is required in the aforementioned areas. The remedial design

Table 15
Perimeter Liquids Control Chemical Performance Standards and Groundwater Cleanup Standards
OII Site Final Record of Decision

Contaminant of Concern	State or Federal ARAR[a] (ug/L)	Health-Based Concentration (ug/L)	Selected Performance Standard and Cleanup Standard (ug/L)
ORGANICS			
1,1,1-Trichloroethane	200	1,473	200
1,1,2-Trichloroethane	5	0.32	5
1,1-Dichloroethane	5	1,000	5
1,1-Dichloroethylene	6	0.07	6
1,2,4-Trichlorobenzene	70	23	70
1,2-Dichlorobenzene	600	464	600
1,2-Dichloroethane	0.5	0.2	0.5
1,2-Dichloroethylene, cis-	6	77	6
1,2-Dichloroethylene, trans-	10	153	10
1,2-Dichloropropane	5	0.26	5
1,3-Dichloropropene, cis-	0.5	0.13	0.5
1,3-Dichloropropene, trans-	0.5	0.13	0.5
1,4-Dichlorobenzene	5	0.72	5
1,4-Dioxane		1.6	1.6
2-Butanone		2,464	2,464
4-Methyl-2-pentanone		198	198
Acetone		768	768
Aldrin		0.0005	0.0005[b]
Benzene	1	57.89	1
BHC, beta-		0.05	0.05
BHC, gamma- (Lindane)	0.2	0.06	0.2
bis(2-Ethylhexyl)phthalate	4	5.6	4
Butylbenzylphthalate	100	6,034	100
Carbon tetrachloride	0.5	0.25	0.5
Chlordane	0.1	0.06	0.1
Chlorobenzene	70	51	70
Chloroform	100	0.27	100
Di-n-octylphthalate		9.3	9.3
Dibromochloromethane	100	1.0	100
Endrin	2	10	2
Ethylbenzene	700	704	700
Heptachlor	0.01	0.02	0.01
Heptachlor epoxide	0.01	0.01	0.01
Methoxychlor	40	162	40
Methylene chloride	5	6.2	5
Pentachlorophenol	1		1
Styrene	100	0.01	100
Tetrachloroethylene	5	0.74	5
Toluene	150	683	150
Trichloroethylene	5	2.1	5
Trichlorofluoromethane	150	1,641	150
Vinyl chloride	0.5	0.03	0.5
Xylenes, total	1,750	1,885	1,750
INORGANICS			
Aluminum	1,000	36,500	1,000
Ammonia		35,405	35,405

Table 15
Perimeter Liquids Control Chemical Performance Standards and Groundwater Cleanup Standards
OII Site Final Record of Decision

	State or Federal ARAR[d]	Health-Based Concentration	Selected Performance Standard and Cleanup Standard
Antimony	6	15	6
Arsenic	50	0.05	50
Barium	1,000	2,555	1,000
Beryllium	4	0.02	4
Cadmium	5	18	5
Chromium VI	50	183	50
Chromium III	50	36,500	50
Copper	1,300	1,351	1,300
Cyanide	200	730	200
Fluoride	1,990[b]	2,190	1,990[b]
Lead	15		15
Manganese		1830[c]	1830[c]
Mercury	2	11	2
Nickel	100	730	100
Nitrate (As NO_3)	10,000	58,400	10,000
Nitrite (as N)	1,000	3,650	1,000
Selenium	50	183	50
Thallium	4[a]		4[a]
Vanadium		256	256
Zinc		10,950	10,950

[a]Present analytical techniques are limited to 0.05 ug/l. This value may need to be adjusted in the future if analytical techniques do not improve.
[b]These values are baseline concentrations as presented in the Draft Remedial Investigation Report (EPA, 1994c). These baseline concentrations are higher than their respective MCLs. Therefore, in accordance with Title 22, CCR, Section 66264.94, the baseline concentrations are used.
[c]This value has been adjusted from the one presented in the Risk Assessment appendix (Appendix B) of the Feasibility Study Report (EPA, 1996) because of newer reference dose data.
[d]The most stringent of either the state or Federal MCL is listed.

investigation must be sufficient to identify any additional areas where groundwater exceeds performance standards.

In accordance with the ARARs (presented in Section 9), the point of compliance is at the downgradient boundary of the waste management unit. The monitoring points to be used to determine compliance shall be identified during remedial design. Hydraulic control, or potentially other measures acceptable to EPA, must be used to demonstrate that the perimeter liquids control system is complying with the remedial action objective. In areas that do not have groundwater contaminant concentrations in excess of the chemical performance standards, compliance will be demonstrated by continued detection monitoring to ensure that future releases resulting in groundwater concentrations above the chemical performance standards do not occur.

The perimeter liquids control system will need to operate until releases are no longer occurring that cause groundwater concentrations in exceedance of chemical performance standards or, if the perimeter control system uses hydraulic control, until liquids are no longer present in the perimeter liquids control system. If portions of the perimeter liquids control system meet these requirements, those portions could be shut down while other portions continue to operate.

8.1.2 Contingency Measures

If the perimeter liquids control system is not demonstrated to be effective, appropriate measures shall be taken to bring the system into compliance. Examples of such measure may include, but are not limited to, any of the following, subject to approval by EPA: more closely spaced extraction wells to facilitate perimeter liquids control, higher extraction rates to increase hydraulic control, installation of a cutoff well or extraction trench in place of wells, or extraction from inside the waste prism to enhance control. EPA may also determine that more extensive groundwater monitoring is required to ensure that concentrations in groundwater are not increasing.

8.2 Liquids Treatment Component

The existing leachate treatment plant, modified as necessary, shall be used to treat the liquids collected as part of the selected remedy. The treated liquids shall be discharged to County Sanitation Districts of Los Angeles County sanitary sewer system. Based on existing monitoring data collected from the landfill perimeter and the existing industrial wastewater discharge permit issued by County Sanitation Districts of Los Angeles County (CSDLAC, 1994), only minor modifications to the treatment plant would be required. In addition, mitigation measures shall be designed to improve treatment plant aesthetics. However, because the selected remedy will result in increased discharge volumes, the existing permit will need to be modified. If County Sanitation Districts of Los Angeles County changes the

wastewater discharge requirements, more extensive treatment plant modifications may be necessary.

Off-gas or air emissions from the treatment plant shall be conveyed through the existing or a modified foul-air system to the existing flare or the thermal destruction facility (to be constructed under the Gas Control and Cover ROD) for treatment.

8.2.1 Performance Standards and Point of Compliance

The performance standards for effluent from the treatment plant shall be the discharge requirements outlined in the existing discharge permit (Table 16). If County Sanitation Districts of Los Angeles County revises the discharge limits, the new discharge limits shall supersede the performance standards listed in Table 16.

County Sanitation Districts of Los Angeles County shall determine the point of compliance as part of the industrial wastewater discharge permit. Currently, all effluent from the treatment plant is held for batch discharge following testing; the point of compliance is the effluent discharge tank. If continuous discharge is allowed in the revised permit, the point of compliance will likely be the discharge weir.

8.2.2 Contingency Measures

If performance standards cannot be met by the existing plant, additional treatment processes shall be installed, as necessary, to ensure compliance with the performance standards.

8.3 Groundwater

The remedial action objectives for groundwater cleanup under the selected remedy are to reduce contaminant concentrations in groundwater to below cleanup standards through perimeter liquids control and natural attenuation and to prevent exposure to contaminated groundwater through implementation of institutional controls. Institutional controls are discussed below in Section 8.5.1. EPA believes that perimeter liquids control and natural attenuation will be sufficient to reduce concentrations to cleanup standards. However, if that is not the case, EPA will implement contingency measures (described below).

8.3.1 Performance Standards and Point of Compliance

The key element of the groundwater component of the selected remedy is the ability of the groundwater contamination to naturally attenuate. As part of the Feasibility Study, EPA used

Table 16
Effluent Discharge Limits
OII Site Final Record of Decision

Conventional Pollutants	Discharge Limit (mg/L)
pH	>6 pH units
Dissolved Sulfides	0.1
Temperature	140°F
Heavy Metals and Cyanide (Total)	
Arsenic	3
Cadmium	0.69
Chromium	2.77
Copper	3.38
Lead	0.69
Mercury	2
Nickel	3.98
Silver	0.43
Zinc	2.61
Cyanide	1.20
Priority Organics (Total)	
Oil and Grease (per Method 5520B)	75
Volatile Total Toxic Organics	1.0
Semivolatile Total Toxic Organics	1.0
Total Identifiable Chlorinated Hydrocarbons (TICH)*	Essentially None
Radioactivity	
Title 17, CCR, Section 30287: Concentration of any radionuclide: 400 picoCuries per liter above background; Total: 1 curie per year.	

*TICH are comprised of: aldrin, dieldrin, chlordane (cis & trans), trans-nonachlor, oxychlordane, heptachlor, and heptachlor epoxide, DDT and derivatives (p, p', and o, p' isomers of DDT, DDD and DDE), endrin, HCH (sum of a, b, g, d, isomers of hexachlorocyclohexane), toxaphene, polychlorinated biphenyls.

an analytical model to evaluate the effect of natural attenuation on reducing groundwater contaminant concentrations. Although the numbers generated by the model are not expected to be extremely precise, they do provide a rough guideline with which to evaluate the progress of natural attenuation. Thus, the performance standard for the groundwater component of the selected remedy is for contaminant concentrations in groundwater to be reduced to below the cleanup standards (Table 15) through natural attenuation in accordance with the approximate times and distances provided in Table 17.

Table 17 provides estimates of approximate natural attenuation times and migration distances for both organic and inorganic constituents in different areas and units around the OII Site. Table 17 indicates areas that were not specifically modeled by EPA; the values presented are extrapolated from other areas that were modeled. In these cases, additional evaluation during remedial design may be warranted. Additional definition of some of the groundwater plumes may also be necessary during remedial design.

In accordance with the ARARs (presented in Section 9), the point of compliance is at the downgradient boundary of the waste management unit. EPA shall identify the monitoring points to be used to determine compliance during remedial design. Groundwater cleanup standards identified in Table 15 shall be attained in groundwater at the point of compliance.

Groundwater monitoring and evaluation shall be performed to determine if natural attenuation is progressing approximately as predicted. The specifics of the monitoring and evaluation program will be determined during remedial design; at a minimum, this program shall include procedures for well-by-well and plumewide evaluation, as described below.

For groundwater that is currently contaminated above cleanup standards, statistical methods shall be used to evaluate monitoring data on both a well-by-well basis and a plumewide basis. If the well-by-well analysis indicates significantly increasing concentrations, additional evaluation will be required and additional monitoring may be necessary in the vicinity of the well.

The plumewide analysis will be compared to the times and distances provided in Table 17 to ensure that concentrations in the overall plume are reducing as expected and that higher-than-expected downgradient contaminant migration is not occurring. If either of these criteria are not met, more detailed evaluation will be required and contingency measures shall be implemented, if EPA determines that they are necessary. General contingency measures are discussed below.

Any concentration increases in groundwater downgradient of existing contamination should not exceed the time and distance expectations listed in Table 17. Increases that are not in accordance with Table 17 will warrant additional evaluation. Contingency measures shall be implemented if EPA determines that they are necessary.

Table 17
Approximate Time and Migration Distances to Reach Cleanup Standards in Groundwater Under the Selected Remedy
OII Site Final Record of Decision

Area	Organic Constituents[a]		Inorganic Constituents[a]	
	Years	Distance (feet)	Years	Distance (feet)
Northwest Area - Shallow Units	12	0	56	600
Northwest Area - Deeper Units	12[b]	0	56[b]	600
Southwest Area - Shallow Units	34 (average[c])	200	About 150 years +/- 50 years[d]	About 1,000 feet +/- 500 feet[d]
Southwest Area - West Aquifer	34[b]	200	Not Applicable	Not Applicable
Eastern Area	18	0	56[b]	600[b]

[a]These approximate times and distances should be considered as general guidelines for evaluating the progress of natural attenuation and should not be considered as precise time frames for remediation, additional evaluation during remedial design may be warranted. The distances listed refer to distances beyond the current areas of contamination (shown in Figure 20).

[b]Modeling of natural attenuation was not performed specifically for this area; estimated times are extrapolated from other areas. Additional evaluation may be warranted during remedial design in these areas.

[c]Simulations were performed in different portions of the Southwest Area and 34 years represents the average of these simulations.

[d]Note that uncertainty in the distribution of inorganic contamination and complex groundwater flow conditions (especially over longer times and with greater distances from the landfill) leads to uncertainty in the simulation results, thus a range of years and distances is shown for inorganic constituents in the Southwest Area.

For groundwater that is currently not contaminated and not immediately downgradient of existing contamination, cleanup standards should not be exceeded. Confirmed exceedances of cleanup standards in such areas will warrant additional evaluation. Contingency measures shall be implemented if EPA determines that they are necessary.

8.3.2 Contingency Measures

If, during implementation of the selected remedy, it is demonstrated that natural attenuation is not progressing as expected or additional exceedances of cleanup standards are confirmed in previously clean areas, appropriate actions will be required to meet the performance standards. Examples of contingency measures include, but are not limited to, the following, subject to approval by EPA:

- Additional groundwater monitoring to evaluate the significance of further migration
- Enhanced perimeter liquids control in the area(s) of concern
- Expanded institutional controls over a larger area
- Active groundwater remediation measures (e.g., focused groundwater pumping)

If contingency measures represent a significant departure from the selected remedy, a ROD amendment or Explanation of Significant Differences may be appropriate.

8.4 Environmental Monitoring

To ensure that the performance standards are met for all components of the selected remedy for as long as contamination remains onsite, a long-term monitoring program shall be designed and implemented. The monitoring program is intended to meet several objectives, including:

- Assess compliance with the chemical performance standards and cleanup standards
- Monitor the effectiveness of the perimeter liquids control system
- Detect additional releases of contaminants from the landfill
- Monitor the progress of natural attenuation in groundwater
- Monitor effluent chemical concentrations from the treatment plant

Details of the monitoring program shall be described in a monitoring plan to be submitted for EPA approval during remedial design. Additional information on various components of the monitoring program is included above in Sections 8.1 and 8.3, as well as in the following sections.

8.4.1 Detection Monitoring

As described in the ARARs section below (Section 9), a detection monitoring program shall be applied to areas at the landfill perimeter that are currently unaffected by releases. A monitoring plan shall be developed that outlines the list of parameters to be monitored (this list shall, at a minimum, include the contaminants of concern presented in Table 15), and the frequencies for collecting samples and conducting statistical analyses. Sampling shall be scheduled to include the times of expected highest and lowest elevation of the potentiometric surface. The list of parameters shall be selected to provide reliable indication of a release from the landfill.

Perimeter liquids control will be necessary in any area in which groundwater concentrations exceed chemical performance standards. Detection monitoring can be re-established after perimeter liquids control is no longer necessary in that area. Detection monitoring shall continue until the groundwater has been in continuous compliance with the chemical performance standards for a period of 3 consecutive years.

8.4.2 Compliance/Performance Monitoring

Four types of compliance or performance monitoring will be needed as part of the selected remedy. For the perimeter liquids control system, the types of monitoring include:

- Monitoring contaminant concentrations downgradient of the perimeter liquids control system to determine compliance
- Monitoring physical conditions downgradient of the perimeter liquids control system to determine compliance

For natural attenuation, the types of monitoring include:

- Monitoring of the groundwater contamination to evaluate the progress of natural attenuation (as described above in Section 8.3.1)
- Monitoring downgradient of the existing areas of groundwater contamination to ensure that contaminants are not moving at faster rates than predicted (see Section 8.3.1).

A monitoring plan shall be prepared that outlines how each of these types of compliance monitoring will be performed. The monitoring plan shall comply with the ARARs identified in Section 9.3. The monitoring plan shall detail the locations of the monitoring, the frequency of the monitoring, the constituents to be monitored, the types of statistical

evaluations to be performed, and how the monitoring and evaluation results will be used to determine compliance with performance standards.

8.5 Additional Components

This section describes additional components of the selected remedy, including institutional controls, site administration, site security, and operation and maintenance of facilities and environmental control systems.

8.5.1 Institutional Controls

Institutional controls are nonengineering methods that federal, state, local governments, or private parties can use to prevent or limit exposure to hazardous substances, pollutants, or contaminants, to ensure the effectiveness of remedial actions. The selected remedy requires institutional controls both on the landfill and in certain areas beyond the landfill boundary.

Institutional Controls Within the Landfill Boundary. The primary objectives of institutional controls within the landfill boundary are to (1) limit human exposure to potentially contaminated materials, (2) prevent trespassing, and (3) protect the integrity of the landfill closure and remedial action components. Institutional controls within the landfill boundary may include, but are not limited to, deed notices and restrictions on construction that run with the land; access restrictions including, but not limited to, fencing and warning signs; zoning controls; and well restrictions. Institutional controls within the landfill boundary must prohibit all activities and uses that EPA determines would interfere or be incompatible with, or that would in any way reduce or impair the effectiveness or protectiveness of this remedy. Institutional controls shall also be required for site-related facilities outside of the landfill boundary.

Institutional Controls Beyond the Landfill Boundary. Institutional controls must also be implemented to prevent use of contaminated groundwater as a drinking water supply for the duration of the remedy. Institutional controls are required in areas where contaminant concentrations exceed the chemical performance standards or where they are anticipated to exceed performance standards in the future. The exact area where institutional controls will need to be implemented shall be determined during remedial design, as approved by EPA. There are currently no known groundwater wells in use within the areas of groundwater contamination; all residences, businesses, and industrial facilities within the expected area of institutional controls are currently connected to municipal water systems.

Implementation of institutional controls will need to be coordinated with the local Watermasters in the San Gabriel and Central Basins to conform with existing regulations governing groundwater use in both groundwater basins in the OII Site vicinity as both basins

are adjudicated. The strict control on groundwater use should help to implement institutional controls. Coordination with Los Angeles County, which requires permits for well installation, shall also be required. If deemed necessary, local ordinances may also be used to limit installation of drinking water wells.

North Parcel Areas Not Used as a Landfill or for Site-Related Facilities. EPA determined that no landfill-related risks are posed by soils in the areas of the North Parcel not containing landfill-related wastes, nor used for site-related facilities (the "nonlandfill areas"). Therefore, no further action is required for soils in the nonlandfill areas. The Baseline Risk Assessment (presented as Appendix B in EPA, 1996) did identify potential risks associated with nonlandfill-related businesses present on the North Parcel and/or with the adjacent Pomona Freeway. State and local authorities may wish to consider such potential risks when evaluating appropriate use of the nonlandfill areas. Institutional controls and, potentially, engineering controls will be required for contaminated groundwater and, potentially, liquids control on the North Parcel.

8.5.2 Site Administration

The selected remedy incorporates long-term administration of site activities, including management of staff, ordering equipment, and performing other administrative functions to ensure that performance objectives are met. Specific activities shall be determined during remedial design.

8.5.3 Operation and Maintenance of Facilities and Environmental Control Systems

The selected remedy includes operation and maintenance of all facilities and environmental control systems at the OII Site, except for those systems covered by the Gas Control and Cover ROD. These activities, facilities, and environmental control systems include: the perimeter liquids control system, groundwater monitoring system, leachate treatment plant, leachate collection system, gas extraction and air dike system, irrigation system, access roads, stormwater drainage system, site security, slope repair, erosion control, and site operation facilities, except to the extent that these activities, facilities, and systems are addressed by the Gas Control and Cover ROD.

In accordance with ARARs (as presented in Section 9), the existing leachate collection system (or equivalent) will need to be operated until leachate is no longer generated and detected or until it is no longer feasible to operate.

8.6 Cost of the Selected Remedy

The selected remedy was evaluated for cost in terms of capital costs, annual or operation and maintenance, and net present worth cost. Capital costs include the sum of direct capital costs (such as construction materials and labor, equipment, sewer connection fees) and indirect capital costs (such as engineering, legal, construction management). Annual costs include the cost for labor, materials, maintenance, energy, and equipment replacement. Net present worth costs include capital costs plus operation and maintenance costs over a 30-year period. Table 18 summarizes the capital, annual operation and maintenance, and net present worth costs for the selected remedy.

A cost component common to all alternatives is the interim operation and maintenance costs to operate the site for an estimated 5 years while the systems required by the Gas Control and Cover ROD and new systems required by this ROD are being implemented. This component totals $46,350,000. The Feasibility Study Report (EPA, 1996) provides additional detail on the derivation of this cost.

9.0 Applicable or Relevant and Appropriate Requirements (ARARs)

Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), requires remedial actions on CERCLA sites to attain (or justify the waiver of) applicable, or relevant and appropriate, federal and state environmental or state facility siting requirements. These applicable, or relevant and appropriate, requirements are referred to as "ARARs." Federal ARARs may include requirements promulgated under any federal environmental laws. State ARARs may only include promulgated, enforceable environmental or facility-siting laws of general application that are more stringent or broader in scope than federal ARARs and that are identified by the state in a timely manner. The California Department of Toxic Substances Control, the lead state agency for the OII Site, provided potential State ARARs to the EPA as part of this process.

Applicable requirements are those cleanup standards, standards of control, criteria, or limitations that specifically address conditions, circumstances, or activities at a CERCLA site. Relevant and appropriate requirements are those cleanup standards, standards of control, criteria, or limitations that, while not directly "applicable" to conditions, circumstances, or activities at a CERCLA site, address problems or situations sufficiently similar to those encountered at the site that their use is well suited to the site. A requirement that is not directly applicable must be both relevant and appropriate, based on site-specific factors, to be an ARAR. The criteria for determining relevance and appropriateness are listed in the NCP, 40 CFR § 300.400(g)(2).

Table 18
Selected Remedy Cost Estimate Summary
OII Site Final Record of Decision

DESCRIPTION	Total Cost
CAPITAL COSTS:	
Administration, Institutional Controls, Site Security, and Facility Maintenance:	$953,000
Perimeter Control System	$6,089,000
Landfill Liquids Treatment Capital Costs	$496,000
Sewer Connection Fees	$301,000
Postconstruction Environmental Monitoring	$435,000
Subtotal	$8,274,000
Bid and Scope Contingencies @ 30%	$2,480,000
TOTAL DIRECT COST	$10,754,000
Indirect Costs @ 38.5%	$4,160,000
Alternative No. 2 Remedial Design Investigation	$2,678,000
TOTAL INDIRECT COST	$6,840,000
TOTAL CAPITAL COST	$17,590,000
ANNUAL O & M	
Administration, Inst. Controls, Site Security, and Fac. Maint.	$2,712,000
Perimeter Control System Maintenance	$720,000
Landfill Liquids Treatment Operation and Maintenance	$802,000
Postconstruction Environmental Monitoring	$656,000
Subtotal	$4,890,000
Contingencies @ 30%	$1,470,000
TOTAL ANNUAL O & M	$6,360,000
Capital Costs	$17,600,000
Present Worth of O&M (30 yrs @ 5%)	$97,800,000
Site Operations During Remedy Implementation (5 years assumed)	$46,350,000
TOTAL SELECTED REMEDY NET PRESENT VALUE	$161,800,000

Nonpromulgated advisories or guidance issued by federal or state government do not have the status of potential ARARs. Such advisories or guidance, which are termed "To-be-Considered Material," may be used during the cleanup process to further the goal of protecting human health and the environment.

ARARs only include substantive, not administrative, requirements, and pertain only to on-site matters. Any offsite activities must comply with all applicable federal, state, and local laws, including both substantive and administrative requirements.

ARARs are identified on a site-specific basis from information about the chemicals at the site, the actions that may take place at the site, and the features of the site location. There are three general categories of ARARs:

- Chemical-specific ARARs are numerical values or methodologies that, when applied to site-specific conditions, result in the establishment of numerical values. They are used to determine acceptable concentrations of specific hazardous substances, pollutants, and contaminants in the environment. If a chemical is subject to more than one numerical value or methodology, the most stringent is generally selected.

- Location-specific ARARs are restrictions placed on the concentration of hazardous substances, pollutants, or contaminants or the conduct of activities solely because they are in specific locations, such as wetlands or floodplains.

- Action-specific ARARs are technology- or activity-based requirements or limitations on actions taken with respect to hazardous substances, pollutants, or contaminants.

EPA's analysis and identification of chemical-specific, location-specific, and action-specific ARARs for the selected remedy for the OII Site followed EPA guidance, including the CERCLA Compliance with Other Laws Manual (Interim Final), EPA Office of Solid Waste and Emergency Response (OSWER) Directive 9234.1-01, August 1988 (EPA, 1988k), and the CERCLA Compliance with Other Laws Manual: Part II, Clean Air Act and Other Environmental Statues and State Requirements (Interim Final), OSWER Directive 9234.1-02, August 1989 (EPA, 1989f).

The following sections present the federal and state ARARs identified for this remedy. Federal and state chemical-specific ARARs are discussed in Section 9.1, and are listed in Table 19. Federal and state location-specific ARARs are discussed below in Section 9.2, and are listed in Table 20. Federal and state action-specific ARARs are discussed below in Section 9.3, and are listed in Table 21.

Table 19
Summary of Chemical-Specific ARARs
OII Site Final Record of Decision

Citation	Description of Requirement	ARAR Determination	Comments
FEDERAL ARARs			
40 CFR § 141, Subparts B and G	Establishes national primary drinking water standards for public drinking water supply systems (Maximum Contaminant Levels, or "MCLs").	Relevant and appropriate	MCLs are relevant and appropriate for groundwater designated as a current or potential source of drinking water where the more stringent maximum contaminant level goals ("MCLGs") are not relevant or appropriate. MCLGs are not appropriate due to the complex hydrogeological setting at the OII Site, the minimal risks of exposure, and the limited potential use of the resource. MCLs for contaminants of concern are listed in Table 15.
22 CCR § 66264.94 (c)	Requires establishment of groundwater protection standards for waste management units where releases have occurred; concentration limits may be set greater than background (up to the MCL) if it is technically or economically infeasible to achieve background and the proposed limit will not pose a substantial hazard to human health or the environment.	Applicable	EPA selected MCLs that exceed baseline (or health-based limits where no MCLs are set) as the groundwater protection standard, due to the complex hydrogeological setting at the OII Site, the minimal risks of exposure, and the limited potential use of the resource. The groundwater protection standards are listed in Table 15. This requirement is applicable (by reference from 22 CCR § 66265.90) to interim status facilities at which groundwater remediation is necessary.
STATE ARARs			
22 CCR §§ 64431, 64444	Establishes California primary drinking water standards for public drinking water supply systems (also known as "MCLs").	Relevant and appropriate where more stringent than federal standard	Specific California MCLs are relevant and appropriate where they are more stringent than federal MCLs. California MCLs that are more stringent than federal MCLs for contaminants of concern are listed in Table 15.
State Water Resources Control Board Resolution 92-49 III. G	Requires cleanup and abatement of discharges to background water quality, or the best water quality which is reasonable if background levels cannot be restored.	Applicable	Applicable to waters discharged to waters of the state. EPA selected MCLs that exceed baseline (or health-based limits where no MCLs are set) as the groundwater protection standard, due to the complex hydrogeological setting at the OII Site, the minimal risks of exposure, and the limited potential use of the resource.
Porter-Cologne Water Quality Control Act § 13370.5; California Government Code § 54739	Pursuant to these authorities, the Los Angeles County Sanitation District issues Industrial Wastewater Discharge permits setting discharge limits for concentration of contaminants, temperature, and volume.	Off-site discharge requirement	Permits are required for discharges to the sanitary sewer, because it is an off-site activity. Discharges must meet pretreatment standards, presented in Table 16. Changes to pretreatment standards, or additional flows over the current permit limit of 24,000 gpd, will require modification of the current permit.

Table 20
Summary of Location-Specific ARARs
OII Site Final Record of Decision

Location	Citation	Description of Requirement	ARAR Determination	Comments
Within 200 ft of a fault displaced in Holocene time	22 CCR § 66264.18(a)	Prohibits construction of new hazardous waste treatment, storage, or disposal facilities.	Applicable	Several faults have been identified in the area that may have been displaced during the Holocene period (EPA, 1994c).
Seismic Zone	23 CCR § 2547	Requires waste management units to be designed to withstand the maximum credible earthquake without damage to the foundation or to structures that control leachate.	Relevant and appropriate for existing units; applicable for new units	Appropriate seismic protection measures are required for existing leachate collection and treatment units at the OII Landfill. Any new waste management units must be designed to withstand the maximum credible earthquake.
Migratory bird area	16 U.S.C. § 703	Protects species of native birds in the U.S. from unregulated "take," which can include poisoning at hazardous waste sites.	Applicable	OII Landfill provides habitat for protected bird species. The remedial design process will identify any measures necessary to prevent an unregulated "take" of protected bird species.

Table 21
Action Specific ARARs
OII Site Final Record of Decision

Citation	Description of Requirement	ARAR Determination	Comments
Landfill Maintenance, Closure and Postclosure			
22 CCR § 66265.31	Requires maintenance and operation of facilities to minimize fire, explosion, or release of hazardous substances.	Applicable	The remedial design process will identify appropriate measures consistent with the provisions of this requirement.
22 CCR §§ 66265.32, 66265.33, 66264.34, 66265.37(a), 66265.55, 66265.56(a)-(c), (e)-(h)	Specifies emergency and communications systems for hazardous waste facilities, testing of equipment, and arrangements for emergency support services.	Applicable	The remedial design process will specify appropriate communication and emergency systems consistent with the substantive provisions of these requirements.
22 CCR § 66265.14	Requires security measures sufficient to prevent unknowing or unauthorized entry onto hazardous waste facilities.	Applicable	Substantive provisions are pertinent to OII Site security. Appropriate security measures could include existing or upgraded systems.
14 CCR § 17767(c)	Requires security measures to prevent unauthorized access to closed landfills and monitoring, control, and recovery systems.	Relevant and appropriate	Substantive provisions are pertinent to OII Site security. Appropriate security measures could include existing or upgraded systems.
14 CCR § 17701	Requires operation and maintenance of landfills to prevent public nuisance.	Relevant and appropriate	The remedial design process will identify appropriate measures to prevent public nuisance.
14 CCR § 17706	Requires operation and maintenance of landfills to minimize dust creation.	Relevant and appropriate	The remedial design process will identify appropriate measures to minimize dust creation.
14 CCR § 17707	Requires operation and maintenance of landfills to control vectors (insects, rodents, etc.).	Relevant and appropriate	The remedial design process will identify appropriate measures to maintain vector control.
14 CCR § 17715	Requires operation and maintenance of landfills to control odors.	Relevant and appropriate	The remedial design process will identify appropriate measures to maintain odor control.
22 CCR § 66265.111 (a),(b)	Requires closure to minimize need for further maintenance and to protect human health and the environment from releases of hazardous substances.	Applicable	The remedial design process will identify measures to reduce maintenance and prevent releases consistent with the provisions of this requirement.
22 CCR § 66265.310 (b)(1), and (b)(3) except references to §§ 66265.118 - 120.	Requires facility closure to minimize chance of postclosure release of hazardous waste; facilitate postclosure maintenance, monitoring and emergency response.	Applicable	The remedial design process will identify specific post-closure care measures consistent with the provisions of this requirement.
22 CCR § 66265.95	Establishes the point of compliance for groundwater protection standards as a vertical surface located at the hydraulically downgradient limit of the waste management area.	Applicable	The remedial design process will identify well locations to monitor compliance with the groundwater protection standards consistent with the provisions of this requirement.
22 CCR § 66265.96	Defines the compliance period for groundwater quality as the number of years equal to the active life of the waste management unit. Requires restarting the compliance period if evaluation monitoring is initiated.	Applicable	The remedial design process will specify the compliance period for specified areas consistent with the provisions of this requirement.
22 CCR § 66264.96(c)	Extends groundwater quality compliance period until groundwater protection standard has been met for three consecutive years.	Applicable	This requirement would extend the compliance period if groundwater performance standards are not met by the end of the period specified by 22 CCR § 66265.96. Applicable (by reference from 22 CCR § 66265.99) when groundwater remediation is required at interim status facilities.

Table 21
Action-Specific ARARs
OII Site Final Record of Decision

Citation	Description of Requirement	ARAR Determination	Comments
22 CCR § 66265.98 (a) - (i)	Requires release detection monitoring in areas unaffected by prior releases.	Applicable	The remedial design will specify the elements of a monitoring program consistent with the substantive provisions of this requirement to detect new groundwater performance standard exceedances in areas where no exceedances of groundwater performance standards previously occurred.
22 CCR § 66265.99(a), (b), (e)(1) - (4) and (6) except for references to surface water	Requires evaluation monitoring to assess the nature and extent of any exceedances of groundwater performance standards.	Applicable	The remedial design will specify the elements of a monitoring program consistent with the substantive provisions of this requirement to evaluate the nature and extent of exceedances of groundwater protection standards in groundwater.
22 CCR § 66264.100(d)	Requires water quality monitoring program to measure effectiveness of remediation.	Applicable	The remedial design process will identify the measures necessary to monitor the effectiveness of groundwater remediation. Applicable (by reference from 22 CCR § 66265.99) when groundwater remediation is required at interim status facilities.
22 CCR § 66265.117 (b)-(d) except references to 66265.118, 119 and 120.	Requires post-closure care for 30 years after completion of closure of the interim status hazardous waste management facilities.	Applicable	Post-closure care includes monitoring and maintenance of waste containment systems. EPA may determine that the length of the period may be modified.
Los Angeles Regional Water Quality Control Board Order WDR 96-054 NPDES # CAS614001	Establishes requirements for stormwater discharges from hazardous waste treatment, storage and disposal facilities	Applicable to on-site discharges; otherwise off-site discharge requirement	Stormwater discharges from the site fall within the scope of the general permit. Stormwater discharges to the sanitary sewer are not included, but are addressed in the Sanitary District permit for the Leachate Treatment Plant.
Landfill Liquids Treatment and Disposal			
22 CCR § 66264.601	Requires location, design, construction, operation, and maintenance of miscellaneous units that treat hazardous waste to ensure protection of human health and the environment.	Applicable to new units; portions applicable or relevant and appropriate to existing units	New units that treat leachate, a listed hazardous waste (F039), must meet these requirements. Requirements for operation, maintenance and closure are relevant and appropriate to existing leachate treatment units.
22 CCR §§ 66264.192, 66264.193(c)-(f), 66264.194, 66264.195, 66264.197	Requires construction, operation, and closure of hazardous waste treatment in tanks to comply specified standards, including secondary containment, inspections, and operating limits.	Applicable to new units; portions applicable or relevant and appropriate to existing units	New treatment tanks that treat leachate, a listed hazardous waste (F039), must meet the substantive provisions of these requirements. Substantive requirements for operation, maintenance and closure are relevant and appropriate to existing leachate treatment tanks.
23 CCR § 2581(c)(2) and (c)(3) except references to surface water	Requires operation of leachate collection and removal systems as long as leachate is generated and detected throughout the post-closure care period.	Applicable	Existing leachate collection systems, or functional equivalents, must be operated to the extent feasible (pursuant to 23 CCR § 2511(d)).
22 CCR § 66265.310(e)(2)	Requires maintenance and operation of leachate collection, removal and treatment system to prevent excess accumulation of leachate during post-closure care period.	Applicable	The remedial design process will identify appropriate measures to prevent excess accumulation of leachate.
22 CCR §§ 66264.1050 - 1063	Sets air emission standards for equipment leaks for units from facilities that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight.	Applicable	Substantive provisions may be applicable to specified equipment.

SCO100192D7.DOC

Page 2 of 3

Page 1-127

00621

Table 21
Action-Specific ARARs
OII Site Final Record of Decision

Citation	Description of Requirement	ARAR Determination	Comments
22 CCR §§ 66264.32, 66264.33, 66264.34, 66265.37(a), 66265.55, 66265.56(a)-(c), (e)-(h)	Specifies emergency and communications systems for hazardous waste facilities, testing of equipment, and arrangements for emergency support services.	Applicable	The remedial design process will specify appropriate communication and emergency systems for the leachate treatment plant consistent with the provisions of these requirements.
Excavation, Construction and Disposal			
22 CCR § 66265.114	Requires equipment, structures and soils to be properly disposed of or decontaminated during closure.	Applicable	The remedial design process will identify procedures to comply with this requirement.
22 CCR § 66265.13	Requires analysis of hazardous waste before transfer, treatment, storage or disposal.	Applicable	Excavation or other management of wastes must meet these requirements.
22 CCR § 66262.34	Allows storage of hazardous waste onsite in containers for up to 90 days.	Applicable	Applicable to wastes managed during implementation or maintenance.
22 CCR §§ 66264.171 - 66264.175, 66264.178.	Requires storage of waste in appropriate containers, and appropriate management and closure of containment areas.	Applicable to new units, relevant and appropriate for existing units	Applicable to wastes managed in containers during implementation or maintenance.
22 CCR § 66264.552 (e)(1) - (4)	Allows redisposal of hazardous wastes generated as part of remediation in designated units	Applicable to new units, relevant and appropriate for existing units	Designated onsite units may receive redisposed wastes from the landfill.
22 CCR § 66264.553 (b),(c)	Allows establishment of temporary tanks and container storage areas for treatment or storage of remediation wastes	Applicable to new units, relevant and appropriate for existing units	Temporary tanks and container storage areas may be established during remediation consistent with this requirement.
SCAQMD Rule 402	Limits discharge of any air contaminant or material that causes injury, detriment, nuisance, or annoyance, or that endangers the comfort, repose, or safety of the public, property, or business.	Applicable	Applies to any activities conducted that generate air contaminants or materials.
SCAQMD Rule 403	Limits downwind concentration of PM-10 from fugitive dust to 100 g/m^3 above upwind concentration, averaged over 5 hours.	Applicable	Applies to activities generating fugitive dust (i.e. earth-moving, construction/ demolition, or vehicular movement).
SCAQMD Rule 1150	Requires mitigation measures that ensure a nuisance does not occur when buried waste is exposed.	Applicable	Potentially applicable to construction or maintenance activities.

SCO100192D7.DOC

Page 3 of 3

Page 1-128

00622

9.1 Chemical-Specific ARARs

The only chemical-specific ARARs that pertain to the selected remedy are those that address water quality. Chemical-specific soil requirements are not pertinent to the selected remedy, as the remedy does not select any response for soil (although action-specific ARARs would apply to management of contaminated soils and wastes necessitated by implementation of the remedy or site maintenance). Chemical-specific surface water and air requirements are addressed in the Gas Control and Cover ROD. Chemical-specific ARARs are listed in Table 19.

Drinking Water Standards. Section 121(d)(2) of CERCLA, 42 U.S.C. § 9621(d)(2), requires CERCLA cleanups to attain water quality criteria established under the Safe Drinking Water Act if those criteria are relevant and appropriate, considering, among other factors, the designated or potential use of the water resource. The 1995 Water Quality Control Plan for the Los Angeles Region (known as the "Basin Plan") designates the groundwater surrounding the OII Site as potential drinking water. EPA has identified the drinking water standards referred to as "Maximum Contaminant Levels" for site-related contaminants as an ARAR, using the more stringent of federally- or state-designated MCLs. Due to the complex hydrogeological setting at the OII Site, the minimal risks of exposure, and the limited potential use of the resource, EPA did not identify the more stringent standards known as "Maximum Contaminant Level Goals." MCLs for contaminants of concern at the OII Site are listed in Table 15.

Water Quality Standards for Landfill Closure. Landfill closure requirements under both federal and State law prescribe water quality protection standards. The OII Site is an "interim status" hazardous waste landfill, having received hazardous wastes after November 19, 1980, the effective date of the Resource Conservation and Recovery Act of 1978, 42 U.S.C. § 6901, and having never obtained a final permit. Regulations governing closure of interim status landfills are applicable to the OII Site. The California hazardous waste program is federally authorized to operate in lieu of the federal program; therefore, the California interim status regulations are considered federal ARARs. Federal and state regulations applicable to permitted facilities may be, as a general matter, relevant and appropriate to interim status facilities; however, with regard to chemical-specific water quality protection, those regulations that are both relevant and appropriate are no more stringent than the interim status regulations. However, certain regulations applicable to groundwater protection standards at permitted facilities where releases have taken place are applicable to interim status facilities by reference from the interim status regulations. These regulations are also considered federal ARARs.

The OII Site also accepted municipal solid waste (such as household trash), but stopped accepting these wastes prior to the effective date of federal and state regulations for municipal solid waste landfills. These regulations may be, as a general matter, relevant and appropriate to older landfills that accepted municipal solid wastes; however, as with the

regulations for permitted hazardous waste facilities, those solid waste regulations pertaining to chemical-specific water quality protection that are both relevant and appropriate are no more stringent than the interim status regulations.

The applicable regulations allow a water quality protection standard greater than background, if it is technically or economically impracticable to attain background levels, provided that the standard is protective of human health and the environment and is no higher than MCLs. Due to the complex hydrogeological setting at the OII Site, the minimal risks of exposure, and the limited potential use of the resource, EPA selected MCLs that exceed baseline levels, and health-based levels for contaminants that have no MCLs, as the ARAR. The MCLs and health-based levels are listed on Table 15.

Offsite Discharge to the Sanitary Sewer. The Leachate Treatment Plant discharges effluent to the sanitary sewer. This effluent subsequently undergoes further treatment at County Sanitation Districts of Los Angeles County facilities. This discharge is considered an "offsite" activity; therefore, the activity is not subject to ARARs and must meet not only substantive, but also administrative, requirements. The substantive requirements include chemical-specific criteria for the effluent. The requirement for a permit is listed in Table 19 solely for informational purposes.

9.2 Location-Specific ARARs

The OII Site presents two location-specific issues: seismic (earthquake-related) requirements and a requirement related to protected bird species. The location-specific ARARs are listed in Table 20.

Seismic Requirements. The OII Site is located near several faults that may have been displaced during the Holocene period. New hazardous waste treatment, storage, or disposal facilities may not be built within 200 feet of such a fault. In addition, regulations promulgated by the State Water Resources Control Board require waste management units to be designed to withstand the maximum credible earthquake for their location. This requirement is applicable for new facilities, and relevant and appropriate to existing facilities (to the extent that existing facilities can be made to withstand the maximum credible earthquake).

Migratory Bird Area. The OII Site provides habitat to several species of migratory birds protected under federal law. The prohibition against "taking" such migratory birds, which can include poisoning at hazardous waste sites, is applicable.

9.3 Action-Specific ARARs

Federal and/or state environmental requirements address numerous activities required by the selected remedy. These activities include landfill maintenance, closure, and postclosure; landfill liquids treatment and disposal; and excavation, construction, and disposal. The action-specific ARARs are listed in Table 21.

Landfill Maintenance, Closure, and Postclosure. The interim status regulations pertinent to landfill maintenance (such as emergency prevention and security) and to landfill closure and postclosure are applicable to the OII Site. Certain permitted facility regulations pertaining to monitoring the effectiveness of water quality remediation and to the water quality compliance period for facilities undergoing water quality remediation are applicable by reference to interim status facilities. Certain state standards for nuisance-related controls at municipal solid waste facilities are more stringent than interim status regulations, and are relevant and appropriate to the selected remedy. In addition, stormwater discharge requirements are applicable for onsite discharges not addressed in the Gas Control and Cover ROD (offsite discharges must meet both administrative and substantive requirements). Stormwater discharges that will be addressed under the Gas Control and Cover ROD are subject to the ARARs identified in that ROD.

The Gas Control and Cover ROD, which is a final ROD, identified ARARs for landfill gas collection and destruction. Gas collection and destruction activities undertaken as site control measures (termed the "gas extraction and air dike system") prior to their inclusion as activities under the Gas Control and Cover operable unit are subject to the ARARs identified in the Gas Control and Cover ROD. To the extent that these interim gas collection and destruction activities cannot meet specific ARARs, such ARARs are waived for the interim measures, as implementation of the Gas Control and Cover ROD will achieve the ARARs.

Landfill Liquids Treatment and Disposal. The interim status regulations, which require leachate collection and removal to prevent excess accumulation, are applicable to the OII Site. The State Water Resources Control Board regulation for leachate collection and removal is different in scope and also applicable, requiring leachate collection and removal through the postclosure period. However, as the OII Site is undergoing remediation under the oversight of a public agency, the State Water Resources Control Board regulation is only applicable to the extent feasible.

Design and construction requirements for permitted facilities are applicable to any new units implemented under this remedy. Operation, maintenance, and closure requirements are applicable to new units and either applicable or relevant and appropriate to existing units (depending on when they were constructed).

Off-gas from the leachate treatment plant is collected and sent through the existing "foul air" system to the landfill gas control system for destruction. ARARs for the landfill gas control system are included in the Gas Control and Cover ROD.

Regulation of air emissions from equipment leaks is applicable if specified equipment contains hazardous wastes with organic concentrations of 10 percent or more.

Excavation, Construction and Disposal. The interim status regulations, which require analysis of hazardous wastes prior to management and proper disposal or decontamination of equipment, structures and soils during closure, are applicable. Requirements for permitted facilities for storage of waste, temporary tanks, and containers, and redisposal of remediation wastes are applicable to new remediation units and relevant and appropriate for existing units. In addition, South Coast Air Quality Management District (SCAQMD) regulations pertinent to construction, excavation, and maintenance of systems other than those addressed by the Gas Control and Cover ROD are applicable.

10.0 Documentation of Significant Changes

EPA issued the Proposed Plan for this remedy at the OII Site for public comment in June 1996. The Proposed Plan identified Alternative No. 2, Perimeter Liquids Control, as the preferred alternative. EPA reviewed all written and verbal comments submitted during the public comment period. After reviewing these comments, EPA has determined that no significant changes to the remedy, as originally identified in the Proposed Plan, are necessary.

11.0 Statutory Determinations

EPA's primary responsibility at Superfund sites is to undertake remedial actions that achieve adequate protection of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences. These specify that when complete, the selected remedial action for a site must comply with applicable or relevant and appropriate environmental standards established under federal and state environmental requirements and state facility siting requirements (unless a statutory waiver is justified). The selected remedy must also be cost-effective and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Finally, the statute includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as their principal element. The following sections discuss how the selected remedy at the OII Site meets these statutory requirements.

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FINAL
RECORD OF DECISION
FOR
OPERATING INDUSTRIES, INC.
SUPERFUND SITE
MONTEREY PARK, CALIFORNIA

Volume 2

September 1996

Contents

Section		Page
Part II	**Responsiveness Summary**	II-1
	Responses to Written Comments	II-1
	Responses to Comments from Individuals and Interest Groups	II-1
	Responses to Comments from Public Entities	II-16
	Responses to Comments from the OII Steering Committee	II-24
	Responses to Oral Comments	II-87
	References	R-1
	Appendix A—Transcript of Proceedings	A-1
	Appendix B—"Cancer Risk Estimates for Vinyl Chloride"	B-1
	Appendix C—Corrected Text, Tables, and Figures from the Feasibility Study Report	C-1

Acronym List

ARARs	applicable or relevant and appropriate requirements
BTEX	benzene, toluene, ethylbenzene, and xylene
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
DTSC	California Department of Toxic Substances Control
EPA	Environmental Protection Agency
ft/day	feet per day
ft/yr	feet per year
gpm	gallons per minute
HELP	Hydrologic Evaluation of Landfill Performance model
hp	horsepower
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
mg/L	milligrams per liter
MOC	USGS Method-of-Characteristics code
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
OII	Operating Industries, Inc.
OSWER	Office of Solid Waste and Emergency Response
PCB	polychlorinated biphenyl
PCE	perchloroethylene
ppm	parts per million
RCRA	Resource Conservation and Recovery Act of 1976
ROD	Record of Decision
SCAQMD	South Coast Air Quality Management District
TBC	to be considered
TCE	trichloroethylene
µg/L	micrograms per liter
$\mu g/m^3$	micrograms per cubic meter
USGS	U.S. Geological Survey

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———. *Risk Assessment Guidance for Superfund. Volume I. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors."* OSWER Directive 9285.6-03. March 25, 1991f.

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Pages 740-829, Transcript of Proceedings - Public Meeting on the Proposed Plan for the Final Remedy, June 12 1996, have been omitted for brevity.

APPENDIX B

"CANCER RISK ESTIMATES FOR VINYL CHLORIDE"

(EPA, 1992i)

SCO100192D1.DOC

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

September 28, 1992

OFFICE OF
RESEARCH AND DEVELOPMENT

MEMORANDUM

SUBJECT: Cancer Risk Estimates for Vinyl Chloride

FROM: Jim Cogliano
Chief
Carcinogen Assessment Statistics & Epidemiology Branch
Office of Health and Environmental Assessment (RD-689)

TO: Arnold Den
Science Advisor
Region 9
San Francisco, California

In answer to your request, our current advice on assessing risks of partial lifetime exposure to vinyl chloride is best represented by my memorandum to you dated September 26, 1989, as updated by my memorandum to John Rauscher of Region 6 referencing the newer unit risk estimate.

Since the time of these memoranda, the scientific basis for this advice has been discussed in different scientific arenas.

(1) In February 1990 this information was part of a poster presentation, "Vinyl chloride: another look" (with J.C. Parker and W.E. Pepelko) at the 29th Annual Meeting of the Society of Toxicology. An abstract is published in *The Toxicologist*, Vol. 10, p. 349.

(2) In May 1990 the underlying bioassays and conclusions were discussed at the Risk Assessment Forum's Colloquium on Children as a Sensitive Subpopulation. Proceedings of the colloquium can be obtained from the Risk Assessment Forum.

(3) In November 1990 this information was presented as a poster, "Early life sensitivity to vinyl chloride-induced carcinogenesis," (with J.C. Parker and W.E. Pepelko) at the conference on "Similarities and Differences between Children and Adults: Implications for Risk Assessment," sponsored by the International Life Sciences Institute and by the Agency. A companion poster, "Experimental indications that early life may be a sensitive period of exposure for some chemical carcinogens," (with J.C. Parker and C.B. Hiremath) described preliminary indications of early-life sensitivity for some other chemicals, although the evidence is not as strong as for vinyl chloride.

(4) More recently, in November 1991 this material was included in a platform presentation, "Some implications of toxicology and pharmacokinetics for exposure assessment," (with J.C. Parker) at the conference on "Measuring, Understanding, and Predicting Exposures in the 21st Century." A companion paper has been peer reviewed and has been accepted for publication in the *Journal of Exposure Analysis and Environmental Epidemiology*, Suppl. 1, 1992.

(5) Currently, this information is being used as one of the focal points of a future Risk Assessment Forum Workshop on Sensitive Subpopulations, which is looking at Agency practices that enable risk assessments to quantitatively characterize sensitive subpopulations in a way that can be used in risk-based decisions, focusing on approaches that are ready for use. The workshop is being planned for early 1993.

I would like to thank you for stimulating discussion of the scientific evidence pertinent to early-life sensitivity to vinyl chloride and for your role in the appropriate implementation of this information in the Agency's risk assessment practices and risk reduction programs. If I can be of further assistance, please call me at 202 260-3814.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 26 1989

08 OCT 1989

OFFICE OF RESEARCH AND DEVELOPMENT

Action Arnold
CC:
File

MEMORANDUM

SUBJECT: Status of Vinyl Chloride Assessment

FROM: James Cogliano, Ph.D.
Carcinogen Assessment Statistics & Epidemiology Branch
Office of Health and Environmental Assessment (RD-689)

TO: Arnold Den, Ph.D.
Senior Science Advisor
Region 9

THRU: Steven Bayard, Ph.D.
Acting Chief
Carcinogen Assessment Statistics & Epidemiology Branch
Office of Health and Environmental Assessment (RD-689)

Charles H. Ris
Deputy Director
Human Health Assessment Group
Office of Health and Environmental Assessment (RD-689)

As a followup to our telephone conversations, here is a status report and some preliminary results of my new assessment of the cancer risks from inhaling vinyl chloride. I request that this risk assessment information not be discussed in public until we can complete our evaluation.

The new assessment will include three separate analyses that give information on complementary aspects of the cancer risks from inhaling vinyl chloride. First, long-term exposure studies by Maltoni et al. (1981) will be used to give an estimate of the cancer risk from long-term inhalation of vinyl chloride. Second, a study by Drew et al. (1983) will be analyzed to show that this lifetime cancer risk is mostly attributable to exposures occurring early in the life of the animals. Third, studies by Maltoni et al. (1981) and Laib et al. (1985a, 1985b), which demonstrate that newborns are especially sensitive to the carcinogenic effects of vinyl chloride, will be used to quantify the cancer risks during the sensitive period. Details about each analysis are given below.

Conventional lifetime studies

Through the years, OHEA has published several estimates of the cancer risk for lifetime inhalation of vinyl chloride. The 1980 Ambient Water Quality Criteria and the 1984 Health Effects Assessment used total tumors from an early publication of the Maltoni et al. (1981) study, and the 1985 Health and Environmental Effects Profile used only liver hemangiosarcomas. All dose-response curves were based on administered inhalation concentration in rats.

Based on work by Gehring et al. (1981), it is now believed that metabolism follows Michaelis-Menten kinetics and that a linear dose-response relationship should be expected for because it is the metabolite thought to be carcinogenic metabolized dose, not administered dose. In addition, EPA's guidelines now call for adding risks from only significantly elevated tumor sites. Furthermore, both mice and hamsters (often thought of as a lung cancer-resistant species) incurred higher cancer incidence than the rats in the Maltoni et al. (1981) study.

Given the results this review of the earlier risk estimates, I am developing a new lifetime risk estimate that reflects this additional information. Because metabolized dose is a small fraction of administered dose at the high doses used in the animal studies, I anticipate that the new lifetime risk estimate will be higher than previous estimates. While the new risk estimate is being reviewed, I would suggest using the still-current estimate published in the Superfund Public Health Evaluation Manual, 0.025 per mg/kg-d. This is equivalent to a risk of 0.02 for exposure to 1 ppm vinyl chloride throughout adulthood. The discussion that follows shows how the available animal data can be modeled to elucidate the concern for partial lifetime age-dependent exposure.

Effects of age and duration of exposure on risk

In a study designed to compare the carcinogenic effects of partial lifetime exposures, Drew et al. (1983) showed that the effect of vinyl chloride depends on both age and duration of exposure. I have attempted to quantitatively describe this relationship without making mathematical assumptions that limit the applicability of the results. Assuming only that each dose carries a risk that is proportional to the amount metabolized and to some power of the remaining lifetime (so that exposures early in life would have greater effect), I found that Drew's data best fit the risk being proportional to the third power of remaining lifetime, although the data are also consistent with higher powers. Because the lifetime risk is higher for exposures early in life, my result is consistent with an earlier mathematical analysis by Brown and Hoel (1986), who showed that if the multistage model is suitable for describing the underlying

carcinogenic process, then Drew's data are consistent with a multistage model of 4 to 6 stages with a strong effect on the first stage and a lesser effect on a late stage.

Sensitivity of newborns

Newborn rats are sensitive to the carcinogenic effects of vinyl chloride. The Drew et al. (1983) and Maltoni et al. (1981) long-term exposure studies were not designed to detect this sensitivity, because animals were not initially exposed until 2 or 3 months of age. In contrast, Maltoni et al. (1981) also conducted an experiment in which newborn rats were exposed to vinyl chloride for only 5 weeks beginning at 1 day of age. His striking result is that a 5-week exposure at this critical period induces more hemangiosarcomas and hepatomas than does lifetime exposure beginning at 13 weeks of age. This result has been supported by evidence from two recent studies by Laib et al. (1985a, 1985b), who showed that "the induction of pre-neoplastic hepatocellular [foci] in rats by [vinyl chloride] is restricted to a well defined period ([approximately] day 7-21) in the early lifetime of the animals." They describe the dose-response relationship as linear down to the lowest dose tested (2.5 ppm for 40 hr/wk).

These studies of early-life exposure provide animal evidence to support the conventional wisdom that speculates about the young being more susceptible to certain cancer-causing agents. In the case of vinyl chloride, the animal data in rats is supportive of a public health concern for this young-age susceptibility. Conventional risk assessment approaches as used by EPA will not adequately describe the susceptibility associated with partial lifetime exposure at a young age. For example, it would <u>not</u> be appropriate to express exposure as a lifetime average computed by distributing a 5-week exposure over a full lifetime. Instead, an appropriate measure of exposure would be the average air concentration experienced throughout the sensitive period. Preliminary results indicate that the incremental cancer risk from breathing air with 1 ppm vinyl chloride throughout the sensitive period <u>may be equal, and in addition to</u>, the cancer risk from breathing the air with 1 ppm vinyl chloride throughout adulthood. At this time, it is not known whether the sensitive period in humans would be defined as a matter of weeks, matching the duration of the sensitive period in rats, or years, matching the fraction of the lifetime at which a comparable stage of development is attained.

Using the rat data (all tumors) of Maltoni et al. (1981) and Drew et al. (1983), together with assumptions regarding tumor development post-exposure and a conventional lifetime cancer risk estimate of 0.02 per ppm, the risk from 4-year constant exposures beginning at different ages can be summarized in the following table.

Estimated increased lifetime cancer risk to humans from 4-year exposures to 1 ppm vinyl chloride in air: differential effects of exposures starting at different ages

Age during 4-year exposure	Apportioned lifetime risk(1)	Age during 4-year exposure	Apportioned lifetime risk(1)
0-5(2)	$2x10^{-2}$(3)	38-41	$5x10^{-4}$
6-9	$5x10^{-3}$	42-45	$3x10^{-4}$
10-13	$4x10^{-3}$	46-49	$2x10^{-4}$
14-17	$3x10^{-3}$	50-53	$1x10^{-4}$
18-21	$2x10^{-3}$	54-57	$5x10^{-5}$
22-25	$2x10^{-3}$	58-61	$2x10^{-5}$
26-29	$1x10^{-3}$	62-65	$5x10^{-6}$
30-33	$1x10^{-3}$	66-69	$3x10^{-7}$
34-37	$8x10^{-4}$	Total 0-69	$4x10^{-2}$

[1]Per ppm, assuming lifetime risk is proportional to remaining lifetime after exposure to the 3rd power, and that equal fractions of a lifetime are equivalent across species.

[2]The 6-year period is adapted from the fraction of the lifetime (2 months out of 24) not covered by Drew et al. (1983).

[3]Based on Maltoni et al. (1981), in which the overall cancer risk from exposure immediately after birth was approximately equal to the overall cancer risk from chronic exposure later in life. This risk applies to <u>any exposure</u> occurring during <u>any portion</u> of this period.

Source: Analysis of Drew et al., 1983 and Maltoni et al., 1981.

This table shows that children face higher risks than adults for exposures of a given duration, if we accept the assumption that a rodent's age-dependent sensitivity to vinyl chloride can be, or should be, equated to humans. If one were to estimate risks from partial lifetime exposures by ignoring the age at exposure and considering only the number of years exposed (for example, by multiplying the full lifetime risk by 4/70 for a 4-year exposure), this would underestimate risks for children and adolescents and overestimate risks for adults over age 30.

Please note that we have proposed, at this time, to double the lifetime risk estimate for vinyl chloride, to account for the extra risk attributable to early lifetime exposures. I want to emphasize that this analysis technique is only deemed relevant to vinyl chloride and not, at this time, to other data bases, as we need to develop more experience and review of these concepts before recommending the far broader application.

A complete discussion of these results will be included in a report that I expect to have completed for review next month. In the meantime, I hope that you will find this status report to be informative. If you have further questions, please call me at FTS 382-2575.

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cc: Hugh McKinnon (RD-689)
William Farland (RD-689)

VINYL CHLORIDE: Effect of Short-Term Exposures in Children

10/8/91

Based on:
Status of Vinyl Chloride (memo: J. Cogliano - A. Dan, 26 Sept 89):

The above referenced memo sets forth risk estimates for short-term exposures to vinyl chloride in children based on a heightened susceptibility of neonatal animals demonstrated in studies by Drew et al. (Tox Appl Pharmacol 68:120, 1983 and Maltoni et al. (Environ Health Perspect 41:3, 1981). The risk table below has been updated from the 26 Sept 89 memo to incorporate a revision of the cancer potency factor for vinyl chloride (the original table in the memo was based on a CPF = 0.025 (mg/kg/d)^-1; the current CPF = 0.29 (mg/kg/d)^-1).

Estimated Excess Lifetime Cancer Risk to Humans From a 4 Year Exposure:

	Apportioned Lifetime Risk					
Age*	1 ppm	100 ppb	10 ppb	1 ppb	0.1 ppb	0.2 ppb
0 to 5	2.3E-1	2.3E-2	2.3E-3	2.3E-4	2.3E-5	4.6E-5
6 to 9	5.8E-2	5.8E-3	5.8E-4	5.8E-5	5.8E-6	1.2E-5
10 to 13	4.6E-2	4.6E-3	4.6E-4	4.6E-5	4.6E-6	9.3E-6
14 to 17	3.5E-2	3.5E-3	3.5E-4	3.5E-5	3.5E-6	7.0E-6
18 to 21	2.3E-2	2.3E-3	2.3E-4	2.3E-5	2.3E-6	4.6E-6

* Age range during 4 year exposure period.

VC Short-Term Risk #6

APPENDIX C

CORRECTED TEXT, TABLES, AND FIGURES FROM THE FEASIBILITY STUDY REPORT (EPA, 1996)

INCLUDES:
- PAGE 2-54
- TABLE 3-1
- PAGE B-224
- PAGES B-228 to B-231
- PAGE B-234
- TABLE B5-1
- TABLE B5-2
- PAGE B.2-17
- FIGURE B5-1

is supported by the fact that Records of Decision have been signed and Consent Decrees have been negotiated for the interim remedial actions selected for the first two operable units and the final remedial actions selected for the third operable unit (see Section 2.2).

2.6.2.2 *Summary of Estimated Ambient Air Risks*

Contaminant levels in air around the landfill were characterized by studies conducted as part of the remedial investigation: a 24-hour outdoor ambient air monitoring program conducted around the landfill perimeter from September 1989 to September 1990 (EPA, 1991c), and an in-home air sampling program performed from November 1992 through July 1993 in 197 homes to evaluate levels of vinyl chloride and methane (EPA, 1993a).

Results from the ambient air monitoring effort were evaluated to estimate potential health risks as part of the Baseline Risk Assessment. The ambient air monitoring station locations are shown in Figure 2-5. The in-home monitoring program was not designed for use in risk assessment, but was only intended to identify homes in need of interim gas control measures. Consequently, the in-home monitoring results were not used for the Baseline Risk Assessment evaluation.

Ambient air was found to present an elevated risk to human health at the monitoring stations around OII Landfill. Stations 1, 2, and 7 had the highest cancer risks, exceeding 3×10^{-4}, primarily due to the presence of vinyl chloride, a known landfill contaminant. Other stations had cancer risks falling in the 5.1×10^{-5} to 1.8×10^{-4} range. Excluding the influence of background pollutants, risks at Stations 1, 2, and 7 still exceed 1×10^{-4} under reasonable maximum exposure conditions and Stations 3, 4, and 6 exceed 1×10^{-5}.

Table 3-1
Preliminary Cleanup Goals
Oil Landfill Feasibility Study Report

Page 1 of 4

Contaminant of Concern	Air: Chemical-Specific ARAR	Air: Risk-Based Concentration	Air: Preliminary Cleanup Goal	Air: Units	Soil: Chemical-Specific ARAR	Soil: Risk-Based Concentration	Soil: Preliminary Cleanup Goal	Soil: Units	Surface Water: Chemical-Specific ARAR	Surface Water: Risk-Based Concentration	Surface Water: Preliminary Cleanup Goal	Surface Water: Units	Groundwater: Chemical-Specific ARAR	Groundwater: Risk-Based Concentration	Groundwater: Preliminary Cleanup Goal	Groundwater: Units
ORGANICS	(Table C2-8)	(Table B6-1)				(Table B6-3)			(Table C2-4)				(Table C3-2)	(Table B6-2)		
1,1,1,2-Tetrachloroethane																
1,1,1-Trichloroethane		1,043	1,043	mg/m³					200		200	ug/L	200	0.88	0.88	ug/L
1,1,2-Trichloroethane									5		5	ug/L	5	1,479	280	ug/L
1,1-Dichloroethane		521	521	mg/m³		408	408	mg/kg	5		5	ug/L	5	8.38	5	ug/L
1,1-Dichloroethylene		0.05	0.05	mg/m³					5		5	ug/L	5	1,600	5	ug/L
1,2,4-Trichlorobenzene									70		70	ug/L	5	0.07	5	ug/L
1,2-Dibromoethane		0.01	0.01	mg/m³									70	23	70	ug/L
1,2-Dichlorobenzene						231	231	mg/kg	600		600	ug/L				
1,2-Dichloroethane		0.09	0.09	mg/m³		1	1	mg/kg	5		5	ug/L	600	484	600	ug/L
1,2-Dichloroethylene (Total)						266	266	mg/kg					0.5	0.2	0.5	ug/L
1,2-Dichloroethylene, cis-						277	277	mg/kg						98	98	ug/L
1,2-Dichloroethylene, trans-									6		6	ug/L	5	77	6	ug/L
1,2-Dichloropropane									10		10	ug/L	10	153	10	ug/L
1,3-Dichlorobenzene						284	284	mg/kg	5		5	ug/L	5	0.28	5.00	ug/L
1,3-Dichloropropene, cis-														2,599	2,599	ug/L
1,3-Dichloropropene, trans-									0.5		0.5	ug/L	0.5	0.13	0.5	ug/L
1,4-Chlorotoluene									0.5		0.5	ug/L	0.5	0.13	0.50	ug/L
1,4-Dichlorobenzene						14	14	mg/kg						600	600	ug/L
1,4-Dioxane									5		5	ug/L	5	0.72	5	ug/L
2,4-Dimethylphenol														1.6	1.6	ug/L
2-Butanone						32,853	32,853	mg/kg						535	535	ug/L
2-Hexanone														2,484	2,484	ug/L
2-Methylnaphthalene																
2-Methylphenol																
3,3'-Dichlorobenzidine						2	2	mg/kg						1,745	1,745	ug/L
4,4'-DDD																
4,4'-DDE														0.2	0.2	ug/L
4,4'-DDT														0.18	0.18	ug/L
4-Methyl-2-pentanone						18,249	18,249	mg/kg						0.11	0.11	ug/L
4-Methylphenol						353	353	mg/kg						198	198	ug/L
4-Nitroaniline														174	174	ug/L
Acenaphthene						36	36	mg/kg								
Acetone						14,418	14,418	mg/kg						423	423	ug/L
Aldrin														798	798	ug/L
Anthracene						2	2	mg/kg						0.0005	0.0005	ug/L
Benzene		0.29	0.29	mg/m³		3	3	mg/kg	1		1	ug/L	1	2,029	2,029	ug/L
Benzo(a)anthracene						1	1	mg/kg						0.58	1	ug/L
Benzo(a)pyrene						0.1	0.1	mg/kg								
Benzo(b)fluoranthene						1	1	mg/kg								
Benzo(g,h,i)perylene																
Benzo(k)fluoranthene						12	12	mg/kg								

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Table 3-1
Preliminary Cleanup Goals
Oil Landfill Feasibility Study Report

Page 2 of 4

Contaminant of Concern	Air: Chemical-Specific ARAR	Air: Risk-Based Concentration	Air: Preliminary Cleanup Goal	Air: Units	Soil: Chemical-Specific ARAR	Soil: Risk-Based Concentration	Soil: Preliminary Cleanup Goal	Soil: Units	Surface Water: Chemical-Specific ARAR	Surface Water: Risk-Based Concentration	Surface Water: Preliminary Cleanup Goal	Surface Water: Units	Groundwater: Chemical-Specific ARAR	Groundwater: Risk-Based Concentration	Groundwater: Preliminary Cleanup Goal	Groundwater: Units
Benzoic acid																
Benzyl alcohol						392,579	392,579	mg/kg								
Benzyl chloride														142,399	142,399	ug/L
BHC, alpha-														10,872	10,872	ug/L
BHC, beta-														0.19	0.19	ug/L
BHC, delta-														0.01	0.01	ug/L
BHC, gamma- (Lindane)														0.09	0.09	ug/L
Bis(2-Ethylhexyl)phthalate									0.3		0.3	ug/L				
Butylbenzylphthalate						81	81	mg/kg	4		4	ug/L	0.2	0.08	0.2	ug/L
Carbazole						14,129	14,129	mg/kg	100		100	ug/L	4	0.8	4	ug/L
Carbon disulfide						43	43	mg/kg					100	6,684	100	ug/L
Carbon tetrachloride		0.19	0.19	mg/m³		33	33	mg/kg						3.5	3.5	ug/L
Chlordane									0.5		0.5	ug/L		27	27	ug/L
Chlorobenzene		20.9	20.9	mg/m³					0.1		0.1	ug/L	0.5	0.38	0.5	ug/L
Chloroform						314	314	mg/kg	70		70	ug/L	0.1	0.08	0.1	ug/L
Chrysene		0.11	0.11	mg/m³									70	81	70	ug/L
Cis-1,2-Dichloroethylene									100		100	ug/L		27,809	27,809	ug/L
Cis-n-butylphthalate													100	0.27	100	ug/L
Di-n-octylphthalate						2	2	mg/kg						2.3	2.3	ug/L
Dibenzofuran						7,084	7,084	mg/kg								
Dibromochloromethane						7,300	7,300	mg/kg						3,334	3,334	ug/L
Dichlorodifluoromethane						1,499	1,499	mg/kg						9.3	9.3	ug/L
Dieldrin									100		100	ug/L		132	132	ug/L
Diethylphthalate													100	1.8	100	ug/L
Dimethylphthalate														510	510	ug/L
Endosulfan														0.01	0.01	ug/L
Endrin														36,000	36,000	ug/L
Ethylbenzene		1,043	1,043	mg/m³										383,000	383,000	ug/L
Fluoranthene						310	310	mg/kg	3		3	ug/L		1.8	1.8	ug/L
Fluorene						14,900	14,900	mg/kg	700		700	ug/L	7	10	7	ug/L
Heptachlor													700	704	700	ug/L
Heptachlor epoxide														717	717	ug/L
Hexachlorobenzene									0.01		0.01	ug/L		230	230	ug/L
Indeno(1,2,3-cd)pyrene						141	141	mg/kg	0.01		0.01	ug/L	0.01	0.08	0.01	ug/L
Isophorone						11	11	mg/kg					0.01	0.01	0.01	ug/L
Methoxychlor																
Methylene chloride		5.2	5.2	mg/m³		1	1	mg/kg	40		40	ug/L	40	89	89	ug/L
N-Nitrosodiphenylamine						20	20	mg/kg	5		5	ug/L	5	168	40	ug/L
Naphthalene						80	80	mg/kg					5	0.2	5	ug/L
Pentachlorophenol						2,119	2,119	mg/kg					5	3.6	3.6	ug/L
Phenanthrene						7	7	mg/kg	1		1	ug/L	1	200	200	ug/L
															1	ug/L

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Table 3-1
Preliminary Cleanup Goals
Oil Landfill Feasibility Study Report

Contaminant of Concern	Air: Chemical-Specific ARAR	Air: Risk-Based Concentration	Air: Preliminary Cleanup Goal	Air: Units	Soil: Chemical-Specific ARAR	Soil: Risk-Based Concentration	Soil: Preliminary Cleanup Goal	Soil: Units	Surface Water: Chemical-Specific ARAR	Surface Water: Risk-Based Concentration	Surface Water: Preliminary Cleanup Goal	Surface Water: Units	Groundwater: Chemical-Specific ARAR	Groundwater: Risk-Based Concentration	Groundwater: Preliminary Cleanup Goal	Groundwater: Units
Phenol						42,367	42,367	mg/kg						21,200	21,200	ug/L
Pyrene						2,119	2,119	mg/kg						588	588	ug/L
Styrene						220	220	mg/kg	100		100	ug/L	100	0.91	100	ug/L
Tetrachloroethylene		4.3	4.3	mg/m³					5		5	ug/L	5	0.74	5	ug/L
Toluene		417	417	mg/m³		275	275	mg/kg	150		150	ug/L	100	080	150	ug/L
Trichloroethylene		1.4	1.4	mg/m³		221	221	mg/kg	5		5	ug/L	5	2.1	5	ug/L
Trichlorofluoromethane									150		150	ug/L	100	1,841	150	ug/L
Vinyl acetate						13	13	mg/kg								
Vinyl chloride	20	0.03	0.03	mg/m³		1	1	mg/kg	0.5		0.5	ug/L	0.5	0.03	0.5	ug/L
Xylenes, m-						99	99	mg/kg						1,886	1,886	ug/L
Xylenes, o-														1,886	1,886	ug/L
Xylenes, p-						99	99	mg/kg								
Xylenes, total						98	98	mg/kg	1,750		1,750	ug/L	1,750	1,886	1,750	ug/L
INORGANICS																
Aluminum						77,365	77,365	mg/kg	1,000		1,000	ug/L	1,000	36,500	1,000	ug/L
Arsenic						31	31	mg/kg	8		8	ug/L	8	35,405	35,405	ug/L
Antimony						1	1	mg/kg	50		50	ug/L	50	15	8	ug/L
Arsenic						5,417	5,417	mg/kg	1,000		1,000	ug/L	1,000	0.05	50	ug/L
Barium						0.4	0.4	mg/kg	4		4	ug/L	4	2,555	1,000	ug/L
Beryllium						77	77	mg/kg						0.02	4	ug/L
Cadmium - food									5		5	ug/L	5	18	5	ug/L
Cadmium - water						387	387	mg/kg	50		50	ug/L	50	183	50	ug/L
Chromium VI						77,365	77,365	mg/kg	50		50	ug/L	50	36,500	50	ug/L
Chromium III																
Cobalt						2,863	2,863	mg/kg	1,300		1,300	ug/L	1,300	1,351	1,300	ug/L
Copper						1,548	1,548	mg/kg	200		200	ug/L	200	730	200	ug/L
Cyanide									1,400		1,400	ug/L	1,400	2,190	1,400	ug/L
Fluoride												ug/L				ug/L
Iron									15		15	ug/L	15		15	ug/L
Lead	1.5		1.5	mg/m³								ug/L				ug/L
Manganese - food						10,834	10,834	mg/kg				ug/L		183	183	ug/L
Manganese - water									2		2	ug/L	2	11	2	ug/L
Mercury						23	23	mg/kg	100		100	ug/L	100	730	100	ug/L
Nickel						1,548	1,548	mg/kg	10,000		10,000	ug/L	10,800	88,400	10,000	ug/L
Nitrate (as NO3)									1,000		1,000	ug/L	1,000	3,650	1,000	ug/L
Nitrite (as N)						387	387	mg/kg	50		50	ug/L	50	183	50	ug/L
Selenium						387	387	mg/kg				ug/L		183	183	ug/L
Silver									2		2	ug/L	2			ug/L
Sulfate	25		25	mg/m³												
Thallium																
Tin						46,431	46,431	mg/kg								

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Table 3-1
Preliminary Cleanup Goals
Oil Landfill Feasibility Study Report

Contaminant of Concern	Air: Chemical-Specific ARAR	Air: Risk-Based Concentration	Air: Preliminary Cleanup Goal	Air: Units	Soil: Chemical-Specific ARAR	Soil: Risk-Based Concentration	Soil: Preliminary Cleanup Goal	Soil: Units	Surface Water: Chemical-Specific ARAR	Surface Water: Risk-Based Concentration	Surface Water: Preliminary Cleanup Goal	Surface Water: Units	Groundwater: Chemical-Specific ARAR	Groundwater: Risk-Based Concentration	Groundwater: Preliminary Cleanup Goal	Groundwater: Units
Vanadium						542	542	mg/kg						258	258	ug/L
Zinc						23,210	23,210	mg/kg						10,950	10,950	ug/L
POLLUTANTS																
Carbon monoxide	10		10	mg/m³												
Hydrogen sulfide	42		42	mg/m³												
Nitrogen dioxide	470		470	mg/m³												
Ozone	180		180	mg/m³												
Sulfur dioxide	1.3		1.3	mg/m³												
Suspended particulate matter	50		50	mg/m³												

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had estimated cancer risks that exceeded $3x10^{-4}$ under reasonable maximum exposure conditions for both adult and child exposures. Stations 1, 2, and 7 are located in the southwestern tip of the South Parcel near where vinyl chloride has been historically detected in landfill gas, leachate, and groundwater (EPA, 1994c). In addition to these three stations, cancer risks for Stations 3, 4, and 6, and background Station 8 all exceeded $1x10^{-4}$ under adult reasonable maximum conditions. Figure B5-1 presents the location of the nine ambient air monitoring stations and their associated estimated cancer risk values under reasonable maximum exposure conditions.

Under average adult exposure conditions, the estimated cancer risks at Stations 1, 2, and 7 were above $2.8x10^{-5}$. Average adult cancer risk at all other stations, including the background stations, was between approximately $1x10^{-5}$ and $2x10^{-6}$. The lowest estimated cancer risk was found at background Station 9.

Noncancer. At all air monitoring stations, hazard index estimates were below unity, under adult reasonable maximum or average exposure conditions, but exceeded unity for child reasonable maximum conditions (Table B5-2). As described in Section B3, the calculated hazard indexes between adult average and reasonable maximum exposure conditions do not differ. Figure B5-2 presents the adult reasonable maximum hazard index calculated for each ambient air monitoring station. Hazard indexes (the sum of the hazard quotients for each chemical) were approximately the same for all stations. The highest estimated hazard index was found at Station 4 (0.67), and the background Station 8 (0.62) was the next highest. The lowest hazard index (0.58) was estimated for both Stations 3 and 7.

B5.2.1.2 Risk Drivers

Chemicals contributing the most to an estimated cancer risk or hazard index are referred to as risk drivers. Individual chemicals driving estimated risks for ambient air were identified and are discussed below. Table B5-1 lists the chemical contribution (in percent) to the total cancer risk or hazard index for each station under reasonable maximum exposure conditions.

Cancer Risk Drivers. Vinyl chloride was found to be the greatest contributor to increased lifetime cancer risk at Stations 1, 2, 3, 4, 6, 7, and 8 (from 54 percent to 93 percent of the total estimated cancer risk) (Table B5-1). Vinyl chloride has been detected in the landfill gas, leachate, and groundwater in the area where these monitoring stations were located (EPA, 1994c). Vinyl chloride was not detected at Station 5 or background Station 9.

The primary risk driver at Station 5 and background Station 9 was benzene, contributing about 75 percent of the total risk. Elevated concentrations of benzene causing higher risks could be attributed to sources other than the landfill; for example, benzene in the ambient air is potentially associated with atmospheric pollution particularly from the highway (EPA, 1991c). No other chemicals contributed greater than 10 percent to the cancer risk at a nonbackground station.

Hazard Index Drivers. Carbon tetrachloride was the highest contributor to the hazard index at all stations (Table B5-1). The percent contribution of carbon tetrachloride to the total hazard index at each station ranged from 56 percent (at Stations 4 and 8) to 61 percent (at Station 9). Carbon tetrachloride was detected with high frequency but was qualified in the majority of samples collected, indicating that the chemical is present but at very low levels that are difficult to quantify. (The contribution of J-qualified data is discussed further in the following subsection.)

Tetrachloroethylene was the second highest contributor to the hazard index at every air sampling station, ranging from 19 percent (at Station 9) to 22 percent (at Station 8). Toluene was the only other chemical contributing greater than 10 percent to the hazard index at a station (Stations 4, 5, and 8).

Background Comparison. The 24-hour ambient air sampling report (EPA, 1991c) identified six chemicals at specified stations as being, at least in part, potentially from sources other than the landfill (e.g., auto exhaust emissions or emissions from oil production activities) or being at background levels:

- Benzene at Stations 1, 2, 3, 4, 6, and 7
- Toluene at Stations 1, 2, 3, and 7
- Tetrachloroethylene at Stations 2 and 7
- Chlorobenzene at Station 4
- Chloroform at Stations 1, 2, 3, and 7
- Trichloroethylene at Station 1

In view of the potential for offsite sources to influence the risk estimates for the nonbackground stations, it is important to account for background when interpreting the risk estimates for the nonbackground stations. A comparison of the results from the nonbackground stations with those for the background stations indicates that the total cancer risks for Stations 1, 2, 3, 4, 6, and 7 exceed background (at Station 8). The incremental increase in risk at each monitoring station for the adult reasonable maximum exposure case is summarized in Table B5-3. The results indicate that the incremental increase in cancer risk over background risks exceeds 1×10^{-4} at Stations 1, 2, and 7, and exceeds 1×10^{-5} at Stations 3, 4, and 6. Virtually all of the incremental increase in risk can be attributed to the presence of vinyl chloride at these stations.

Table B5-3 Incremental Increase in Excess Cancer Risk Over Background for Inhalation Residential Adult Reasonable Maximum Exposure Scenario OII Landfill Feasibility Study Report		
Station ID	**Total Excess Cancer Risk**	**Incremental Cancer Risk Over Background***
Sample Stations		
1	5.86E-04	4.53E-04
2	5.46E-04	4.13E-04
3	1.79E-04	4.60E-05
4	1.78E-04	4.50E-05
5	5.10E-05	Background
6	1.43E-04	1.00E-05
7	3.14E-04	1.81E-04
Background Stations		
8	1.33E-04	---
9	3.57E-05	---

* Calculated as Station risk minus risk at Station 8.

B5.2.1.3 California Toxicity Factors

EPA toxicity factors used in this Baseline Risk Assessment differ from those of CalEPA. The differences in the toxicity factors are discussed in Section B4. Potential differences to the estimated cancer risks from using California toxicity factors were qualitatively evaluated.

Three chemicals of potential concern for air had state toxicity factors that were two or more times greater than the EPA toxicity factors (Table B4-5):

- Benzene levels were not elevated over background contamination at any of the sampling stations.

- Carbon tetrachloride contributed a risk of approximately 4×10^{-6} at all stations. Using the state slope factor (2.9 times higher) would increase the total risk at each station by approximately 1×10^{-5}.

  Tetrachloroethylene contributed a cancer risk of about 1×10^{-6} at each station. Using the California toxicity factor, which is 25 times higher than the EPA value, it would contribute an additional cancer risk of 2.5×10^{-5} to the total station risk estimate. This additional risk would not result in Station 5 exceeding a total cancer risk of 1×10^{-4}. Adult reasonable maximum exposure risks for all other nonbackground stations exceed 1×10^{-4} using either EPA or California toxicity factors. There is uncertainty associated with the California inhalation toxicity factor because it was route-to-route extrapolation from the oral EPA toxicity value.

Two chemicals of potential concern for air had state toxicity factors that were two or more times lower than the EPA toxicity factors:

- 1,2-Dibromoethane, only detected at background Station 9, did not contribute to cancer risk from air.

- Chloroform was only a risk contributor at Station 5; use of the California toxicity factor would slightly minimize this contribution.

B5.2.1.4 Summary of Ambient Air Estimated Risks

Ambient air was found to present an elevated risk to human health at the monitoring stations around OII Landfill. Stations 1, 2, and 7 had the highest cancer risks, exceeding $3x10^{-4}$, primarily due to the presence of vinyl chloride, a known landfill contaminant (Table B5-2). Other stations had cancer risks falling in the $5.1x10^{-5}$ to $1.8x10^{-4}$ range. Excluding the influence of background pollutants, risks at Stations 1, 2, and 7 still exceed $1x10^{-4}$ under reasonable maximum exposure conditions and Stations 3, 4, and 6 exceed $1 x 10^{-5}$.

B5.2.2 Groundwater Well-Specific Evaluation

Groundwater sample results from January 1989 through October 1993 were used to calculate groundwater exposure risks on a well-specific basis. Adult residential receptors were evaluated for potential groundwater exposure via ingestion, volatile inhalation, and dermal contact. Risks were calculated using the reasonable maximum exposure conditions and average exposure point concentrations detected at each of the 72 groundwater monitoring wells at the landfill. As described in Section 2, exposure point concentrations were calculated two ways: using only those chemicals of potential concern for the individual well or using those chemicals detected in the well group. Both average and reasonable maximum exposure conditions were evaluated for each. These variations and other factors are intended to provide a sensitivity analysis to support risk management decisions. The results of risk calculations discussed below focus on chemicals detected in individual wells rather than in well groups. The sensitivity analysis is also summarized below, along with other factors affecting the risk estimates. Estimated risks from groundwater presented here are based on evaluations of current conditions. Under the modified no-action approach used in this Baseline Risk Assessment, the control systems

Table B5-1
Ambient Air Risk Calculations (Inhalation of Volatiles)
Adult Resident Reasonable Maximum Exposure Scenario
OII Landfill Feasibility Study Report

Page 1 of 4

Station ID	Chemical Name	Units	95%ile UCL	Calculated Units	Calculated value	Inhalation RFD[a] mg/kg-day	Inhalation SF[b] kg-day/mg	Intake - noncancer	Intake - cancer	Hazard Index	Cancer Risk	Percent of HI for Station	Percent of Risk for Station
1	1,1,1-Trichloroethane	ug/m3	17.48	MG/M3	0.0175	0.2857		0.0049	0.00205	0.017		2.78	
1	1,1-Dichloroethane	ug/m3	1.15	MG/M3	0.0011	0.14285		0.0003	0.00013	0.002		0.36	
1	Benzene	ug/m3	8.18	MG/M3	0.0082		0.02905	0.0022	0.00096		2.79E-05		4.76
1	Carbon tetrachloride	ug/m3	0.74	MG/M3	0.0007	0.00057	0.0525	0.0002	0.00009	0.368	4.58E-06	59.27	0.76
1	Chlorobenzene	ug/m3	0.28	MG/M3	0.0003	0.005714		0.0001	0.00003	0.013		2.23	
1	Chloroform	ug/m3	0.55	MG/M3	0.0005	0.01	0.0905	0.0001	0.00005	0.015	5.16E-06	2.45	0.85
1	Ethylbenzene	ug/m3	4.81	MG/M3	0.0048	0.2857		0.0013	0.00057	0.005		0.76	
1	Tetrachloroethylene	ug/m3	4.40	MG/M3	0.0044	0.01	0.002	0.0012	0.00052	0.121	1.03E-06	19.96	0.16
1	Toluene	ug/m3	21.46	MG/M3	0.0215	0.11428		0.0059	0.00252	0.051		8.52	
1	Trichloroethylene	ug/m3	0.48	MG/M3	0.0005	0.008	0.00586	0.0001	0.00005	0.022	3.37E-07	3.86	0.05
1	Vinyl chloride (c)	ug/m3	3.29	MG/M3	0.0033						5.47E-04		93.34
2	1,1,1-Trichloroethane	ug/m3	18.80	MG/M3	0.0188	0.2857		0.0046	0.00197	0.016		2.74	
2	1,1-Dichloroethane	ug/m3	1.14	MG/M3	0.0011	0.14285		0.0003	0.00013	0.002		0.37	
2	1,2-Dichloroethane	ug/m3	0.46	MG/M3	0.0005		0.091	0.0001	0.00005		4.92E-06		0.80
2	Benzene	ug/m3	8.01	MG/M3	0.0080		0.02905	0.0022	0.00094		2.73E-05		5.01
2	Carbon tetrachloride	ug/m3	0.71	MG/M3	0.0007	0.00057	0.0525	0.0002	0.00008	0.342	4.39E-06	58.19	0.80
2	Chlorobenzene	ug/m3	0.23	MG/M3	0.0002	0.005714		0.0001	0.00003	0.011		1.91	
2	Chloroform	ug/m3	0.65	MG/M3	0.0007	0.01	0.0805	0.0002	0.00006	0.018	6.16E-06	3.05	1.13
2	Ethylbenzene	ug/m3	4.75	MG/M3	0.0048	0.2857		0.0013	0.00056	0.005		0.77	
2	Tetrachloroethylene	ug/m3	4.20	MG/M3	0.0042	0.01	0.002	0.0012	0.00046	0.115	9.87E-07	19.57	0.18
2	Toluene	ug/m3	20.81	MG/M3	0.0208	0.11428		0.0057	0.00244	0.050		8.48	
2	Trichloroethylene	ug/m3	0.63	MG/M3	0.0006	0.008	0.00586	0.0002	0.00007	0.029	4.43E-07	4.92	0.08
2	Vinyl chloride (c)	ug/m3	3.01	MG/M3	0.0030						5.01E-04		91.86
3	1,1,1-Trichloroethane	ug/m3	16.89	MG/M3	0.0169	0.2857		0.0046	0.00196	0.016		2.81	
3	1,1-Dichloroethane	ug/m3	0.05	MG/M3	0.0005	0.14285		0.0002	0.00008	0.001		0.22	
3	1,2-Dichloroethane	ug/m3	0.53	MG/M3	0.0005		0.091	0.0001	0.00005		6.63E-06		3.15
3	Benzene	ug/m3	7.65	MG/M3	0.0076		0.02905	0.0021	0.00090		2.51E-05		14.54
3	Carbon tetrachloride	ug/m3	0.71	MG/M3	0.0007	0.00057	0.0525	0.0002	0.00008	0.340	4.36E-06	59.01	2.44

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Table B5-1
Ambient Air Risk Calculations (Inhalation of Volatiles)
Adult Resident Reasonable Maximum Exposure Scenario
Oil Landfill Feasibility Study Report

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3	Chlorobenzene	ug/m3	0.09	MG/M3	0.0001	0.005714		0.00003	0.00001	0.004		0.78	
3	Chloroform	ug/m3	0.50	MG/M3	0.0005	0.01	0.0805	0.0001	0.00006	0.014	4.69E-06	2.36	2.82
3	Ethylbenzene	ug/m3	4.63	MG/M3	0.0046	0.2857		0.0013	0.00054	0.004		0.77	
3	Tetrachloroethylene	ug/m3	4.40	MG/M3	0.0044	0.01	0.002	0.0012	0.00052	0.121	1.03E-06	20.91	0.59
3	Toluene	ug/m3	20.64	MG/M3	0.0206	0.11428		0.0057	0.00242	0.049		8.59	
3	Trichloroethylene	ug/m3	0.67	MG/M3	0.0006	0.006	0.00595	0.0002	0.00007	0.028	4.01E-07	4.55	0.22
3	Vinyl chloride (c)	ug/m3	0.82	MG/M3	0.0008						1.37E-04		78.41
4	1,1,1-Trichloroethane	ug/m3	18.53	MG/M3	0.0185	0.2857		0.0051	0.00218	0.018		2.64	
4	Benzene	ug/m3	9.76	MG/M3	0.0098		0.02905	0.0027	0.00115		3.33E-05		18.68
4	Carbon tetrachloride	ug/m3	0.78	MG/M3	0.0008	0.00057	0.0525	0.0002	0.00009	0.375	4.81E-06	55.73	2.70
4	Chlorobenzene	ug/m3	0.42	MG/M3	0.0004	0.005714		0.0001	0.00005	0.020		3.01	
4	Chloroform	ug/m3	0.55	MG/M3	0.0005	0.01	0.0805	0.0001	0.00006	0.015	5.16E-06	2.23	2.90
4	Ethylbenzene	ug/m3	14.53	MG/M3	0.0145	0.2857		0.0040	0.00171	0.014		2.07	
4	Tetrachloroethylene	ug/m3	5.01	MG/M3	0.0050	0.01	0.002	0.0014	0.00059	0.137	1.18E-06	20.41	0.68
4	Toluene	ug/m3	28.96	MG/M3	0.0290	0.11428		0.0079	0.00340	0.069		10.33	
4	Trichloroethylene	ug/m3	0.53	MG/M3	0.0005	0.006	0.00595	0.0001	0.00006	0.024	3.88E-07	3.58	0.21
4	Vinyl chloride (c)	ug/m3	0.80	MG/M3	0.0008						1.33E-04		74.86
5	1,1,1-Trichloroethane	ug/m3	16.70	MG/M3	0.0167	0.2857		0.0046	0.00196	0.016	-	2.63	
5	1,1-Dichloroethane	ug/m3	0.41	MG/M3	0.0004	0.14286		0.0001	0.00005	0.001		0.13	
5	1,2-Dichloroethane	ug/m3	0.21	MG/M3	0.0002		0.091	0.0001	0.00002		2.20E-06		4.31
5	Benzene	ug/m3	11.18	MG/M3	0.0112		0.02905	0.0031	0.00131		3.81E-05		74.72
5	Carbon tetrachloride	ug/m3	0.74	MG/M3	0.0007	0.00057	0.0525	0.0002	0.00009	0.354	4.54E-06	58.23	8.90
5	Chloroform	ug/m3	0.50	MG/M3	0.0005	0.01	0.0805	0.0001	0.00006	0.014	4.69E-06	2.24	9.20
5	Ethylbenzene	ug/m3	5.53	MG/M3	0.0055	0.2857		0.0015	0.00065	0.005		0.87	
5	Tetrachloroethylene	ug/m3	4.57	MG/M3	0.0046	0.01	0.002	0.0013	0.00054	0.125	1.07E-06	20.60	2.11
5	Toluene	ug/m3	28.23	MG/M3	0.0282	0.11428		0.0077	0.00331	0.068		11.12	
5	Trichloroethylene	ug/m3	0.56	MG/M3	0.0006	0.006	0.00595	0.0002	0.00007	0.025	3.89E-07	4.18	0.76
6	1,1,1-Trichloroethane	ug/m3	17.25	MG/M3	0.0172	0.2857		0.0047	0.00203	0.017		2.73	

TBL5-1.XLS

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Table B5-1
Ambient Air Risk Calculations (Inhalation of Volatiles)
Adult Resident Reasonable Maximum Exposure Scenario
Oil Landfill Feasibility Study Report

Station ID	Chemical Name	Units	95%ile UCL	Calculated Units	Calculated value	Inhalation RFD[a] mg/kg-day	Inhalation SF[b] kg-day/mg	Intake - noncancer	Intake - cancer	Hazard Index	Cancer Risk	Percent of HI for Station	Percent of Risk for Station
6	1,1-Dichloroethane	ug/m3	0.21	MG/M3	0.0002	0.14286		0.0001	0.00002	0.0004		0.07	
6	Benzene	ug/m3	8.67	MG/M3	0.0087		0.02905	0.0024	0.00102		2.96E-05		20.72
6	Carbon tetrachloride	ug/m3	0.73	MG/M3	0.0007	0.00057	0.0525	0.0002	0.00009	0.350	4.49E-06	57.78	3.14
6	Chloroform	ug/m3	0.55	MG/M3	0.0005	0.01	0.0805	0.0001	0.00006	0.015	5.16E-06	2.47	3.62
6	Ethylbenzene	ug/m3	5.36	MG/M3	0.0054	0.2857		0.0015	0.00063	0.005		0.85	
6	Tetrachloroethylene	ug/m3	4.83	MG/M3	0.0048	0.01	0.002	0.0013	0.00057	0.132	1.13E-06	21.85	0.79
6	Toluene	ug/m3	24.66	MG/M3	0.0247	0.11428		0.0068	0.00290	0.059		9.77	
6	Trichloroethylene	ug/m3	0.58	MG/M3	0.0006	0.006	0.00595	0.0002	0.00007	0.027	4.15E-07	4.48	0.29
6	Vinyl chloride (c)	ug/m3	0.81	MG/M3	0.0006						1.02E-04		71.44
7	1,1,1-Trichloroethane	ug/m3	16.37	MG/M3	0.0164	0.2857		0.0045	0.00192	0.016		2.71	
7	1,1-Dichloroethane	ug/m3	0.37	MG/M3	0.0004	0.14286		0.0001	0.00004	0.001		0.12	
7	Benzene	ug/m3	8.10	MG/M3	0.0081		0.02905	0.0022	0.00096		2.78E-05		8.80
7	Carbon tetrachloride	ug/m3	0.72	MG/M3	0.0007	0.00057	0.0525	0.0002	0.00008	0.344	4.42E-06	58.32	1.41
7	Chlorobenzene	ug/m3	0.23	MG/M3	0.0002	0.005714		0.0001	0.00003	0.011		1.93	
7	Chloroform	ug/m3	0.60	MG/M3	0.0006	0.01	0.0805	0.0002	0.00007	0.016	5.63E-06	2.81	1.79
7	Ethylbenzene	ug/m3	4.46	MG/M3	0.0044	0.2857		0.0012	0.00052	0.004		0.73	
7	Tetrachloroethylene	ug/m3	4.14	MG/M3	0.0041	0.01	0.002	0.0011	0.00049	0.113	9.71E-07	18.53	0.31
7	Toluene	ug/m3	20.51	MG/M3	0.0205	0.11428		0.0056	0.00241	0.049		8.47	
7	Trichloroethylene	ug/m3	0.56	MG/M3	0.0006	0.006	0.00595	0.0002	0.00007	0.025	3.88E-07	4.37	0.12
7	Vinyl chloride (c)	ug/m3	1.65	MG/M3	0.0017						2.75E-04		87.57
8	1,1,1-Trichloroethane	ug/m3	20.81	MG/M3	0.0208	0.2857		0.0057	0.00244	0.020		3.21	
8	1,2-Dichloroethane	ug/m3	0.83	MG/M3	0.0008		0.091	0.0002	0.00010		8.83E-06		6.64
8	Benzene	ug/m3	12.22	MG/M3	0.0122		0.02905	0.0033	0.00143		4.17E-05		31.37
8	Carbon tetrachloride	ug/m3	0.72	MG/M3	0.0007	0.00057	0.0525	0.0002	0.00008	0.347	4.45E-06	55.83	
8	Chlorobenzene	ug/m3	0.28	MG/M3	0.0003	0.005714		0.0001	0.00003	0.013		2.17	
8	Chloroform	ug/m3	0.50	MG/M3	0.0005	0.01	0.0805	0.0001	0.00006	0.014	4.69E-06	2.19	3.53
8	Ethylbenzene	ug/m3	5.21	MG/M3	0.0052	0.2857		0.0014	0.00061	0.005		0.80	
8	Tetrachloroethylene	ug/m3	5.02	MG/M3	0.0050	0.01	0.002	0.0014	0.00059	0.138	1.18E-06	22.17	0.86

TBL5-1.XLS

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Table B5-1
Ambient Air Risk Calculations (Inhalation of Volatiles)
Adult Resident Reasonable Maximum Exposure Scenario
Oil Landfill Feasibility Study Report

Station ID	Chemical Name	Units	95%ile UCL	Calculated Units	Calculated value	Inhalation RFD[a] mg/kg-day	Inhalation SF[b] kg-day/mg	Intake - noncancer	Intake - cancer	Hazard Index	Cancer Risk	Percent of HI for Station	Percent of Risk for Station
8	Toluene	ug/m3	30.05	MG/M3	0.0301	0.11428		0.0082	0.00353	0.072		11.61	
8	Trichloroethylene	ug/m3	0.27	MG/M3	0.0003	0.006	0.00595	0.0001	0.00003	0.012	1.91E-07	2.01	0.14
8	Vinyl chloride (c)	ug/m3	0.43	MG/M3	0.0004						7.19E-05		54.06
9	1,1,1-Trichloroethane	ug/m3	17.60	MG/M3	0.0176	0.2857		0.0048	0.00207	0.017		2.90	
9	Benzene	ug/m3	7.77	MG/M3	0.0078		0.02906	0.0021	0.00091		2.65E-05		74.23
9	Carbon tetrachloride	ug/m3	0.74	MG/M3	0.0007	0.00057	0.0525	0.0002	0.00009	0.355	4.55E-06	61.02	12.74
9	Chlorobenzene	ug/m3	0.23	MG/M3	0.0002	0.005714		0.0001	0.00003	0.011		1.93	
9	Chloroform	ug/m3	0.35	MG/M3	0.0003	0.01	0.0805	0.0001	0.00004	0.010	3.29E-06	1.64	9.20
9	Ethylbenzene	ug/m3	4.44	MG/M3	0.0044	0.2857		0.0012	0.00052	0.004		0.73	
9	Tetrachloroethylene	ug/m3	4.09	MG/M3	0.0041	0.01	0.002	0.0011	0.00048	0.112	9.61E-07	19.29	2.69
9	Toluene	ug/m3	19.14	MG/M3	0.0191	0.11428		0.0052	0.00225	0.048		7.89	
9	Trichloroethylene	ug/m3	0.58	MG/M3	0.0006	0.006	0.00595	0.0002	0.00007	0.027	4.08E-07	4.59	1.14

(a) Reference Dose

(b) Slope Factor

(c) The Cogliano Method was used to estimate risks for vinyl chloride (see text).

TBL5-1.XLS

00855

Table B5-2
Station-Specific Cancer and Hazard Index
Exposure Scenario for Residential Adult and Child
Oil Landfill Feasibility Study Report

Station ID	Total Risk			Total Hazard Index		
	Adult Average	Adult RME	Child RME	Adult Average	Adult RME	Child RME
Sample Stations						
1	4.83E-05	5.86E-04	3.91E-04	0.60	0.60	1.17
2	4.55E-05	5.46E-04	3.63E-04	0.59	0.59	1.14
3	2.08E-05	1.79E-04	1.17E-04	0.58	0.58	1.12
4	2.14E-05	1.78E-04	1.16E-04	0.67	0.67	1.31
5	1.46E-05	5.10E-05	2.98E-05	0.61	0.61	1.18
6	1.83E-05	1.43E-04	9.24E-05	0.61	0.61	1.18
7	2.81E-05	3.14E-04	2.09E-04	0.58	0.58	1.13
Background Stations						
8	2.19E-05	1.33E-04	8.40E-05	0.62	0.62	1.21
9	1.04E-05	3.57E-05	2.08E-05	0.58	0.58	1.13

TBL5-2.XLS

00856

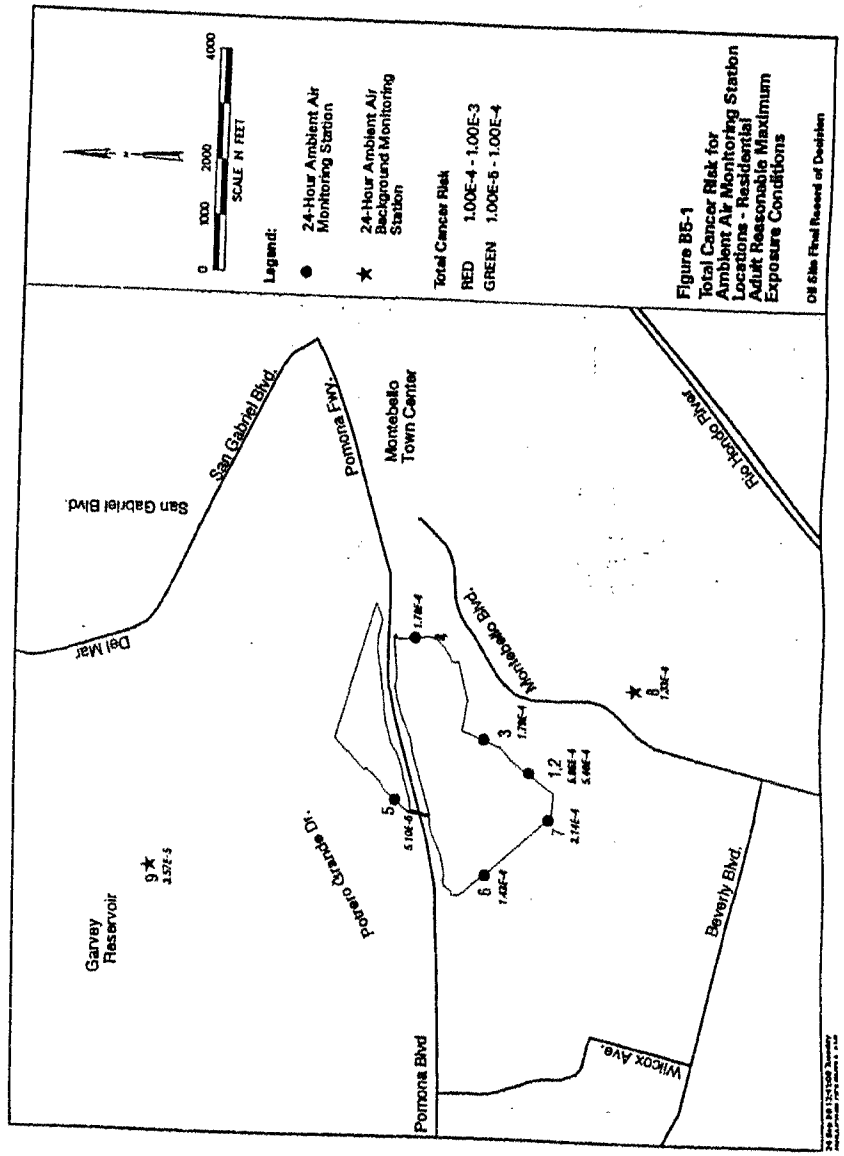
media (e.g., air and soil). Typically, as an initial step, the risks across various media for the same population are simply added together. If this indicates a significantly higher risk than the single media estimates alone, it may be appropriate to evaluate the multipathway risks across media in more detail. This would involve breaking the risks down to specific pathways and impacted organs.

As an example at OII Landfill, under current conditions, potential risks to children adjacent to the landfill in the Iguala Park area include exposure to contaminated soil and air. Table B.2-4 illustrates the results of adding together the risk estimates from these two media.

Table B.2-4
Multipathway Risks Across Media
Child Reasonable Maximum Exposure Conditions in Iguala Park
OII Landfill Feasibility Study Report

Exposure Pathway	Cancer Risk	Noncancer Hazard Index
Ambient Air- Average of Stations 1, 2 and 3	2.90×10^{-4}	1.14
Surface Soil	5.3×10^{-3}	1.76
Totals:	3.43×10^{-3}	2.9

The cancer risks essentially remain unchanged in this example. The noncancer hazard index increases; but, given that the increase is not large and that all pathways and organs are combined together, this change probably does not represent a significant change in actual risk. Groundwater risks are not included in this evaluation because under current conditions, groundwater in the landfill vicinity is not being used. Thus, the exposure pathway is not complete. Under future exposure scenarios, groundwater could potentially be used; however, the air and soil pathways would likely have been addressed by the landfill cover. Thus, multipathway risks across media are not likely to occur under future conditions. The groundwater risks alone, as presented in Appendix B, likely represent the maximum potential risks.



EPA ENFORCEMENT CONFIDENTIAL
OPERATING INDUSTRIES, INC. LANDFILL

EXHIBIT C

OPERATING INDUSTRIES, INC. SUPERFUND SITE

SCOPE OF WORK

Table of Contents (Index)

1.0 INTRODUCTION
- 1.1 **Purpose of the Scope of Work**
- 1.2 **General Description of the Work**
- 1.3 **CD-8 Excluded Work**

2.0 REQUIREMENTS AND PERFORMANCE STANDARDS
- 2.1 **General Requirements**
- 2.2 **Performance Standards and Contingency Measures**
  - 2.2.1 Perimeter Liquids Control
    - Performance Standards and Point of Compliance
    - Contingency Measures
  - 2.2.2 Liquids Conveyance and Treatment
    - Performance Standards and Point of Compliance
    - Contingency Measures
  - 2.2.3 Groundwater Cleanup
    - Performance Standards and Point of Compliance
    - Contingency Measures
  - 2.2.4 Groundwater Monitoring
    - Long-Term Monitoring Program - Detection Monitoring
    - Long-Term Monitoring Program - Compliance/Performance Monitoring
    - Interim Groundwater Monitoring Program
  - 2.2.5 Access and Institutional Controls
    - Institutional Controls Within the Landfill Boundary
    - Institutional Controls Beyond the Landfill Boundary
  - 2.2.6 Operation and Maintenance of Facilities and Site Environmental Control Systems and Site Administration
- 2.3 **CD-8 Excluded Work**
  - 2.3.1 CD-8 Excluded Work for Groundwater Monitoring Well Sampling and Analyses
  - 2.3.2 CD-8 Excluded Work for Site Access and Security

3.0 INTEGRATION AND COORDINATION
- 3.1 **Introduction**
  - 3.1.1 Integration
  - 3.1.2 Coordination
- 3.2 **Integration and Coordination with CD-3 Work, CD-3 Excluded Work, and CD-8 Excluded Work**
- 3.3 **Integration and Coordination with North Parcel Remediation and Potential Commercial Development and Activities**
- 3.4 **Procedures**
  - 3.4.1 Technical Exchange Meetings
  - 3.4.2 OII Site Interagency ("IAC") Meetings
  - 3.4.3 Over-the Shoulder Review Meetings
  - 3.4.4 Site Tours
- 3.5 **Site Access and Security**
  - 3.5.1 Requirements
  - 3.5.2 Exclusion Zones

4.0 MANAGEMENT PLANS
- 4.1 **Requirements**
- 4.2 **Plans**
  - 4.2.1 Work Plan
    - Introduction
    - Contents
  - 4.2.2 Safety, Health, and Emergency Response Plan
    - Introduction
    - Contents
    - Acceptance
  - 4.2.3 Quality Assurance/Quality Control Plan
    - Introduction
    - Contents
  - 4.2.4 Operations Plan
    - Introduction
    - Contents
  - 4.2.5 Transition Plans
  - 4.2.6 Project Proposal/Technical Memoranda
  - 4.2.7 Sampling Plans

5.0 ACTIVITIES
- 5.1 **Groundwater Monitoring and Evaluation**
  - 5.1.1 Long-Term Groundwater Monitoring Plan
  - 5.1.2 Groundwater Monitoring Reports
    - 5.1.2.1 Groundwater Data Report
    - 5.1.2.2 Annual Groundwater Monitoring and Evaluation Report
- 5.2 **Perimeter Liquids Control Implementation**
  - 5.2.1 Detection /Compliance Monitoring

5.2.2 Remedial Design Investigation/Perimeter Liquids Control Implementation
5.2.3 Perimeter Liquids Control Performance Monitoring and Compliance
5.2.4 Perimeter Liquids Control Completion

5.3 Remedial Design Investigations
Remedial Design Investigation Work Plan
Remedial Design Investigation Report

5.4 Preliminary and Final Design Activities
5.4.1 Preliminary Design Activities
Existing System Conditions and Performance Data Evaluation
Selection Criteria Development
Alternatives Identification and Evaluation
Data Collection and Engineering Calculations
Systems Selection
Preliminary Design Report Preparation
5.4.2 Final Design Activities
Prefinal - 90% Design Package
Final - 100% - Design Package

5.5 Construction Activities
Construction As-built Report
Construction Completion Report

5.6 Compliance Testing and Evaluation Activities
5.6.1 Perimeter Liquids Control System
Compliance Testing Plan
Compliance Testing Request
Compliance Testing Period
Compliance Testing Report
Compliance Date
5.6.2 Leachate Treatment System
Compliance Testing Plan
Compliance Testing Request
Compliance Testing Period
Compliance Testing Report
Compliance Date
5.6.3 Natural Attenuation Compliance Evaluation

5.7 Access and Institutional Controls
5.7.1 Access and Institutional Controls Implementation Work Plan
5.7.2 Bi-Annual Work Plan Updates

5.8 Site Administration

5.9 Site Access and Security

5.10 Operation and Maintenance of Facilities and Site Environmental Control Systems

5.11 Annual Work Status Report

5.12 5-Year Work Status Report

5.13 Final Remedial Action Compliance Date

5.14 Final Remedial Action Completion Report

5.15 Final Work Completion Report

5.16 CD-8 Excluded Work Completion Report

6.0 DELIVERABLES AND REVIEW PROCEDURES

6.1 Introduction

6.2 Deliverables
6.2.1 Management Plan Deliverables
Work Plan
Safety, Health and Emergency Response Plan
Quality Assurance/Quality Control Plan
Operations Plan
Transition Plans (as required)
Project Proposals/Technical Memoranda, if necessary
Sampling Plans
Progress Reports
6.2.2 Groundwater Monitoring Deliverables
Long-Term Groundwater Monitoring Plan
Groundwater Monitoring Reports
Groundwater Data Report
Draft and Final Annual Groundwater Monitoring and Evaluation Reports
6.2.3 Remedial Design Investigation(s) Deliverables
Area-Specific Evaluation Reports
Remedial Design Investigation Work Plans (RDIWPs)
Remedial Design Investigation Reports
6.2.4 Preliminary Design Deliverables
Preliminary Design Report
6.2.5 Final Design Deliverables
Design Packages
Intermediate (if required by EPA)
Prefinal - 90% Design
Final - 100% Design
6.2.6 Construction Deliverables
Contractor Selection Notification
Construction As-built Report
Construction Completion Report
6.2.7 Compliance Testing Deliverables
Compliance Testing Plan
Compliance Testing Reports
6.2.8 Access and Institutional Controls Implementation Deliverables

Initial Work Plan
Bi-Annual Work Plan Update
6.2.9 Bi-Annual Work Status Report
6.2.10 5-Year Work Status Report
6.2.11 Final Remedial Action Completion Report
6.2.12 Final Work Completion Report
6.2.13 CD-8 Excluded Work Completion Report
6.3 Review Approach and Procedures
7.0 SCHEDULES
7.1 Introduction
7.2 Schedules for Management Plans
7.2.1 Work Plan
7.2.2 Final Remedy SHERP
7.2.3 QA/QC Plan
7.2.4 Operations Plans
7.2.5 Transition Plans (as required)
7.2.6 Project Proposals/Technical Memoranda
7.2.7 Sampling Plans
7.2.8 Progress Reports
7.3 Schedules for Groundwater Monitoring Activities
7.3.1 Long-Term Groundwater Monitoring Plan
7.3.2 Groundwater Monitoring Reports
Groundwater Data Report
Annual Groundwater Monitoring and Evaluation Report
7.3.3 Natural Attenuation Contingency Action Implementation Plan(s)
7.3.4 Focused Groundwater Pumping Remedial Design Investigation Work Plan(s)
7.4 Schedules for Remedial Design Investigation Activities for Perimeter Liquids Control Actions
7.4.1 First Area-Specific Evaluation (ASE)
7.4.2 Additional ASEs
7.4.3 First Remedial Design Investigation Work Plan (RDIWP)
7.4.4 Additional RDIWPs
7.4.5 Remedial Design Investigations
7.5 Schedules for Preliminary Design Deliverables
7.6 Schedules for Final Design(s) Activities
7.7 Schedules for Construction Activities
7.7.1 Contractor Selection
7.7.2 Construction Schedule
7.7.3 System Startup(s)
7.7.4 Construction As-Built Report(s)
7.7.5 Construction Completion Reports

7.8 Schedules for Compliance Testing and Evaluation
7.8.1 Compliance Testing Plans
7.8.2 Compliance Testing
7.8.3 Compliance Testing Reports
7.9 Schedules for Implementation of Access and Institutional Controls
7.9.1 Work Plan
7.9.2 Bi-Annual Work Plan Update
7.10 Schedule for Annual Work Status Report
7.11 Schedule for 5-Year Work Status Report
7.12 Schedule for Final Remedial Action Completion Report
7.13 Schedule for Final Work Completion Report
7.14 Schedule for CD-8 Excluded Work Completion Report

Table SOW-1 Potential Perimeter Liquids Control Remedial Actions
Table SOW-2 OII Site Natural Attenuation Requirements - Maximum Times and Distances to Reach Cleanup Standards in Groundwater
Table SOW-3 Examples of Trend Analyses "Triggers" for Initiating Natural Attenuation Contingency Response Actions
Figure SOW-1 Point of Compliance for Perimeter Liquids Control
Figure SOW-2 Decision Process for Perimeter Liquids Control Implementation
Figure SOW-3 Groundwater Compliance Lines for Contaminants of Concern
Figure SOW-4 Decision Process for Monitored Natural Attenuation

Appendix I -- REFERENCES

1.0 INTRODUCTION

1.1 Purpose of the Scope of Work

The purpose of this Scope of Work (SOW) for the Operating Industries, Inc. Superfund Site ("OII", "Site", or "OII Site") is to detail remedial activities to be undertaken by the Work Defendants in compliance with this Consent Decree ("Decree" or "CD-8").

The SOW is intended to be read in conjunction with the provisions of CD-8. In the event of conflict between any provision in the body of the Consent Decree and any provision of the Scope of Work (SOW) or any attachment to the SOW, the provision in the body of the Consent Decree shall control. In the event of any inconsistency between the SOW and the Plans, the SOW shall govern.

1.2 General Description of the Work

The Work shall meet requirements and provisions of the Record of Decision (ROD) for the Gas Migration Control Operable Unit (September 30, 1988), as amended to include Landfill Cover (September 28, 1990), and referred to in this SOW as the "Gas Control and Cover" ROD, and the Final ROD for the Operating Industries, Inc. Site, dated September 30, 1996. Work under this SOW includes objectives and activities that were previously encompassed by the ROD for Site Control and Monitoring (SCM) (July 31, 1987), and the ROD for the Leachate Management (LM) Operable Unit (November 16, 1987). Those RODs have been superseded by the Gas Control and Cover and the Final RODs.

In accordance with the Final ROD, the remedial activities undertaken by the Work Defendants shall achieve control of site-associated liquids and contaminated groundwater as well as provide for long-term site administration, operation, monitoring, and maintenance of all environmental control facilities at the Site, including (1) O&M activities required for the North Parcel gas control and landfill cover remediation systems, and (2) security work for the area within the North Parcel referred to as the "Remediation Parcel" after the North Parcel systems' compliance testing is successfully completed, as described in Paragraph E of XII of CD-7.

The Work Defendants shall dispose of any materials taken off-site in compliance with the EPA's *Procedures for Planning and Implementing Off-Site Response Actions*, September 22, 1993 (Off-site Policy) and 40 CFR § 300.440, if applicable, and in accordance with the provisions of Section VII, Paragraphs A.8 & A.9, of CD-8.

In accordance with the Gas Control and Cover ROD, to the extent that the activities are not performed as work under the Third Partial Consent Decree (CD-3) or CD-7, the Work Defendants shall meet requirements for final landfill cover, landfill gas migration control, and

surface water management systems for the OII Site. The CD-8 Work Defendants also intend to perform operation, maintenance, and monitoring activities required by and implemented under the CD-3 SOW, pursuant to Paragraph M of Section XXXIV of CD-8, the work under CD-7 as described in Paragraph B of Section XII of CD-7.

The Work shall be performed in such a manner as to assure integration and coordination with CD-3, CD-3 Excluded Work, CD-7 Work, CD-8 Excluded Work, and any activities undertaken at the Site under EPA oversight. To the greatest extent practicable and reasonable, Work Defendants shall coordinate with parties implementing North Parcel remediation and commercial development without unduly impacting or delaying response activities required by EPA.

As indicated throughout this SOW, parts of the Final ROD may be implemented by other parties as Final Remedy early actions through separate agreements incorporating that work into CD-3. CD-8 Work Defendants shall perform as Work pursuant to CD-8, all early action activities not implemented under such separate agreements, subject to EPA approval.

1.3 CD-8 Excluded Work

To facilitate remedial project management for this Site, EPA and the Work Defendants have established the following response actions (further described in Section 2.3 of this SOW), both individually and collectively, to be CD-8 Excluded Work:

- Groundwater monitoring well sampling, laboratory analyses, and reporting for each routine sampling event in each year for six consecutive calendar years starting with the first full calendar year after CD-8 entry;
- Site Access and Security activities for all areas of the South Parcel of the Site, for seven consecutive calendar years starting with the first full calendar year after CD-8 entry.

Work Defendants shall perform all elements not included in these CD-8 Excluded Work items as Work under CD-8. Work Defendants are responsible for assuring that Work pursuant to CD-8 is properly integrated and coordinated with CD-8 Excluded Work. In the event that any or all item(s) of Excluded Work are performed entirely by person(s) other than Work Defendants, Work Defendants shall not be responsible for attaining Performance Standards for that item(s) of Excluded Work. Nothing in this paragraph shall be deemed to modify or change Work Defendants' obligations under the SOW or CD-8, including the obligation to attain Performance Standards or to comply with integration and coordination requirements in Section 3.0 of the SOW.

2.0 REQUIREMENTS AND PERFORMANCE STANDARDS

2.1 General Requirements

Work Defendants shall perform the following work in compliance with Performance Standards required by the Gas Control and Cover ROD and the Final ROD for the Site:

- Perform remedial design investigations where required by EPA, and design, construct, operate, and maintain a Perimeter Liquids Control System in areas where contaminants are migrating from the landfill at levels that cause groundwater at the point of compliance to exceed chemical performance standards. EPA and the Work Defendants anticipate that contaminated groundwater beyond the point of compliance will reduce below groundwater cleanup standards through natural attenuation.

- Design, construct, operate, and maintain all necessary systems to convey, treat, and dispose of the collected liquids at the existing onsite Leachate Treatment Plant (LTP), modified as necessary as approved by EPA, to handle all site-associated liquids. Work Defendants shall implement measures to improve the aesthetics of the existing onsite LTP as required by the Final ROD to the extent that this work is not performed by other parties at the OII Site outside the scope of CD-8.

- Implement a groundwater monitoring and evaluation program to: (1) determine effectiveness of Perimeter Liquids Control System performance; (2) evaluate the progress of natural attenuation of contaminated groundwater beyond the landfill perimeter, and to compare its progress to natural attenuation requirements; and (3) detect potential future releases of contaminants from the landfill. Groundwater sampling and analyses conducted for six consecutive calendar years starting with the first full calendar year after CD-8 entry is considered to be CD-8 Excluded Work.

- Perform contingency measures as required by EPA, if EPA determines that natural attenuation is not progressing as anticipated.

- Establish access and institutional controls, in coordination with other authorities, for limiting human exposure to potentially contaminated materials, protecting the integrity of the landfill environmental control systems, and restricting groundwater use in the immediate vicinity of the OII Site, including all areas within the Groundwater Compliance Lines.

- Perform site administration and operation and maintenance of all facilities and environmental control systems except to the extent that they are performed as CD-3 work, CD-3 Excluded Work, CD-7 activities, and CD-8 Excluded Work. This work is inclusive

of administration and operation and maintenance of the gas control and landfill cover remedial systems required for the North Parcel to the extent that the activities are not performed by other parties outside the scope of CD-8.

- Perform North Parcel OM&M Work, as described in Paragraph E of Section XII of CD-7 and Section XXXIV.R of CD-8, after the North Parcel systems' compliance testing is successfully completed.

- Perform operation, maintenance, and monitoring activities required by and implemented under the CD-3 SOW pursuant to Paragraph M of Section XXXIV of CD-8.

Work shall be performed in a manner that assures smooth integration and coordination with all ongoing activities at the Site.

Work Defendants shall follow procedures contained in applicable Site Access and Security plans referenced in Appendix I of this SOW as administered by EPA, CD-3 Work Defendants, other parties performing CD-8 Excluded Work, and CD-7. To the extent that site and security activities are not performed by other parties performing work at the Site outside the scope of CD-8, Work Defendants shall be responsible for Site access and security activities. CD-8 Work Defendants shall modify as needed, implement, and administer as approved by EPA, revised access and security procedures to facilitate remedial actions at the Site.

2.2 Performance Standards and Contingency Measures

The Work Defendants are responsible for meeting all Performance Standards as defined in CD-8. If any Performance Standards are not being met, the Work Defendants shall implement appropriate contingency measures, subject to EPA approval, to ensure compliance with Performance Standards.

2.2.1 Perimeter Liquids Control

The Work Defendants shall implement perimeter liquids control actions to meet the Performance Standards described below. EPA and Work Defendants anticipate that perimeter liquids control actions generally will consist of those actions listed in Table SOW-1, or other equivalent actions that EPA deems acceptable.

<u>Performance Standards and Point of Compliance</u>
The Work Defendants shall implement perimeter liquids control in areas where contaminants of concern currently migrate or are observed in the future to migrate from the landfill at levels that cause groundwater at the point of compliance to exceed chemical performance standards. Chemical performance standards for each contaminant of concern are presented in *Table 15* from the *Final ROD*. Work Defendants shall implement perimeter liquids control in each area where

an exceedance of chemical performance standards has currently been verified or is verified in the future. An exceedance of a chemical performance standard is verified when it is detected in two out of three consecutive groundwater sampling events.

The point of compliance is the downgradient boundary of the waste management unit. The point of compliance for perimeter liquids control is shown in Figure SOW-1. (The point of compliance shown for North Parcel perimeter liquids control excludes areas not containing landfill-related wastes.) The location of the point of compliance may be modified in the future, subject to EPA approval, if physical conditions warrant (e.g., if perimeter liquids control actions are implemented at or near the current point of compliance). In the Long-Term Groundwater Monitoring Plan, the Work Defendants shall identify, subject to EPA approval, the monitoring points to be used to determine compliance.

Work Defendants shall implement perimeter liquids control in accordance with the process outlined in Figure SOW-2 in response to verified chemical performance standard exceedances in at least the following areas:

- Along the northwestern perimeter of the South Parcel in the general vicinity of former Well CDD-13, to a depth of approximately 70 feet;
- Along the northwestern perimeter of the South Parcel in the general vicinity of Well OI-24B, to a depth of approximately 150 feet;
- Along the northwestern perimeter of the South Parcel in the general vicinity of Wells OI-19A and OI-19C, to a depth of approximately 180 feet;
- Along the northeastern perimeter of the South Parcel in the general vicinity of Well OI-20A, to a depth of approximately 170 feet.

Initial perimeter liquids control actions are already being implemented, as part of construction and operation of the CD-3 gas control system, in response to verified chemical performance standard exceedances in the following three other areas:

- Along the western perimeter of the South Parcel between Wells PE-3 and PE-7, to a depth of approximately 200 feet;
- At the southwestern corner of the South Parcel between Wells OI-53P and OI-50A to a depth of approximately 80 feet;
- Along the southern boundary of the South Parcel between Wells OI-16A and PE-13 to a depth of approximately 175 feet.

Upon completion of activities under CD-3, Work Defendants shall continue to implement perimeter liquids control actions in these areas as required by EPA until as otherwise provided in this SOW.

An additional area was identified in the Final ROD as requiring perimeter liquids control (the West Aquifer at well OI-18B). Chemical performance standards are not currently exceeded in this area. Consistent with the requirements of this SOW, EPA has determined that implementation of a perimeter liquids control action is not currently required in this area. The Work Defendants shall continue to implement groundwater monitoring of the West Aquifer in this area consistent with the Long Term Groundwater Monitoring Plan.

The general procedures for implementation of perimeter liquids control actions are specified in Section 5.2 of this SOW. The Work Defendants shall document specific details in appropriate work plans, as determined by EPA.

The Work Defendants shall develop performance criteria for the perimeter liquids control actions for review and approval by EPA. These performance criteria shall identify specific procedures and measurements to be used to demonstrate to EPA's satisfaction that the perimeter control system is complying with the Performance Standards. These performance criteria may include hydraulic control (e.g., gradient reversal, overlapping capture zones in extraction wells, or water table lowering), or potentially other measures.

In areas where liquids are actively extracted at the landfill perimeter, the effectiveness of perimeter liquids control remedial actions shall be determined by EPA, based primarily on water level measurements and related hydraulic data/information. The perimeter liquids control actions shall be in compliance with Performance Standards if one or more of the following conditions has been demonstrated to EPA's satisfaction:

- liquids are no longer present (i.e., the perimeter area has been dewatered);
- a reversal of hydraulic gradient has been demonstrated within the area where EPA requires perimeter liquids control; or
- overlapping capture zones have been established between adjoining extraction wells.

In areas where active perimeter liquids control actions are not required, EPA shall determine compliance with the Performance Standards for perimeter liquids control based on a comparison of concentrations of contaminants of concern in groundwater at the point of compliance to the chemical performance standards listed in *Table 15* of the *Final ROD*.

Work Defendants may request EPA to suspend perimeter liquids control actions by

demonstrating to EPA's satisfaction that groundwater concentrations at the point of compliance have no verified exceedances of chemical performance standards for three consecutive years or, if the perimeter control system provides for hydraulic control, that liquids are no longer present in the perimeter liquids control system(s). Work Defendants shall operate and maintain the perimeter liquids control components until EPA approves this request. If EPA determines that Performance Standards have not been met and additional actions are warranted for the perimeter liquids control component for any portion of the landfill perimeter, EPA will notify the Work Defendants in writing of the activities that must be undertaken by the Work Defendants. Also, EPA will set forth in the notice a schedule for performance of such activities consistent with the Consent Decree and this SOW or require the Work Defendants to submit a schedule to EPA for review and approval. If EPA concludes that Performance Standards have been met and that actions may be suspended, EPA will notify the Work Defendants in writing and the Work Defendants may suspend operation of the perimeter control system in these areas and convert to detection monitoring while they continue to operate and maintain other portions of the perimeter liquids control systems. In accordance with Section 2.2.4, Work Defendants shall continue detection monitoring in areas where perimeter liquids control has been suspended.

Contingency Measures
If the perimeter liquids control system is not demonstrated to be effective in meeting the Performance Standards, as determined by EPA, contingency measures shall be proposed by the Work Defendants to bring the system into compliance. Potential contingency measures shall be outlined in the Operations Plan. The Work Defendants shall implement, subject to EPA approval, contingency measures to meet the Performance Standards.

2.2.2 Liquids Conveyance and Treatment

The Work Defendants shall modify the existing onsite leachate treatment plant and related liquids conveyance and discharge facilities as necessary to treat and discharge site-associated liquids collected pursuant to CD-8 to achieve Performance Standards. For the purposes of this SOW, site-associated liquids include but are not limited to leachate, condensate generated from landfill gas, washdown from decontamination processes, and well purge water associated with groundwater sampling activities. The treated liquids shall be discharged to County Sanitation Districts of Los Angeles County (CSDLAC) sanitary sewer system in accordance with CSDLAC and EPA requirements. The Work Defendants shall secure revisions to the existing industrial wastewater discharge permit issued by CSDLAC or secure other applicable permits as may be required by any other authorizing agency to manage additional liquids generated by liquids control activities conducted pursuant to CD-8. The Work Defendants shall maintain and operate the existing Leachate Treatment System (LTS) in conformance with requirements of CSDLAC, other potential regulating authorities, and EPA to accommodate site-associated liquid volumes and flowrates including periods while performing the remedial design and construction activities required by CD-8. (The LTS includes the Leachate Conveyance System, the Leachate Treatment Plant, and the Effluent Sewer to its point of connection to the CSDLAC sanitary sewer system.)

Performance Standards and Point of Compliance
The Performance Standards for the effluent from the treatment plant shall be the discharge requirements outlined in the existing permit *(Table 16* of the *Final ROD)*. If EPA, CSDLAC or other regulating authorities revise the discharge limits, the new discharge limits shall supersede the performance standards listed in Table 16 of the Final ROD.

Contingency Measures
If Performance Standards are not met by the existing plant, the Work Defendants shall install additional treatment processes, as approved by EPA, to demonstrate and ensure compliance with the Performance Standards.

2.2.3 Groundwater Cleanup

The Work Defendants shall implement groundwater cleanup actions in areas beyond the point of compliance to achieve Performance Standards described below.

The Work Defendants shall monitor and evaluate the performance of natural attenuation, and if required by EPA, implement contingency actions to meet Performance Standards, in accordance with the general decision processes shown in Figure SOW-4.

Performance Standards and Point of Compliance
The groundwater cleanup component of the selected remedy requires contaminant concentrations in groundwater to be reduced to achieve groundwater cleanup standards (*Table 15* from the *Final ROD*) through natural attenuation in accordance with the times and distances provided in Table SOW-2. The times and distances presented in Table SOW-2 are based on the approximate numbers provided in *Table 17* from the *Final ROD*. Table SOW-2 provides requirements for natural attenuation times and migration distances for both organic and inorganic constituents in different subareas and units (identified as specific geographic areas and groundwater units with specific hydrogeological characteristics) around the OII Site. The migration distances presented in Table SOW-2 refer to distances beyond the current areas with verified groundwater cleanup standard exceedances. This SOW additionally defines lines of compliance for groundwater cleanup. "Groundwater Compliance Lines" for organic and inorganic contaminants of concern are shown on Figure SOW-3. The extent of verified groundwater cleanup standard exceedances are also shown on this figure. EPA may revise the representation of the extent of the contaminated areas and the Groundwater Compliance Lines presented on Figure SOW-3 if data from monitoring wells installed during First Remedial Design Investigation activities (described in Section 5.3) or other information indicate that such revisions are warranted.

In the event that an organic groundwater cleanup standard exceedance is verified at or beyond the organic Groundwater Compliance Lines shown in Figure SOW-3, or that an inorganic groundwater cleanup standard exceedance is verified at or beyond the inorganic Groundwater Compliance Lines shown in Figure SOW-3, the Work Defendants shall implement focused

groundwater pumping contingency actions in accordance with the process outlined in Figure SOW-4, including preparation of the Contingency Remedial Design Workplan and installation of additional groundwater compliance monitoring wells, to meet groundwater cleanup standards. EPA may consider alternative contingency actions if Work Defendants propose and demonstrate to EPA's satisfaction that other contingency actions are appropriate. Contingency actions shall be undertaken by the Work Defendants following and in addition to those described below.

The Work Defendants shall install new groundwater monitoring wells at strategic locations surrounding the Site to provide monitoring of the Groundwater Compliance Lines. The location and number of these "sentinel wells" shall be proposed by the Work Defendants in the Long-term Groundwater Monitoring Plan for EPA approval. EPA anticipates that the locations will generally conform to those locations shown on Figure SOW-3, accounting for design considerations (e.g., siting and access constraints and groundwater flow conditions). However, EPA may revise the number and location of sentinel wells as additional information is developed. For areas where groundwater cleanup standard exceedances have currently been verified at the farthest existing downgradient wells, the Work Defendants shall propose specific sentinel well locations, well depths, and details of and schedule for construction, etc., in their Long-Term Groundwater Monitoring Plan (Section 5.1.1) for EPA review. Upon EPA approval, Work Defendants shall install the new sentinel wells. For remaining areas beyond the landfill boundary, the Work Defendants shall propose installation of new sentinel wells in the Annual Groundwater Monitoring and Evaluation Report (Section 5.1.2.2) pursuant to receipt of data indicating verification of a groundwater cleanup standard exceedance at the farthest downgradient existing monitoring well between the landfill boundary and the Groundwater Compliance Lines.

The Work Defendants shall conduct Groundwater Compliance Line monitoring at least every two years for the duration of this Consent Decree unless a different interval or duration is required by EPA.

After perimeter liquids control has been implemented in each perimeter segment, concentrations of contaminants of concern should gradually decline in each subarea beyond the landfill boundary. The timing and rate of decline of contaminant concentrations will vary in each area depending on several factors. These include the:

- type of constituent (organic or inorganic) and properties of the individual contaminant;
- hydrogeologic conditions in the subarea;
- location within the subarea relative to the landfill perimeter source area;
- magnitude of starting contaminant concentrations.

Except to the extent that these activities are performed as CD-8 Excluded Work, the Work Defendants shall perform groundwater monitoring, data evaluation, and reporting to allow EPA to determine if natural attenuation is progressing as predicted. The evaluation of natural attenuation shall consider the factors described above and focus on determining whether areas

beyond the landfill boundary where concentrations exceed the groundwater cleanup standards are attenuating (in terms of both concentration and areal extent) consistent with the requirements presented in Table SOW-2 and do not extend to the Groundwater Compliance Lines as shown on Figure SOW-3 or as modified by EPA.

The Work Defendants shall present the specifics of the monitoring and evaluation program for natural attenuation in the Long-Term Groundwater Monitoring Plan, described in Section 5.1, for EPA review and approval. For groundwater that is already contaminated above cleanup standards, the Work Defendants shall use statistical methods based on EPA direction to evaluate monitoring data on both a well-by-well basis and a subarea-wide basis (the Long-Term Groundwater Monitoring Plan shall identify appropriate subareas to be used for evaluation). Work Defendants shall perform an annual compliance evaluation of the progress of natural attenuation as described in Section 5.6.3. This evaluation shall include the use of statistical analysis of the spatial occurrence and temporal trends of contaminant concentrations in individual monitoring wells beyond the landfill perimeter and a statistical evaluation of average contaminant concentrations and temporal trends within the specific subareas beyond the landfill boundary to be identified in the Long-Term Groundwater Monitoring Plan.

Where groundwater contamination in any subarea has attenuated to meet requirements presented in Table SOW-2, Work Defendants shall continue detection monitoring for that subarea to demonstrate continued compliance with the groundwater cleanup standards. Once all wells in a subarea beyond the landfill boundary are in compliance with groundwater cleanup standards for three consecutive years, the Work Defendants may request EPA to modify groundwater monitoring frequency or the number of wells monitored in that subarea to a level appropriate for that area as determined by EPA. Work Defendants shall continue implementation of natural attenuation monitoring, including contingency measures required by EPA, until EPA approves this request. If EPA determines that groundwater cleanup standards for that subarea have not been met and that further actions are warranted, EPA will notify the Work Defendants in writing of the required actions. If EPA concludes that groundwater cleanup standards have been met and that actions may be revised, EPA will notify the Work Defendants in writing and the Work Defendants may modify natural attenuation monitoring for that subarea while they continue current levels of monitoring of natural attenuation in other subareas. However, if groundwater cleanup standard exceedances are verified at the upgradient point of compliance, or if EPA determines that conditions warrant continued monitoring, EPA may require the Work Defendants to increase monitoring in the subarea in accordance with the process outlined in Figure SOW-4.

The overall natural attenuation remedial action shall be considered complete when the Work Defendants demonstrate and EPA determines that the groundwater cleanup standards identified in *Table 15* from the *Final ROD* have been met in all groundwater monitoring wells beyond the point of compliance for three consecutive years. Work Defendants shall continue monitoring, as provided by this SOW, until EPA approves the Final Work Completion Report. Work Defendants shall include monitoring procedures for demonstrating completion of natural

attenuation of groundwater beyond the landfill boundary in the Long-Term Groundwater Monitoring Plan for EPA review and approval.

If EPA determines that natural attenuation is not progressing as intended (e.g., in accordance with the times and distances presented in Table SOW-2), the Work Defendants shall perform, at a minimum, additional monitoring and evaluation. EPA may also require Work Defendants to perform additional contingency measures as discussed below. Factors that, individually or collectively, EPA will consider indicative that progress of natural attenuation is not meeting the requirements presented in Table SOW-2, include, but are not limited to, those shown in Table SOW-3.

EPA's determination that natural attenuation is not progressing as intended shall not be subject to review, under Section XXV (Dispute Resolution) of CD-8 or otherwise. The parties agree that, depending on the scope and substance of the contingency measure deemed appropriate by EPA, such contingency measure may be Work, Additional Work, or may trigger a reopener event or a reservation of rights under CD-8. This paragraph does not preclude the Work Defendants from initiating a dispute under Section XXV.A.3 of the CD-8 over whether any specific contingency measure selected by EPA is within the scope of CD-8, including whether such a contingency measure is Work, Additional Work, a reopener event, or a reservation of rights under CD-8, nor does it preclude the Work Defendants or EPA from presenting data and technical evaluations in such a dispute.

If verified exceedances of groundwater cleanup standards are detected in wells that are not currently contaminated above groundwater cleanup standards and are not located downgradient of currently contaminated wells, EPA will determine natural attenuation time and distance requirements and the locations of Groundwater Compliance Lines as are presented in Table SOW-2, and Figure SOW-3, respectively, for other areas. EPA may also require new sentinel wells and contingency measures, as described below, in these areas.

Contingency Measures

If EPA determines that natural attenuation is not progressing as expected (based on evaluation of groundwater monitoring data compared to the requirements provided in Table SOW-2, and based on evaluation of additional factors as described above) the Work Defendants shall implement contingency measures as required by EPA to meet the Performance Standards. Examples of contingency measures include, but are not limited to, the following, as required by EPA:

- Additional groundwater monitoring (e.g., increased monitoring frequency and/or installation of additional monitoring wells) and evaluation of hydrogeologic conditions to assess the significance of further contaminant migration;
- Expanded institutional controls over a larger area to ensure that the potential for exposure is limited;
- Evaluation of the effectiveness of perimeter liquids control in upgradient areas and implementation of supplemental perimeter liquids control actions to limit migration of

additional contaminants to the areas;
- Focused groundwater pumping (i.e., pumping from a limited number of wells in specific areas of contamination or "hot spots") to inhibit additional downgradient migration and accelerate groundwater remediation.

As determined by EPA, these contingency measures may be implemented incrementally, starting with less aggressive actions such as additional groundwater monitoring and evaluation. However, if EPA determines that an exceedance is verified at or beyond a Groundwater Compliance Line, EPA shall require the Work Defendants to implement a focused groundwater pumping contingency action unless the Work Defendants demonstrate to EPA's satisfaction that other contingency actions are appropriate or that the exceedances are not due to the landfill. Work Defendants shall implement contingency measures until EPA determines that Performance Standards are being achieved and maintained and that contingency actions are unnecessary.

2.2.4 Groundwater Monitoring

The Work Defendants shall design and implement a long-term groundwater monitoring program, consistent with ARARs, to determine whether the perimeter control and groundwater cleanup Performance Standards are met. The long-term groundwater monitoring program shall meet the following requirements:

- Assess compliance with the chemical performance standards and groundwater cleanup standards;
- Monitor the effectiveness of the perimeter liquids control system;
- Detect additional releases of contaminants from the landfill;
- Monitor the progress of natural attenuation in groundwater.

The Work Defendants shall prepare a Long-Term Groundwater Monitoring Plan, as described in Section 5.1, that will provide the details of the long-term monitoring program, for EPA review and approval. Prior to initiation of the long-term groundwater monitoring program, the Work Defendants shall continue to implement the existing interim groundwater monitoring program. The components and requirements of the groundwater monitoring program are described below and in Section 5.1.

Long-Term Monitoring Program - Detection Monitoring

The Work Defendants shall apply a detection monitoring program to areas at the landfill perimeter that are unaffected by releases. The Long-Term Groundwater Monitoring Plan shall outline the list of parameters to be monitored (this list shall include the contaminants of concern presented in *Table 15* from the *Final ROD*) and the frequencies for collecting samples and conducting statistical analyses. Work Defendants shall schedule sampling to include the times of expected highest and lowest elevation of the potentiometric surface. The list of parameters shall be selected to provide reliable indication of a release from the landfill.

The Work Defendants shall implement a perimeter liquids control action (described above in Section 2.2.1) in any area where EPA determines releases are causing groundwater concentrations at the point of compliance to exceed chemical performance standards. Work Defendants shall re-establish detection monitoring when EPA determines that perimeter liquids control is no longer necessary in an area. Detection monitoring shall continue until EPA approval of the Final Work Completion Report provided, however, that once all wells in an area of the Site are in compliance with chemical performance standards for three consecutive years, the Work Defendants may request EPA to modify the frequency of monitoring or number of wells monitored to a level appropriate under the circumstances for and pertaining to that area.

Long-Term Monitoring Program - Compliance/Performance Monitoring

The long-term groundwater monitoring program shall incorporate four types of compliance or performance monitoring for areas that are affected by releases:

- Perimeter Liquids Control - monitoring contaminant concentrations at the point of compliance to determine compliance with chemical performance standards;
- Perimeter Liquids Control - monitoring physical (hydraulic) conditions downgradient of the perimeter liquids control system to determine compliance with Performance Standards;
- Groundwater Cleanup - monitoring in subareas beyond the point of compliance containing contamination above cleanup standards to evaluate the progress of natural attenuation (as described above in Section 2.2.3);
- Groundwater Cleanup - monitoring downgradient of the existing areas of groundwater contamination to ensure that contaminants are not migrating into areas at or beyond the Groundwater Compliance Lines shown on Figure SOW-3.

Work Defendants shall describe in the Long-Term Groundwater Monitoring Plan how each of these types of compliance monitoring will be implemented. The monitoring plan shall detail the locations of the monitoring wells, the frequency of the monitoring, the constituents to be monitored, the types of statistical evaluations to be performed, and how the monitoring and evaluation results will be used to determine compliance with Performance Standards. Work Defendants shall perform compliance/performance monitoring, as provided in this SOW, for each identified area at the landfill perimeter until EPA approval of the Final Work Completion Report.

Interim Groundwater Monitoring Program

The Operating Industries, Inc. Steering Committee (OIISC) is currently conducting an Interim Groundwater Monitoring Program under an Interim Groundwater Monitoring Plan approved by EPA. This interim monitoring program shall continue until the long-term monitoring program is

initiated with EPA approval under CD-8. EPA may require or approve modifications to this Interim Monitoring Plan.

The interim groundwater monitoring program shall:

- Provide for determination of groundwater conditions to allow for future comparisons to data collected through the long-term groundwater monitoring program;
- Detect changes in groundwater conditions (e.g., areas of new releases from the landfill or significant increases or decreases in contaminant concentrations) prior to and during design and construction of the remedial action, and assessment of the potential impact of such changes on implementation of the remedial action.

2.2.5 Access and Institutional Controls

The Work Defendants shall coordinate their work with the local Watermasters, EPA, and other appropriate authorities and shall establish and maintain institutional controls to limit human exposure to potentially contaminated materials, to protect the integrity of the landfill environmental control systems, and to ensure the effectiveness of remedial action components.

Institutional Controls Within the Landfill Boundary

The primary requirements of institutional controls within the landfill boundary are to:

- limit human exposure to potentially contaminated materials;
- prevent unauthorized access;
- protect the integrity of the landfill closure and remedial systems.

To meet these requirements, the Work Defendants shall implement, subject to EPA approval, a combination of deed notices, access restrictions, and covenants that run with the land.

As provided in CD-8, Work Defendants shall ensure that the institutional controls within the landfill boundary prohibit all activities and uses that EPA determines would interfere or be incompatible with, or that would in any way reduce or impair the effectiveness or protectiveness, of remedies for the Site. The Work Defendants shall coordinate these institutional controls with work by other parties for implementation, operation, and maintenance of North Parcel remedial systems and North Parcel commercial development.

Institutional Controls Beyond the Landfill Boundary

The Work Defendants shall implement or assure implementation of institutional controls beyond the landfill boundary for limiting human exposure to contaminated groundwater. Institutional

controls shall consist of prohibiting installation of water supply wells in areas where contaminant concentrations exceed the groundwater cleanup standards. For all properties on which physical construction will occur, Work Defendants shall obtain access agreements and use restrictions that run with the land in accordance with Section XV.B. of CD-8. For properties on which physical construction will not occur, but currently or foreseeably will, be located above groundwater that exceed the groundwater cleanup standards, Work Defendants shall provide annual notice explaining the final remedy and the use restrictions as described in Section XV.I. of CD-8.

The Work Defendants shall coordinate implementation with, at a minimum, the local Watermasters in the San Gabriel and Central Basins that control groundwater use in the OII Site vicinity and Los Angeles County, which requires permits for installation of water supply wells. The Work Defendants also shall involve other state and local agencies, such as the Regional Water Quality Control Board and the Cities of Monterey Park and Montebello, as needed to assure the effectiveness of the institutional controls as determined by EPA. Work Defendants shall perform specific activities associated with implementation of institutional controls beyond the landfill boundary including but not limited to the following:

- Identification of the areas where institutional controls should be implemented, subject to EPA approval;
- Obtaining access agreements and use restrictions that run with the land for all properties on which physical construction will occur;
- Provide notice to all properties in the "natural attenuation areas," as defined in Section XV.I of CD-8;
- Obtaining and performing reviews, every two years, of state and local regulatory agency documentation to determine if water supply wells have been installed or groundwater has been accessed in the areas delineated for institutional controls.

2.2.6 Operation and Maintenance of Facilities and Site Environmental Control Systems and Site Administration

To the extent that administration and operation and maintenance activities are not performed as CD-3 Work, CD-3 Excluded Work, CD-7 activities, and CD-8 Excluded Work, CD-8 Work Defendants shall perform site administration and operation and maintenance of all OII Site facilities and environmental control systems to achieve Performance Standards required by the Gas and Cover ROD and Final ROD. CD-3 OM&M Work, as described in CD-3 and the CD-3 SOW, will become the responsibility of the CD-8 Work Defendants upon successful completion of CD-3 compliance testing activities or lodging of CD-8, whichever is later. North Parcel OM&M Work, as described in CD-7, shall be performed by CD-8 Work Defendants after the North Parcel systems' compliance testing is successfully completed. The Work Defendants shall dispose of any materials taken off-site in compliance with the EPA's *Procedures for Planning and Implementing Off-Site Response Actions*, September 22, 1993 (Off-site Policy) and 40 CFR § 300.440, if applicable, and in accordance with the provisions of Paragraphs A.8 & A.9 of

Section VII of CD-8.

Work Defendants shall achieve and maintain all Performance Standards and meet other requirements for site administration, environmental control systems, facilities and other activities, as presented in documentation currently in effect (referenced in Appendix I of this SOW) as well as the Gas Control and Cover ROD and the Final ROD, including but not limited to the following elements:

- Gas Control System
  - Gas Collection Component (e.g., interior, slope, and perimeter landfill gas extraction wells , blowers, compressors, flow metering instrumentation, and gas conveyance systems);
  - Liquids Collection Component (e.g., systems for handling condensate; and systems for handling leachate that is generated from landfill gas extraction wells);
  - Liquids Treatment Component (e.g., treatment at the on-site LTS of landfill gas condensate and leachate generated from operation of landfill gas extraction wells);
  - Gas Monitoring Component (e.g., landfill gas monitoring probes within the landfill and beyond the perimeter of the landfill; water meter boxes in residential areas adjacent to the South Parcel).
- Landfill Cover System
  - All Cover Components, including cover protection component (e.g., monocover materials, monocover landscaping shrubs; monocover moisture sensing systems);
  - Access and Bench Road Component.
- Thermal Destruction Facility (Landfill Gas Treatment System)
  - Thermal oxidation systems and components including maintenance of facility aesthetic improvements to the extent that these activities are not provided by other parties performing work at the Site outside the scope of CD-8;
  - Thermal Destruction Facility residuals handling and disposal, if any, as required at a permitted facility approved by EPA;
  - Thermal treatment of LFG and handling of associated condensate that can not be treated at the TDF for reasons resulting from prevailing operations for landfill gas control at the OII Site;
  - Combustion efficiency testing of the Thermal Destruction Facility in accordance with the approved Standard Operating Procedure (SOP) and approved Plans.
- Surface Water Management System (e.g., stormwater drainage, collection, conveyance, detention, and discharge facilities for the South Parcel; stormwater control facilities within the Remediation Parcel as that parcel is defined in CD-7).

- Site Administration and Facilities (e.g., administration offices, storage areas for equipment and parts, personnel staging and assembly areas).
- Site Control and Monitoring
  - Landscaping/Irrigation (e.g., water supply, distribution network, and application systems);
  - Access Roads (e.g., roadways entering the South Parcel, Greenwood Avenue Bridge/Pomona Freeway overpass, and access roads from the North Parcel);
  - Fences;
  - Support Facilities and Utilities (e.g., electrical, water, sewerage, communications services).
- Leachate Management Systems
  - Liquid Collection (e.g., Site-wide seep mitigation systems and liquids collection, and associated conveyance piping; liquids handling systems within the TDF; existing and new gas and leachate extraction well discharge piping, well leachate extraction pumps, liquids conveyance piping for the Site including systems for conveyance of leachate, condensate from landfill gas, and liquids from decontamination washdown processes; facilities associated with decontamination washdown, and waters produced by EPA [or its representatives] during investigations and monitoring activities);
  - Pretreatment and Transport Piping;
  - Influent Storage and Liquid Treatment, including residuals management and disposal (e.g., storage and treatment of liquids at the facility formerly known as the "ROSF" on the South Parcel and Leachate Treatment Plant [LTP]; treatment and discharge of liquids in accordance with the County Sanitation Districts of Los Angeles County [CSDLAC] permit and EPA requirements; LTS process control and treatment compliance monitoring analyses including the operation, to the degree permitted by in-place equipment and procedures, of the LTP laboratory; on-site treatment, storage, transport, and disposal of LTS process wastes, filter cake, and other LTS residuals in accordance with all permit and EPA requirements; control and collection of foul air generated at the ROSF and LTP process units; off-site transport, treatment, and disposal of site-associated liquids not processed by the LTS; stormwater management for the LTP);
  - Effluent Storage and Transport (e.g., activities associated with the sewer line to transport treated effluent to an existing sanitary sewer system which discharges to a publicly-owned treatment works operated by the CSDLAC, including sampling and testing to ensure compliance with all discharge requirements).
- Meteorological Monitoring Systems
- Site Access and Security (e.g., access control fencing and gates for equipment and

C0850

personnel, security lighting, security alarms; posting of on-site security guards).
- North Parcel OM&M Work, including but not limited to gas control, cover, surface water management, Remediation Parcel aesthetic mitigation, Interpretive Center staffing and operations, and security, as described in CD-7.

Work Defendants shall perform all required operation, maintenance, and monitoring for the Site, as provided in this SOW, until EPA approves the Final Work Completion Report. Consistent with the Operations Plan (described in Section 4.2.4), the Work Defendants may propose to EPA that OM&M tasks for landfill gas control, landfill cover, surface water management, and other Site systems be reduced in scope and frequency if data supports those reductions. Work Defendants shall implement OM&M changes in accordance with EPA approvals.

The Work Defendants shall develop and implement contingency measures subject to EPA approval, in situations where Performance Standards and other requirements are not met. Contingency measures shall be continued by the Work Defendants until EPA determines that Performance Standards are achieved and maintained and that contingency measures are unnecessary.

2.3 CD-8 Excluded Work

To facilitate remedial project management for this Site, EPA and the Work Defendants have established the response actions described in this Section below, both individually and collectively, to be CD-8 Excluded Work. Work Defendants shall perform all elements not included in these CD-8 Excluded Work items as Work under CD-8. In the event that any or all item(s) of Excluded Work are performed entirely by person(s) other than Work Defendants, Work Defendants shall not be responsible for attaining Performance Standards for that item(s) of Excluded Work. Nothing in this paragraph shall be deemed to modify or change Work Defendants' obligations under the SOW or CD-8 including the obligation to attain Performance Standards or to comply with integration and coordination requirements in Section 3.0 of the SOW.

2.3.1 CD-8 Excluded Work for Groundwater Monitoring Well Sampling and Analyses

Elements included in this item of Excluded Work (for six consecutive calendar years starting with the first full calendar year after CD-8 entry):
- Maintenance of groundwater monitoring wells, onsite and beyond the landfill boundary;
- Field sampling;
- Field analyses and measurements;
- Transport of water generated during sampling to the LTP;
- Laboratory analyses;
- Submission of reports for field data and laboratory analyses to EPA, the Work Defendants, and the State in accordance with requirements of Section 5.1.2.1 of the CD-8

SOW.

These activities shall be performed in accordance with approved plans and related operating procedures.

Work Defendant Obligations under CD-8 for this item of Excluded Work:

- Maintenance of the groundwater monitoring program database for the Site;
- Evaluation of groundwater monitoring data and associated reporting.

2.3.2 CD-8 Excluded Work for Site Access and Security

Elements included in this item of Excluded Work (for seven consecutive calendar years starting with the first full calendar year after CD-8 entry) for all areas of the South Parcel:

- Deployment of full time security for control of access to the Site and patrol during unattended hours of the Site;
- OM&M of perimeter fencing, perimeter alarms, perimeter sensors, perimeter barriers, perimeter security lighting, and other facilities incorporated into the site security systems at the beginning of the excluded work period.

Work Defendant Obligations under CD-8 for this item of Excluded Work:

- Implementation of site security improvements (e.g., perimeter fencing, perimeter lighting, alarm sensors).

3.0 INTEGRATION AND COORDINATION

3.1 Introduction

Work Defendants shall establish integration and coordination procedures to facilitate the performance of the Work and all ongoing response activities and operations conducted by other parties at the Site. Work Defendants shall follow applicable access and security procedures established or approved by EPA . The Work Defendants shall perform all activities required by CD-8 in such a manner so as not to impede the performance by other parties responsible for any ongoing or future response activities.

3.1.1 Integration

Integration applies to materials and equipment required to implement the Work or other operations and tasks at the Site. Integration shall be required of Work Defendants when conducting Work that impacts activities being conducted by other parties at the Site. Systems constructed pursuant to the Work and other site operations and tasks shall be operated and maintained as an integral system. Therefore the Work Defendants shall assure, pursuant to procedures set forth in this SOW, that the material and equipment required to implement the Work is compatible, and will function efficiently with, the materials and equipment required to implement activities being performed by other parties at the Site.

3.1.2 Coordination

Coordination applies to activities required to implement the Work and activities being performed by other parties at the Site. As described in Section XIV (Project Coordinators) of CD-8, EPA, the State, and the Work Defendants shall each designate a Project Coordinator as the focal point for communications with EPA and other parties working at the Site. The Work Defendants' Project Coordinator shall be responsible for overseeing the Work Defendants' implementation of CD-8 and shall have the responsibility for assuring the Work Defendants' integration and coordination of work activities with other site activities.

3.2 Integration and Coordination with CD-3 Work, CD-3 Excluded Work, and CD-8 Excluded Work

The Work shall be performed to assure integration and coordination with CD-3 Work, CD-3 Excluded Work, and CD-8 Excluded Work. CD-8 Excluded Work is described elsewhere in this SOW. CD-3 and CD-3 Excluded Work are described by references listed in Appendix I of this SOW. Work Defendants shall cooperate with other parties assuming Work activities (e.g., CD-8 Excluded Work) under EPA oversight and provide these parties with information and documentation needed to perform such Work activities.

3.3 Integration and Coordination with North Parcel Remediation and Potential Commercial Development and Activities

CD-8 Work Defendants pursuant to CD-8 shall coordinate and integrate its Work with the work being performed by other parties for implementation of North Parcel remediation under CD-7. Included with these integration and coordination activities, CD-8 Work Defendants shall maintain controlled and secure access to the Site pursuant to the Work required by CD-8. To the greatest extent practicable, Work Defendants shall accommodate and coordinate with parties implementing North Parcel commercial development without unduly impacting or delaying response activities required by EPA. Work by CD-8 Work Defendants shall allow for suitable access for other parts of the North Parcel so that ongoing or future commercial activities are not impeded.

3.4 Procedures

All procedures shall be prepared and submitted by the Work Defendants to EPA for approval in accordance with the requirements detailed in Section 4.2 of this SOW. These procedures shall include activities designed to facilitate communications between EPA and Work Defendants' Project Coordinators and allow for streamlining of remedial project management and administration.

3.4.1 Technical Exchange Meetings

Work Defendants shall participate in technical exchange meetings as required by EPA to assure that information, including schedules, data, plans, and reports, is exchanged between EPA, State, and parties performing CD-3 Work, CD-3 Excluded Work, CD-8 Excluded Work, North Parcel remediation, and North Parcel commercial development.

3.4.2 OII Site Interagency ("IAC") Meetings

As described in Section XLV of CD-8, the OII Site Interagency Committee ("IAC") includes EPA and various State and municipal agencies as well as regulatory and public agencies. The IAC provides the primary mechanism for coordination of project-related matters among the member agencies for this project. As the lead agency for OII Site remediation activities, EPA chairs IAC meetings on a periodic basis (quarterly) to advise the member agencies on the status of OII Site project activities and developments. The Work Defendants' Project Coordinator (or their designees) shall participate in Interagency Committee meetings only at EPA's request.

3.4.3 Over-The-Shoulder Review Meetings

EPA and the Work Defendants may suggest review meetings be used to facilitate the timely presentation of project submittals to EPA for discussion and comments ("over-the-shoulder" review meetings). These meetings are used primarily for design and other significant submittals,

where informal review is required to keep EPA and its oversight representatives informed of the status of the submittal. Work Defendants shall participate in Over-the-Shoulder review meetings, when required by EPA to enhance coordination and streamline the technical review process.

3.4.4 Site Tours

Tours of the Site by interested agencies, industrial, public groups, or individuals may be conducted by EPA, or by the Work Defendants after prior notification and approval by EPA. Pursuant to applicable health and safety plans, Work Defendants' Project Coordinator shall work with the EPA Project Coordinator when such tours of the Site are to be arranged.

3.5 Site Access and Security

3.5.1 Requirements

The CD-8 Work Defendants' activities shall conform to provisions of Site Access and Security plans administered by CD-3 Work Defendants, parties responsible for performing CD-8 Excluded Work, other parties as authorized by EPA, and EPA. CD-8 Work Defendants shall propose adopting the same plans or shall submit new plans for EPA approval.

3.5.2 Exclusion Zones

Personnel shall be prohibited from entering an exclusion zone unless they have prior permission of the appropriate Project Coordinator for the party responsible for the work and unless they are in full compliance with that Project Coordinator's health and safety requirements. Exclusion zones may be established in various areas of the Site for the safe conduct of work under CD-8, other Consent Decrees, or other Site activities.

4.0 MANAGEMENT PLANS

4.1 Requirements

The purpose of the management plans is to provide a more detailed framework by which this SOW is to be executed. The management plans to be prepared by the Work Defendants shall include at least the following:

- Work Plan;
- Safety, Health and Emergency Response Plan (SHERP);
- Quality Assurance/Quality Control Plan (QA/QC Plan);
- Operations Plan (for operation and maintenance of site facilities and environmental control systems);
- Transition Plans (as required for Work Defendants' assumption of work on the Site that is being performed by other parties under agreements or orders enforced by EPA including assumption of responsibilities for operation and maintenance of North Parcel remediation systems);
- Project Proposal/Technical Memoranda (if necessary);
- Sampling Plans (to be incorporated into the Work Plan, remedial design investigations, and predesign activities as appropriate).

In preparation of the documents required by this SOW, the Work Defendants shall utilize to the maximum extent practicable the applicable management plans currently in effect and approved by EPA for conducting OII Site activities. Work Defendants shall modify such plans to meet the requirements of this SOW prior to submitting them to EPA for review and approval.

All management plans shall be submitted to EPA for review and approval pursuant to Section IX of CD-8. Schedules for submittals are set forth in Section 7.0 of this SOW.

EPA shall retain sole discretionary authority to approve, conditionally approve, or disapprove deliverables, modifications to the contents of each deliverable, or changes to the schedule for activities and submittal of deliverables proposed by the Work Defendants.

Upon approval by EPA, the Work Defendants shall implement subject to approved schedules the management plans for conducting activities as required by CD-8.

The Work Defendants shall submit to EPA for review and approval addenda to the following plans or revised plans to direct related field activities, significant Site system modifications or changes that are to be implemented: Safety, Health and Emergency Response Plan (SHERP); Quality Assurance/Quality Control Plan (QA/QC Plan); Long-Term Groundwater Monitoring Plan; and the Operations Plan (for operations, monitoring, and maintenance of site facilities and environmental control systems).

4.2 Plans

The following sections describe the management plans to be submitted.

4.2.1 Work Plan

Introduction

Work Defendants shall prepare and submit a Work Plan for EPA review and approval. The Work Plan shall be the primary plan by which the Work Defendants control the Work activities and achieve Performance Standards required by CD-8. It shall describe the procedures the Work Defendants will employ to perform the activities required and the specific objectives of these activities in performing the Work.

Provisions of the Work Plan shall allow for expediting the transition to the CD-8 Work Defendants from parties responsible for performing other activities at the Site, including CD-8 Excluded Work, CD-3 Work, and CD-3 Excluded Work.

Preparation of a Work Plan Outline is being undertaken as an early action activity through a separate agreement outside the scope of CD-8.

Contents

The Work Plan shall include a description of the anticipated sequencing of remedial design investigations, preliminary and final design, construction, and compliance testing for the Work required by this SOW.

The Work Plan shall include a section that specifically presents how the Work Defendants plan to meet the Performance Standards for each component system required pursuant to CD-8. For example, the Work Defendants shall present in this section of the Work Plan details on the perimeter liquids control implementation process (described in Section 5.2 of this SOW).

The Work Defendants shall describe in the Work Plan the procedures established to coordinate and integrate the Work with the other ongoing and anticipated site activities. Work Defendants shall include procedures for establishing and participating in daily site meetings as a routine method to assure work coordination and integration.

The Work Plan shall define responsibilities for management and organization of the work activities and for quality control activities. The staffing element of the Work Plan shall cover all of the Work activities. The responsibilities of the Work Defendants' Project Coordinator and key contractors involved in carrying out the Work required by CD-8 shall be presented in the Work Plan. The description of Work shall include not only the Work Defendants' activities but interactions between the Work Defendants and their contractors, and their subcontractors, and oversight and quality assurance/quality control of contractor and subcontractor activities.

The Work Defendants shall describe in the Work Plan the formal external communications procedures to be followed for coordination of the Work Defendants' activities with those activities conducted by other parties on the Site.

The Work Plan shall present a schedule for Work required by CD-8 that describes significant area-specific evaluations/remedial design investigations, preliminary and final design, construction, compliance testing, and performance monitoring activities. The schedule shall be maintained as an appendix to the Work Plan, outlining the phasing and sequencing of work activities; submittal of deliverables; and scheduled activity completion dates. During the course of Work under CD-8, the Work Defendants shall revise and update the schedule on a regular basis (e.g., monthly) to incorporate proposed Work schedule changes for approval by EPA. Upon EPA approval, this revised schedule shall supersede any previous schedule either contained in the Work Plan or previously submitted by the Work Defendants.

Additionally, the Work Plan shall include the following:

- Procedures for implementation of modifications to site facilities as may be required;
- Format for the Progress Report, pursuant to Section VII C.4.b. of CD-8;
- Format of regularly scheduled remedial design investigation, design, and construction progress meetings;
- Procedures for modifying the Work Plan, other management plans, and other deliverables and schedules required by this SOW;
- Activity-specific sampling plans for the remedial design investigations (these may be appended to the Work Plan);
- Procedures for the preparation of preliminary and final designs, and for conducting construction, and construction management activities;
- Procedures for design-specific review processes to accomplish regular and timely updates of design activities and design deliverables in progress;
- Procedures for initiating and implementing the Project Proposal/Technical Memorandum per Section 4.2.6 of this SOW.

4.2.2 Safety, Health, and Emergency Response Plan

Introduction

Each organization performing work on the Site operates under individual Safety, Health and Emergency Response Plans (SHERPs) or Health and Safety Plans. Monitoring and control of personnel working under the various SHERPs are the responsibility of each organization. Work Defendants shall prepare and submit a SHERP for EPA review and comment. The SHERP shall apply to both workers at the Site and public exposure to releases or spills at and from the LTS and related facilities (e.g., effluent sewer), perimeter liquids control systems, and all other facilities and environmental control systems at the Site (e.g., landfill gas control and treatment facilities and landfill cover). The SHERP shall include procedures for coordination between the

various parties conducting work at the Site and other emergency response agencies and personnel (e.g., police departments, fire department, etc.). The SHERP shall be developed in accordance with Section XII (Safety, Health and Emergency Response Plan) of CD-8, and to the extent possible, it shall be consistent with the existing SHERP(s) implemented for SCM/LMS activities and for Gas Control and Cover activities pursuant to the Third Partial Consent Decree.

Until EPA acceptance of the CD-8 Work Defendants' SHERP, the CD-8 Work Defendants shall comply with applicable existing health and safety plans.

Contents

The SHERP shall include at least the following basic elements:

- Introduction and Purpose;
- Applicable Laws and Regulations;
- Onsite Organization and Coordination;
- Medical Surveillance Program;
- Chemicals of Concern;
- Activities Hazard Analysis;
- Site Control, Work Zones, and Security Measures;
- General Safe Work Practices;
- Training;
- Personnel Protective Equipment;
- Onsite Work Plans;
- Safety Related Standard Operating Procedures;
- Communication Procedures;
- Personnel Exposure Monitoring Plan;
- Decontamination Procedures;
- Work Disruption Notification Procedures;
- Community Safety Plans;
- Emergency Response Plan, including:
  - A Contingency Plan;
  - Identification and responsibilities of an Emergency Coordinator;
  - Coordination with persons or organizations responsible for emergency response (e.g., fire department) beyond the landfill boundary;
- Procedures for updating and distributing the SHERP;
- Record Keeping Procedures;
- Requirements for Contractors and Subcontractors;
- Procedures for special activities.

Acceptance

While the Work Defendants shall obtain EPA acceptance of the SHERP prior to implementing the activities described in CD-8, EPA's comments on and acceptance of the SHERP shall not constitute EPA approval of the Health and Safety protocols and other health and safety

provisions of this Plan.

4.2.3 Quality Assurance/Quality Control Plan

Introduction
The Work Defendants shall prepare for EPA review and approval a Quality Assurance/Quality Control (QA/QC) Plan that shall establish quality procedures for all activities conducted by the Work Defendants. Addenda to the general QA/QC Plan and specific sampling plans shall be prepared as required for specific activities such as remedial design investigations, and shall be developed pursuant to Section XIII of CD-8.

Contents
The QA/QC Plan shall include the following elements:

Project organization and qualifications of QA/QC manager and staff;
Sampling and sample custody procedures, including sample site selection rationale;
Analytical methods/procedures;
Analytical/statistical/control procedures;
Data handling, analysis, validation, and reporting;
Routine monitoring;
Special testing;
Alternative test procedures;
Requirements for Contractors and Subcontractors;
Procedures for special activities;
Appendices:
General Construction QA Plan in accordance with EPA/530-SW-86-031.

Amendments to appropriate portions of the QA/QC Plan shall be provided with each design package.

4.2.4 Operations Plan

Introduction
Operations is defined to include both maintenance and monitoring of the Work, systems, and facilities pursuant to CD-8.

Work Defendants shall prepare, implement after approval by EPA, and amend if necessary, an Operations Plan that shall include procedures for performing site administration, management, operations, maintenance, and monitoring of site facilities and environmental control systems including, but not limited to, the following components:

- The existing Leachate Management Systems (includes the Leachate Treatment System);

- LTS modifications and aesthetic mitigation measures;
- Perimeter Liquids Control Systems;
- Thermal Destruction Facility;
- Groundwater well sampling and analyses;
- Site Access and Security activities;
- North Parcel Systems upon transition to the CD-8 Work Defendants from other parties;
- Other activities under CD-3 upon the transition to the CD-8 Work Defendants from other parties.

This Operations Plan shall include procedures that assure integration between new systems and existing systems and shall reference the Transition Plans as appropriate for components that may be performed as CD-3 Work, CD-3 Excluded Work, CD-7 activities, or CD-8 Excluded Work.

Contents
The following topics shall be included in the Operations Plan:

- Description of existing and new site facilities and environmental control systems being operated under CD-8;
- Integration and coordination requirements of the existing and new systems;
- Site Administration, utility and support facilities, data management and management information systems, and reporting;
- Procedures for verifying and documenting compliance with quality control requirements;
- Description of type and numbers of employees required to operate the facilities;
- Operational procedures (equipment and systems startup and shutdown, normal operational procedures, and procedures for abnormal conditions);
- Operational emergency response;
- Maintenance procedures and schedules;
- Compliance and process monitoring procedures and schedules;
- Parts and equipment inventory;
- Well abandonment design and construction procedures;
- Equipment decontamination procedures;
- Equipment salvage procedures;
- Formats for Incident Report, Noncompliance Notification, Compliance Action Plan, and Noncompliance Correction Report;
- Emergency Repair Plans;
- Appendices, including Sampling Plans for each of the monitoring and sampling activities,

and Management Information System (MIS) Users Manual;
- Management of wastes designated for off-site disposal pursuant to Section VII, Paragraphs A.8 and A.9 of CD-8.

This Plan shall describe at least the operating components, systems, and procedures listed below. To facilitate streamlining the development of project management plans, Work Defendants shall use to the maximum extent practicable existing documentation prepared under past and current decrees and orders as referenced in Appendix I of this SOW.

- Site Administration and General Operations
  - Site Administration;
  - Access and Institutional Controls;
  - Site Access and Security;
  - Landscaping and Irrigation;
  - Site Utilities and Support Facilities;
  - Data Management and Management Information Systems;
  - Reporting.
- General Monitoring Systems
  - Meteorological Station.
- Groundwater Monitoring
  - Maintenance of groundwater monitoring wells.
- Perimeter Liquids Control Systems
  - Liquid Extraction System;
  - Liquid Conveyance System;
  - Perimeter Liquids Control Monitoring Facilities;
  - Performance testing and documentation;
  - Planning for contingency measures.
- Gas Control and Cover Systems
  - Perimeter and Interior Gas Control System;
  - Thermal Destruction Facility;
  - Landfill Gas Monitoring System;
  - Landfill Cover System and Cover Monitoring System;
  - Surface Water Management System;
  - Performance testing and documentation;
  - Planning for contingency measures.
- Leachate Treatment System
  - Leachate collection and conveyance systems;
  - Leachate Treatment Plant (including sewer to CSDLAC system);
  - Performance testing and documentation;
  - Planning for contingency measures.
- Emergency Repair Plans
- Appendices

Standard Operating Procedures (operation, maintenance, monitoring);
Activity-Specific Sampling Plans.

The Work Defendants may amend the contents of the Operations Plan with prior written EPA approval.

4.2.5 Transition Plans

As required by EPA, the CD-8 Work Defendants shall develop transition plans and shall submit them to EPA for review and approval. These plans shall describe the procedures, documents, and required activities for the CD-8 Work Defendants to transition and assume work responsibilities from other parties who are conducting work at the Site including those parties performing work for CD-3, CD-3 Excluded Work, CD-7, and CD-8 Excluded Work. Subject to EPA approval, utilizing existing site documents may be sufficient to fulfill this requirement.

The Work Defendants shall describe in the transition plan the procedures established to coordinate and integrate the Work with the other site activities. Procedures for establishing and participating in daily site meetings as a routine method to assure work coordination and integration shall be included in the transition plan.

The transition plan shall define responsibilities for management and organization of the work activities and for quality control activities. The qualifications and responsibilities of the Work Defendants' Project Coordinator and personnel involved in carrying out the Work required by CD-8 shall be presented in the transition plan. The description of Work shall include not only the Work Defendants' activities but any interactions between the Work Defendants and their contractors, and their subcontractors, and oversight and quality assurance/quality control of contractor and subcontractor activities.

Plan Elements - Each plan shall include at least the elements described below. In the development of the transition plan, the CD-8 Work Defendants shall coordinate with EPA and others performing work at the Site in order to determine current and projected needs associated with the other ongoing work activities.

- Personnel and facilities mobilization logistics and schedule;
- Staffing approach and breakdown by discipline and organizational responsibility matrix, and the qualifications and responsibilities for the Work Defendants' Project Coordinator and personnel involved in carrying out the Work required by CD-8;
- Training of the Work Defendants' contractor, if applicable;
- The process and schedule for transition or transfer of existing and/or new acquisition of all insurance, operating, waste discharge and other permits, such as Environmental Laboratory Accreditation Program (ELAP) certifications for the on-site laboratory analytical activities, and permits and licenses required for conducting the Work specified by CD-8 including special maintenance activities required in easements and right-of-ways

under the control of other parties;
- Acquisition of EPA approval of proposed permitted treatment, storage, or disposal facilities (TSDF) in compliance with the EPA's "Off-Site Rule", National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR Section 300.440, September 22, 1993;
- Procedures for record keeping;
- Procedures to be used to amend or otherwise modify approved management plans and for incorporation of changes in required activities as may be proposed by the CD-8 Work Defendants or required by EPA;
- Procedures and schedule for verification that existing facilities being transitioned to CD-8 Work Defendants meet Performance Standards.

Plan Implementation - Upon approval by EPA, the Work Defendants shall implement the additional transition plans.

4.2.6 Project Proposal/Technical Memoranda

Either the Work Defendants or EPA may propose an improvement to an existing system or procedure. When such an improvement is proposed, Work Defendants shall prepare a formal Project Proposal/Technical Memorandum and submit it to EPA for review and approval in accordance with a schedule approved by EPA.

Either Work Defendants or EPA may propose an improvement affecting current levels of performance and functional capability of site facilities and environmental control systems or implementation of changes to approved monitoring and operating procedures and systems. When such an improvement or change is proposed, Work Defendants shall prepare a project proposal/technical memorandum and submit it to EPA for review and approval in accordance with a schedule approved or determined by EPA.

Minor improvements may be implemented by the Work Defendants without submittal of a Project Proposal/Technical Memorandum if proposed to and approved by EPA prior to its design and implementation.

Procedures for initiating and implementing the Project Proposal/Technical Memorandum shall be described in the Work Plan. Each project proposal/technical memorandum shall include at least the following elements unless otherwise approved by EPA:

- Summary of proposed improvements or activities;
- Need for improvement or activity;
- Evaluation of other alternatives;
- Operational effects;
- Coordination and integration activities;

- Cost effects for the short and long terms;
- Health and safety effects;
- List of deliverables including reports, reports of findings, other technical memoranda, predesign and designs, amendment of management plans, completion report;
- Progress submittals and reviews;
- Alternatives for implementation;
- Schedule for implementation (including submittals, allowances for EPA reviews, review conferences, and facility tours and inspections);
- Design and implementation precautions;
- Quality assurance/control procedures;
- Sampling and analysis plans.

Upon approval by EPA, the Work Defendants shall implement the activities included in the Project Proposal/Technical Memorandum.

4.2.7 Sampling Plans

Work Defendants shall develop sampling plans for monitoring and sampling activities and shall submit them to EPA for review and approval. Each plan shall comply with EPA guidelines and include at least the following components:

- Sampling rationale and description of techniques used in selecting sampling site (e.g., random, stratified, etc.);
- Specific sampling, preservation, and preparation procedures used, extraction methods, analytical references or descriptions (including sample size, types of sample containers, applicable samplers, etc.). For nonstandard or modified sampling methods, detailed procedures with appropriate references are required.;
- Sampling program organization, if needed;
- Description of sample container and sampler cleaning procedures for each type of container to be used following EPA guidelines or other appropriate procedures;
- Procedures to avoid sample contamination;
- Sample preservation methods and holding times, following EPA SW-846 guidelines or other appropriate references;
- Sample transportation requirements (following EPA and Department of Transportation guidelines, as applicable);
- Chain-of-Custody procedures, following the *National Enforcement Investigations Center Policies and Procedures Manual* (as revised), and the *National Enforcement Investigations Center Manual for the Evidence Audit* (as revised), as well as EPA SW-846 guidelines, and other appropriate references;
- Procedures and responsibility for data validation.

Upon approval by EPA, the Work Defendants shall implement the Sampling Plans.

5.0 ACTIVITIES

This Chapter presents the following Work activities which shall be undertaken by the Work Defendants pursuant to this SOW:

- Groundwater Monitoring and Evaluation;
- Perimeter Liquids Control Implementation;
- Remedial Design Investigations;
- Predesign Activities;
- Design Activities;
- Construction Activities;
- Compliance Testing and Evaluation Activities;
- Access and Institutional Controls Implementation;
- Site Administration;
- Operation and Maintenance of Site Facilities and Environmental Control Systems.

Work Defendants shall submit all deliverables to EPA for review and approval pursuant to Section IX of CD-8. Schedules for submittals are set forth in Section 7.0 of this SOW.

EPA shall retain sole discretionary authority to approve, conditionally approve, or disapprove deliverables, modifications to the contents of each deliverable, or changes to the schedule for activities and submittal of deliverables proposed by the Work Defendants.

5.1 Groundwater Monitoring and Evaluation

Except to the extent that this activity is undertaken as CD-8 Excluded Work, the Work Defendants shall design and implement a long-term groundwater monitoring program, as approved by EPA, to evaluate whether the Performance Standards for the perimeter liquids control and groundwater remedy are met, to evaluate whether natural attenuation of contaminated groundwater beyond the landfill perimeter is progressing as anticipated, and to detect potential future releases of contaminants from the landfill. In accordance with ARARs (*Table 21 of the Final ROD*), groundwater monitoring, as provided in this SOW, at the landfill perimeter point of compliance shall be required until EPA approval of the Final Work Completion Report. The requirements of the long-term groundwater monitoring program are described in Section 2.2.4. The activities required to implement the long-term groundwater monitoring program are described below.

Currently, interim groundwater monitoring activities, involving semiannual and annual sampling events, are being conducted as part of the ongoing site operations and monitoring activities. Interim groundwater monitoring activities shall continue as CD-8 Excluded Work or CD-8 Work until the Long-Term Groundwater Monitoring Plan has been approved by EPA for

implementation.

5.1.1 Long-Term Groundwater Monitoring Plan

The Work Defendants shall prepare a Long-Term Groundwater Monitoring Plan and submit it to EPA for review and approval. This plan shall describe the detection monitoring and compliance/performance monitoring programs to be implemented as part of the perimeter liquids control and groundwater cleanup remedy. The Long-Term Groundwater Monitoring Plan shall be submitted for review at two levels of completeness (Draft and Final). Preparation of the Long-Term Groundwater Monitoring Plan may be undertaken as an early action activity through a separate agreement outside the scope of CD-8. The Long-Term Groundwater Monitoring Plan shall include, at a minimum, the following:

- An introduction outlining the requirements, Performance Standards, and a description of the perimeter liquids control system and groundwater remedy.

- Description of the monitoring points to be used to represent the point of compliance. The point of compliance for perimeter liquids control is located at the downgradient boundary of the waste management unit as shown on Figure SOW-1. Monitoring wells shall be located as close to the approved point of compliance as is practical and accessible. Where EPA determines that suitable monitoring wells exist at the point of compliance, the groundwater monitoring program along the point of compliance may use them. Work Defendants shall construct additional point of compliance wells in the following areas if not performed as early action activities through a separate agreement with EPA:
  - Two well clusters, of two monitoring wells each, at the point of compliance along the western boundary of the landfill to replace existing monitoring wells OI-18A and OI-27A;
  - A single monitoring well at the point of compliance along the south perimeter of the landfill between monitoring wells OI-56P and OI-6;
  - A cluster of up to two monitoring wells along the point of compliance north of the Pomona Freeway near the Greenwood Avenue overpass.

  Upon EPA determination that additional point of compliance wells are needed, Work Defendants shall prepare preliminary and final design packages (in accordance with requirements of Section 5.4) for EPA reviews and approvals. Upon EPA approval of the final designs, Work Defendants shall install the new point of compliance wells.

- Description of and rationale for the detection/perimeter liquids control compliance monitoring program, including wells to be sampled, analytical parameters, sampling frequency, and sampling procedures.
  - This program shall incorporate semiannual sampling events.
  - Under the detection/compliance monitoring program, groundwater in the point of

compliance monitoring wells shall be tested for volatile organic compounds (VOCs), metals, cations/anions, and TDS during each sampling event. Groundwater in the point of compliance monitoring wells shall also be tested once every five years for pesticides/PCBs, and cyanide, and once every three years for semivolatile organics.

- Description of and rationale for water level monitoring activities, including monitoring locations, frequency, and procedures.

- Description of investigation to evaluate the presence of nickel in monitoring wells north and northwest of the landfill, including at least the following elements:
  - Updated review of nickel spatial and temporal trends in monitoring wells;
  - Extended purging, sampling, and analyses of selected monitoring wells;
  - Evaluation of nickel solubility and groundwater quality using both existing data and the newly generated data;
  - Provisions of a second phase of data collection that, if EPA deems necessary, shall involve collection of subsurface soil samples at appropriate depth intervals near existing monitoring wells.

- Description of and rationale for the program that will be used to evaluate the operations and performance of natural attenuation including wells to be sampled, analytical parameters, sampling frequency, and sampling procedures.
  - This program shall incorporate semiannual sampling events.
  - To supplement the current monitoring well network, three additional groundwater monitoring wells beyond the landfill boundary shall be constructed in the following areas:
    - + Southeast of well OI-55A* and northeast of well OI-34A*;
    - + East of well OI-30A*;
    - + West of wells OI-58A/58B*
    - * These wells may be installed as an early action activity through a separate agreement outside the scope of CD-8.
  - For additional monitoring wells beyond the landfill boundary required by EPA, Work Defendants shall prepare preliminary and final design packages (in accordance with Section 5.4) for EPA review and approval. Upon EPA approval of the final designs, Work Defendants shall install the new monitoring wells.
  - The Work Defendants shall propose, subject to EPA approval, approximately 5 to 10 organic and inorganic contaminants (10 to 15 total constituents) that shall be the primary focus of natural attenuation evaluations. The evaluation of natural attenuation shall consider all the groundwater data but shall primarily focus on these contaminants.
  - Specific subareas and associated wells to be used in the evaluation of natural attenuation shall be described.

  - The frequency of groundwater sampling of wells beyond the landfill boundary, except for Groundwater Compliance Line monitoring, may be changed to annual, upon approval by EPA, in areas where contaminants have not been verified to exceed the cleanup standards. The future reduction of monitoring frequency of wells beyond the landfill boundary from semiannual to annual in areas previously or currently affected by contaminants shall be subject to EPA approval, after the performance and efficacy of the natural attenuation remedial action has been monitored and verified over an appropriate period following implementation of perimeter liquids control remedial actions.
  - Monitoring wells beyond the landfill boundary in areas where contaminants do not currently exceed the cleanup standards and where exceedances are not expected in the future (based on the requirements included in Table SOW-2), except those to be used for monitoring the Groundwater Compliance Lines, may be removed from the monitoring program, and abandoned, upon EPA approval, following a demonstration to EPA's satisfaction that natural attenuation is progressing as anticipated in the Final ROD.

- Description of and rationale for the Groundwater Compliance Line monitoring program that will be used to evaluate groundwater cleanup as described in Section 2.2.3, including locations of existing and new sentinel wells to be sampled, analytical parameters, sampling frequency, and sampling procedures.
  - Installation details shall be included for any new sentinel monitoring wells that are located in areas where the closest existing upgradient monitoring well already has verified groundwater cleanup standard exceedances; details shall include well locations, well depths, and schedule for design (preliminary and final designs in accordance with Section 5.4) and construction.
  - For future proposed sentinel monitoring well locations downgradient of existing monitoring wells that do not currently have verified groundwater cleanup standard exceedances, installation details shall be provided by the Work Defendants in the appropriate Annual Groundwater Monitoring and Evaluation Report (Section 5.1.2.2) for EPA review and approval.
  - Sampling frequency shall be every two years unless otherwise required or approved by EPA.
  - Analytical parameters and sampling procedures shall be the same as those used for evaluating the progress of natural attenuation (described above).

- Description of the contingency actions as described in Section 2.2.3 that will be implemented if EPA determines that the natural attenuation remedial action is not progressing as expected (as described in Section 2.2.3).

- Description of monitoring procedures for demonstrating completion of the natural attenuation remedial action for groundwater cleanup beyond the landfill boundary.

- Identification of the analytical laboratory to be used, and sampling documentation and laboratory quality control methods. The groundwater analyses shall be performed by a State-certified laboratory capable of preparing CLP-equivalent data packages to allow for data validation. Work Defendants may propose to incorporate these procedures into the QA/QC Manual for EPA review and approval.

- Procedures and responsibility for data validation. Full data validation review of laboratory analyses shall be conducted for a minimum of 10 percent of the sample data collected during monitoring events. Work Defendants may propose to incorporate these procedures into the QA/QC Manual for EPA review and approval.

- Description of the statistical analyses and methods to be used in evaluating the water quality data collected during detection monitoring and compliance/performance monitoring and evaluating the progress of natural attenuation. The statistical methods proposed shall be consistent with the statistical methods and approaches described in EPA's *Superfund Guidance on Ground-Water Remedy Performance Monitoring*, draft guidance dated August 1995, or other methods as proposed by the Work Defendants and approved by EPA.

- Description of the field sampling procedures, sample management procedures, QA/QC procedures, and data management and reporting procedures.

- Schedule for monitoring and reporting.

Upon EPA approval of the Long-Term Groundwater Monitoring Plan, Work Defendants shall implement it except for the portion that is performed by other parties as CD-8 Excluded Work.

5.1.2 Groundwater Monitoring Reports

To the extent that the activities are not performed by others under CD-8 Excluded Work, the Work Defendants shall submit groundwater data reports and groundwater monitoring and evaluation reports for EPA review for all groundwater monitoring and sampling activities performed under CD-8. Work Defendants shall conduct two rounds of groundwater monitoring the same month each calendar year, six months apart, unless otherwise directed by EPA. Data from the first round of groundwater monitoring performed each year shall be presented in a Groundwater Data Report. Data from the second round of groundwater monitoring performed each year shall be presented in an Annual Groundwater Monitoring and Evaluation Report, which shall evaluate and document the results of both groundwater monitoring events conducted during the calendar year. The requirements for the groundwater monitoring reports are described below.

5.1.2.1 Groundwater Data Report

Work Defendants shall submit a Groundwater Data Report, with the analytical results for the first groundwater sampling round performed each year to EPA within twelve (12) weeks following completion of the groundwater sampling event. The Groundwater Data Report shall include a brief summary of the monitoring activities, including any deviations from the Long-Term Groundwater Monitoring Plan, and present the water level measurements and field sampling records for the monitoring round performed, identify monitoring wells and specific contaminants that exceed the chemical performance standards for perimeter liquids control or the groundwater cleanup standards. The Groundwater Data Report shall also identify any well maintenance or repair activities that should be conducted before the next groundwater monitoring event.

Prior to submitting the Groundwater Data Report, within 4 weeks of receipt of groundwater sampling data, the Work Defendants shall notify EPA of exceedances in groundwater cleanup or chemical performance standards. Based on EPA's evaluation of these data, EPA may direct the Work Defendants to perform additional groundwater sampling and analyses.

5.1.2.2 Annual Groundwater Monitoring and Evaluation Report

An annual Groundwater Monitoring and Evaluation Report shall be prepared to document the results and evaluation of the detection groundwater monitoring and compliance/performance monitoring programs. Upon approval of the Long-Term Groundwater Monitoring Plan, the Work Defendants shall submit the Draft Annual Groundwater Monitoring and Evaluation Report annually to EPA within sixteen (16) weeks following completion of the second semiannual groundwater monitoring event. The Annual Groundwater Monitoring and Evaluation Report shall provide the following information:

- Summary of the requirements of the detection monitoring and compliance/performance monitoring programs;

- Summary of the monitoring and sampling activities completed during the calendar year monitoring period and schedule for future monitoring activities;

- Summary and evaluation of groundwater sample analyses and water level measurements obtained during the calendar year monitoring period. A tabular listing of current and historic sampling results by well and by sample date shall be included as an appendix;

- Potentiometric surface maps prepared for the primary groundwater flow units and discussion of horizontal and vertical hydraulic gradients;

- Discussion of baseline groundwater conditions to be used for evaluating monitoring data collected during future performance monitoring;

- Identification of monitoring wells and specific contaminants that exceed the chemical performance standards for perimeter liquids control or the groundwater cleanup standards;

- Interpretative maps and cross section(s) of water quality data to evaluate the performance of the perimeter liquids control system(s) and natural attenuation;

- Description of the components and operation of the perimeter liquids control system(s), compliance monitoring system, and groundwater remedy;

- Presentation and evaluation of compliance/performance monitoring results for the perimeter liquids control systems, including statistical and trend analyses performed;

- Presentation of the Annual Compliance Evaluation Review which provides discussion of natural attenuation monitoring results and assessment of the progress of the natural attenuation groundwater remedy, as described in Section 5.6.3;

- Presentation of the Annual Compliance Evaluation Review shall also include discussion of the detection monitoring results, including statistical analyses performed;

- Proposed additional Groundwater Compliance Line sentinel wells based on most recent groundwater monitoring data indicating verification of a groundwater cleanup standard exceedance at the furthest downgradient existing monitoring well between the landfill boundary and the Groundwater Compliance Lines; Work Defendants shall include well locations, well depths, and details of and schedule for design (preliminary and final designs in accordance with Section 5.4) and construction;

- Summary of QA/QC activities performed and data quality issues identified during the monitoring period;

- Discussion of any monitoring well maintenance or repair completed during the monitoring period, or required before the next monitoring event;

- Discussion of the adequacy of the current monitoring program and any proposed changes or additions to the detection monitoring and compliance/performance monitoring programs, including recommendations for new wells;

- Status and schedule for detection monitoring, compliance/performance monitoring activities, and compliance testing activities.

Prior to submitting the Draft Annual Groundwater Monitoring and Evaluation Report, within 4 weeks of receipt of groundwater sampling data from the second semiannual groundwater

monitoring event, the Work Defendants shall notify EPA of exceedances in groundwater cleanup or chemical performance standards. Based on EPA's evaluation of these data, EPA may direct the Work Defendants to perform additional groundwater sampling and analyses.

5.2 Perimeter Liquids Control Implementation

The Work Defendants shall implement perimeter liquids control in accordance with the process outlined in this section. To achieve the requirement, Work Defendants shall install and operate perimeter liquids control systems in areas where contaminants are migrating from the landfill at levels that cause contaminants of concern in groundwater at the point of compliance to exceed chemical performance standards. The chemical performance standards for perimeter liquids control are listed in *Table 15* of the *Final ROD*. Comparisons to chemical performance standards shall be based on groundwater concentrations measured in monitoring wells along the point of compliance. Work Defendants shall initiate a perimeter liquids control action when exceedances of the chemical performance standards are detected and verified at the point of compliance. Implementation of a perimeter liquids control action in any area is a four step process including:

1. Detection/Chemical Performance Standards Compliance Monitoring;

2. Remedial Design Investigation/Perimeter Liquids Control Implementation;

3. Perimeter Liquids Control Performance and Compliance Monitoring;

4. Perimeter Liquids Control Completion.

A more detailed description of these four steps of perimeter liquids control implementation is provided below. A general decision tree diagram which defines the required implementation process is shown in Figure SOW-2.

5.2.1 Detection/Compliance Monitoring

Work Defendants shall conduct detection and compliance groundwater monitoring in accordance with the Long-Term Groundwater Monitoring Plan to be prepared in accordance with Section 5.1 of this SOW.

Work Defendants shall compare the chemical performance standards presented in *Table 15* of the *Final ROD* to the concentration of the corresponding contaminants of concern, as reported in the groundwater monitoring data from individual wells at the point of compliance.

An exceedance of the chemical performance standards is considered to be verified if the concentration exceeds the chemical performance standards in either of the subsequent two sampling events. EPA may require sampling at a higher frequency for wells where new

exceedances of chemical performance standards are detected.

Any exceedances of the chemical performance standards in the monitoring program must be verified before a perimeter liquids control response action is initiated.

5.2.2 Remedial Design Investigation/Perimeter Liquids Control Implementation

If a chemical performance standards exceedance is verified, Work Defendants shall perform an "Area-Specific Evaluation" (ASE) to characterize the nature of the release and the potential for migration beyond the landfill boundary, and to evaluate whether a more detailed remedial design investigation should be performed prior to remedial design. EPA will determine the "Area" to be evaluated in an ASE. In general, it is the area in the vicinity of the monitoring well or wells where the verified chemical performance standard exceedances occur. The area-specific evaluation shall include:

- Characteristics of the release, including contaminants detected; range of concentrations; and analysis of potential sources of contamination (e.g., landfill gas or leachate);
- Extent of contamination (lateral and downgradient or beyond the landfill boundary);
- Hydrogeologic conditions in the area and the potential rate of contaminant migration.

Work Defendants shall conduct supplemental groundwater monitoring in the affected area including installation of additional monitoring wells as part of the area-specific evaluation, if required by EPA.

At a minimum, Work Defendants shall evaluate the following factors as part of the area-specific evaluation:

- the potential persistence and concentration of contaminants detected in groundwater at the point of compliance;
- the potential for contaminant migration into downgradient areas, including evidence of migration beyond the landfill boundary or exceedances of Groundwater Cleanup Standards.

Work Defendants shall include in the area-specific evaluation recommendations for the priority and magnitude of perimeter liquids control action(s) required and recommendations on the need for a more detailed remedial design investigation. Work Defendants shall perform remedial design investigations to collect additional information on the nature of the release and to support selection and design of the perimeter liquids control actions, if required by EPA.

Work Defendants shall provide specific details of the area-specific evaluation process in the Work Plan to be developed in accordance with Section 4.2 of this SOW. The Work Defendants shall present the results of the area-specific evaluation in an Area-Specific Evaluation Report and shall submit the report for EPA review and approval. This report shall include proposals and schedules for performing remedial design investigations and preliminary design activities. Upon approval of the Area-Specific Evaluation Report, Work Defendants shall implement it.

Work Defendants shall base the design of the perimeter liquids control remedial action on information developed during the area-specific evaluation and remedial design investigation, if performed. During predesign, Work Defendants shall identify specific perimeter liquids control remedial actions and shall evaluate them through an alternatives evaluation process, that will assess the potential for alternative perimeter liquids control remedial actions to achieve the perimeter liquids control Performance Standards. The evaluation and selection of appropriate perimeter liquids control remedial action(s) in the alternatives evaluation shall consider, at a minimum:

- the potential persistence and concentration of contaminants detected in groundwater at the point of compliance;
- the potential for contaminant migration into downgradient areas, including evidence of migration beyond the landfill boundary, or exceedances of Groundwater Cleanup Standards;
- the potential migration pathways of exposure and impacts on human health, or the environment, if the contaminants migrate beyond the point of compliance;
- the ability of the remedial action to control the contaminants at issue;
- the effectiveness of the remedial action in controlling contaminant migration;
- compatibility/consistency with other remedial actions already implemented at the Site;
- compliance with ARARs identified in the Final ROD.

Upon EPA approval, Work Defendants may implement perimeter liquids control actions incrementally if appropriate for the specific area. The perimeter liquids control remedial action(s) must be consistent with the information developed during the area-specific evaluation and remedial design investigation, if performed. A range of potential actions that may be appropriate for perimeter liquids control is listed in Table SOW-1. Subject to EPA approval, other perimeter liquids control remedial actions may also be considered and proposed, if appropriate for a specific area.

As indicated in Section 2.1 of this SOW and the Final ROD, Work Defendants shall initiate perimeter liquids control actions in four areas of the landfill perimeter where chemical performance standards exceedances have already been verified. Implementation shall start with an area-specific evaluation. The Work Defendants shall perform the first area-specific evaluation for the following four areas:

- The northwest corner near OI-19A/C;
- The north central boundary near CDD-13/OI-61A;
- The north central boundary near OI-24B;
- The northeast boundary near OI-20A/30A and OI-60A.

The Work Defendants shall submit a single area-specific evaluation report covering these four areas for EPA review and approval. Upon approval by EPA, the Work Defendants shall follow these initial area-specific evaluations with a remedial design investigation (process is described in Section 5.3 of this SOW) and/or preliminary design (process described in Section 5.4 of this SOW) as appropriate for implementing perimeter liquids control systems. The first area-specific evaluation is being undertaken as an early action activity through a separate agreement outside the scope of CD-8.

Initial perimeter liquids control actions have already been initiated by construction and startup of the SWEAP system along the southeast, southwest and western boundary of the South Parcel. In the SWEAP area, Work Defendants shall install four additional liquids extraction wells to complete initial implementation, two each in the vicinity of PE7/PE8 and PE12/PE13. These wells may be installed as an early action activity through a separate agreement outside the scope of CD-8. In the event that these four wells are not installed as early action items by others, the Work Defendants shall prepare design documents, consistent with the requirements of Section 5.4, for EPA approval, and construct the remaining four extraction wells in the SWEAP area. For these four wells and the SWEAP perimeter liquids control system in its entirety, the Work Defendants shall perform compliance testing activities and construction completion reporting activities consistent with the requirements of Sections 5.6 and 5.5, respectively, in this SOW, for EPA approval.

5.2.3 Perimeter Liquids Control Performance Monitoring and Compliance

As part of the perimeter liquids control design process, Work Defendants shall prepare a compliance testing plan for each perimeter liquids control action for EPA review and approval. This plan shall include, at a minimum:

- Perimeter liquids control Performance Standards for discrete areas of the landfill perimeter. These requirements shall be consistent with overall remedial action requirements and could include hydraulic control, or potentially other measures acceptable to EPA.

- Identification of the basis for performance evaluation. This includes the specific parameters to be measured (including water level measurements and related hydraulic data/information), measurement frequency, and evaluation procedures to be used to demonstrate that the perimeter liquids control system is complying with Performance Standards. For Performance Standards that include hydraulic control, the following performance evaluation factors shall be considered:
  - The presence of liquids (i.e., has the perimeter area been dewatered?);
  - Reversal of hydraulic gradient within the area where liquids are actively extracted;
  - Substantial lowering of liquid levels in perimeter areas as compared to historic levels, such that overlapping capture zones of adjoining extraction wells can be inferred.
- Identification of contingency actions that could be implemented if Performance Standards are not met. Contingency actions shall be based on an evaluation of the monitoring performance data. Contingency actions may be incremental and commensurate with the potential magnitude of the release, as determined by EPA.

Upon approval by EPA, the Work Defendants shall implement the perimeter liquids control compliance testing plans.

In areas where active perimeter liquids control actions are not occurring, EPA will determine compliance based on comparison of contaminant concentrations from wells on the point of compliance to the chemical performance standards presented in *Table 15* of the *Final ROD*, as described above.

Work Defendants shall evaluate the performance and compliance of perimeter liquids control remedial action(s) annually, and shall prepare and submit a report with the Annual Groundwater Monitoring and Evaluation Report (described in Section 5.1.2.2) to EPA for review and approval.

5.2.4 Perimeter Liquids Control Completion

Work Defendants may request EPA to suspend perimeter liquids control actions after demonstration to EPA's satisfaction that Performance Standards have been met. The demonstration shall verify that:

- Landfill liquids are no longer present in the extraction zone at the landfill perimeter for three consecutive years; or

- No exceedances of chemical performance standards are detected and verified (as described above) at the point of compliance for the last three consecutive years and there are no statistically significant increasing trends in concentrations of contaminants.

Work Defendants shall operate and maintain the perimeter liquids control components until EPA approves this request. If EPA determines that Performance Standards have not been met for the perimeter liquids control component for any portion of the landfill perimeter, EPA will notify the Work Defendants in writing of the activities that must be undertaken by the Work Defendants and set forth in the notice a schedule for performance of such activities consistent with the Consent Decree and this SOW or require the Work Defendants to submit a schedule to EPA for review and approval. If EPA concludes that Performance Standards have been met and that no further perimeter liquids control action is warranted, EPA will notify the Work Defendants in writing and the Work Defendants may suspend operation of the perimeter control system in these areas while they continue to operate and maintain other portions of the perimeter liquids control systems. In accordance with Section 2.2.4, Work Defendants shall continue detection monitoring in areas where perimeter liquids control has been suspended.

5.3 Remedial Design Investigations

The Work Defendants shall implement remedial design investigations that will generate data necessary to proceed with remedial design. As described above in Section 5.2, the need for remedial design investigations in specific areas may arise at different times throughout the perimeter liquids control implementation process. The requirements and components of these remedial design investigations shall be developed as part of the area-specific evaluation process described in Section 5.2. Work Defendants shall incorporate the following data collection and evaluation activities into the First Remedial Design Investigation:

- Installation of up to two monitoring wells* and collection of groundwater samples to fill data gaps along the point of compliance north of the Pomona Freeway near the Greenwood Avenue overpass (* These wells are being installed as an early action activity through a separate agreement outside the scope of CD-8.);

- Further delineation of contaminated groundwater beyond the point of compliance that exceeds groundwater cleanup standards, including installation of monitoring wells and collection of groundwater samples in the following areas:
  - Southeast of well OI-55A* and northeast of well OI-34A*;
  - East of well OI-30A*;
  - West of wells OI-58A /58B*;
  - * These wells are being installed as an early action activity through a separate agreement outside the scope of CD-8.
  - At the northwest corner of the South Parcel near OI-19B, if required by EPA after reviewing findings of the area-specific evaluations.

After the Work Defendants perform the First Remedial Design Investigation, EPA will review the results of this first remedial investigation and confirm or adjust the representation of the extent of contamination and organic and inorganic Groundwater Compliance Lines shown on Figure SOW-3 for these areas.

For each remedial design investigation, unless not required by EPA, the Work Defendants shall prepare a Remedial Design Investigation Work Plan (RDIWP) for EPA approval that describes the data collection and evaluation activities needed to proceed with remedial design. The RDIWP shall describe procedures to ensure that sample collection and analytical activities are conducted in accordance with data quality objectives (DQOs) and technically acceptable protocols. The RDIWP shall include a sampling plan and an activity-specific QA/QC plan. Sampling plan and QA/QC plan requirements are outlined in Sections 4.2.7 and 4.2.3, respectively. If approved by EPA, the RDIWP can reference previously-developed sampling plans and QA/QC plans. Subject to EPA approval, the RDIWP shall also include a schedule for field investigation, sample analysis and reporting activities.

In addition to the field activities, the RDIWP shall describe the data evaluation activities to be performed by Work Defendants to meet the requirements of the remedial design investigation. The Work Defendants shall precede the first remedial design investigation with the preparation of a RDIWP.

At the conclusion of each Remedial Design Investigation, the Work Defendants shall evaluate whether the chemical performance standards have been achieved without further remedial actions, in which case, the findings shall be presented in a Remedial Design Investigation Report to EPA for review and approval. This report shall present all findings from the remedial design investigation, including:

- Documentation of field procedures, including record drawings, analytical results, testing results, quality control records;

- Evaluation of field results with regard to the specific requirements for the Remedial Design Investigation.

Remedial design investigations for related work activities may be incorporated into a single RDIWP and/or Remedial Design Investigation Report where appropriate and approved by EPA.

If EPA determines that the results of the Remedial Design Investigation demonstrate that the chemical performance standards continue to be exceeded at the point of compliance, the Work Defendants shall proceed with preliminary design of a perimeter liquids control system, as described below. The Work Defendants shall submit either a separate Remedial Design Investigation Report at the completion of the Remedial Design Investigation, or a combined Remedial Design Investigation/Preliminary Design Report at the completion of Preliminary

Design, for EPA review and approval. Specific reporting requirements and practices shall be included in the RDIWP.

5.4 Preliminary and Final Design Activities

Except as otherwise approved by EPA in the Work Plan, or appropriate Area-Specific Evaluation Reports, or Remedial Design Investigation Reports, Work Defendants shall perform preliminary design and final design activities described below for implementation of all remedial actions, systems and facilities required in the Work pursuant to CD-8. These remedial systems and facilities include: Perimeter Liquids Control actions; Leachate Treatment System Modifications and Aesthetic Mitigation Measures; additional groundwater monitoring wells; and Site Facilities Improvements, as approved by EPA. Work Defendants shall perform these design activities for each part of the larger system if the total system or facility is to be implemented incrementally as approved by EPA.

5.4.1 Preliminary Design Activities

Work Defendants shall include the following types of predesign and design activities in the Preliminary Design:

Existing System Conditions and Performance Data Evaluation
In this activity, Work Defendants shall evaluate existing information related to implementation of new systems required for the Work including, but not necessarily limited to, existing liquids conveyance and treatment and disposal capacities, and characterization (volumes and treatability) of site-related liquids to be collected in the perimeter liquids control system as determined by related remedial design investigations described in Sections 5.2, or activities required for implementation of other remedial actions at the Site. Work Defendants shall incorporate findings from appropriate Area-Specific Evaluation Reports and Remedial Design Investigation Reports described in Section 5.2 and 5.3 of this SOW, as approved by EPA, into preliminary designs.

The Work Defendants shall describe portions of the existing systems which may be incorporated into the Work and the manner in which they may be integrated into the Work. Also, Work Defendants shall provide descriptions of existing systems which will not be utilized, including the manner in which they will be removed from operation, abandoned in place or permanently removed.

Selection Criteria Development
The Work Defendants shall propose selection criteria to be utilized during their system selection for implementation of each of the remedial systems or facilities included in the Work. Selection criteria shall be based on requirements and Performance Standards pursuant to Section 2.0 of this SOW.

Alternatives Identification and Evaluation
The Work Defendants shall identify alternatives to be considered for each major remedial system and components thereof to be implemented in the Work and shall propose the criteria to be used for final selection for components where more than one alternative is considered. Work Defendants shall propose components based on an evaluation of how alternatives meet the requirements and Performance Standards in Section 2.0 of this SOW. Evaluations shall be presented for the following elements:

- Perimeter Liquids Control components (including liquid conveyance) considering the alternatives described in Table SOW-1. Subject to EPA approval, other perimeter liquids control remedial actions may also be considered and proposed, if appropriate for a specific area. Work Defendants shall include consideration of factors described in Section 5.2.2 of this SOW in the evaluation of perimeter liquids control alternatives.

- Leachate Treatment Systems modifications, including all necessary temporary facilities to allow for maintaining operations in compliance with CSDLAC and EPA requirements for all site-associated liquid volumes and flowrates during predesign evaluations and construction of new components required pursuant to this SOW;

- Groundwater Monitoring Well Installations;

- Site Facilities Improvements, if necessary;

- Gas Control and Cover improvements, if necessary;

- LMS improvements, if necessary.

Alternative analyses shall also consider most appropriate construction sequences including the following factors:

- Location of systems with respect to residences;
- Potential requirements that certain elements of Work be completed before other elements can be started;
- Integration and coordination with activities at the Site being performed by others.

Data Collection and Engineering Calculations
The Work Defendants shall provide engineering calculations including collection of additional information and data necessary to propose components of the remedial system/facility for EPA approval where more than one option is being considered.

- Special data gathering requirements shall be identified as early as possible to avoid delay to predesign process (i.e., evaluate during preparation of the Area-Specific Evaluation).
- Analyses of alternatives shall include adequate engineering analyses to determine the degree to which selected system components satisfy selection criteria.

Systems Selection
The Work Defendants shall propose, for EPA approval, the preferred alternative for each remedial system to be implemented as part of the Work. Selection shall be based on evaluation of how alternatives satisfy Performance Standards and requirements in this SOW. The selection process shall evaluate interim and long-term operation, maintenance, and monitoring considerations.

Preliminary Design Report Preparation - The Work Defendants shall prepare and submit Preliminary Design Reports to document their preliminary design activities for EPA review and approval. These Reports shall include at least the following sections:

- Introduction and Purpose;
- General Description of the Selected Components;
- Discussion of how Performance Standards are analyzed and incorporated into the design;
- Components proposed for various areas of the Site and rationale;
- Integration of design and construction;
- Construction phasing;
- Presentation of Selection Criteria
  - Selection criteria applied for development of the selected systems that meet requirements in this SOW;
- Summary of information obtained from remedial design investigations and other field investigations and studies which will affect design activities;
- Description of existing systems conditions and performance data for leachate treatment system (conveyance, treatment, and disposal), wells, probes, piping, etc.;
- Description of existing systems conditions and performance data for landfill gas control, landfill cover, and landfill surface water management systems;
- Geologic conditions which may affect control component depth and spacing;
- Lateral and vertical extent of groundwater contamination which may affect nature and location of perimeter liquids control components;
- Additional factors considered in formulating the proposed systems (relative to LTS modifications, factors such as contingency plans for handling higher or lower liquid volumes and higher or lower chemical loadings than identified in remedial design investigations shall be discussed);
- Description of Alternatives Evaluated
  - Alternative components, configurations, alignments, locations, and operation and maintenance considerations evaluated;
- Detailed Descriptions of the Systems

  - Component construction techniques;
  - Construction techniques for environmental controls (to minimize effects of dust, noise, odors, emissions, traffic, risks to human health and the environment, etc.)
  - Anticipated liquids pumping requirements;
  - Special perimeter preparation requirements;
  - Cross sections for well locations;
  - Gas and liquid conveyance pipeline alignments;
  - LTS modifications;
  - Details showing how constructed components will be integrated with adjacent systems at time of construction;
  - Integration requirements where new systems will be connected to existing systems;
  - Provisions to be included to assure access required for construction, maintenance, and monitoring;
  - Provisions to maintain access to existing systems;
  - Preliminary discussion of construction procurement procedures for different components;
  - Observations, monitoring procedures and criteria to be used to evaluate constructed system performance and determine where additional components may be necessary.
- Basis for Design
  - Principal Design Criteria;
  - Applicable design and construction standards and codes.
- Preliminary Design Phasing Concepts and Schedules
  - General manner for phasing;
  - Integration of new with existing systems.
- Preliminary Construction Phasing Concepts and Schedules
  - General manner for phasing;
  - Integration of new with existing systems.
- Preliminary Design/Build Concepts and Schedules
  - General manner for phasing;
  - Integration of new with existing systems.
- Preliminary Fast-track Concepts and Schedules
  - Accelerated site preparations planning;
  - Accelerated equipment procurement.
- System prestartup
- Compliance Testing Plan (procedures, report formats)
- Special operations personnel training requirements
- Spare parts inventory requirements
- Preliminary Design Drawings
  - Plan of existing site conditions and facilities;
  - Property boundary and survey control plan.

- Preliminary Design Specifications
  - Table of contents for technical specifications; reference to source specifications from other design approved by EPA for work previously constructed on the Site.
- Preliminary Design Calculations (with source information referenced).

5.4.2 Final Design Activities

Except as modified by the approved Work Plan, Area-Specific Evaluation Reports, Remedial Design Investigation Reports, or Preliminary Design, the Work Defendants shall perform final design activities for each facility and for each part if the total system is implemented incrementally for: Perimeter Liquids Control actions; Leachate Treatment System Modifications and Aesthetic Mitigation Measures (to the extent that the work is not performed as work by other parties); additional groundwater monitoring wells; and Site Facilities Improvements, as approved by EPA.

Work Defendants shall conduct design activities in accordance with the plans and schedules set forth in Preliminary Design Report(s) as approved by EPA, and shall prepare final design documents necessary for constructing the Work. Applicable design concepts and details from facilities designed and constructed under CD-1 and CD-3, and other parties performing work at the Site shall be used where appropriate.

Work Defendants shall include information in the design that describes how Performance Standards are incorporated into the design. Design parameters dictated by these Performance Standards shall be identified.

Except as modified by the Work Plan, or in accordance with subsequent revisions as proposed by the Work Defendants and approved by EPA, or as directed by EPA, Work Defendants shall submit design for review at two levels of completeness (Prefinal 90% and Final 100%). On-going coordination of the Work Defendant's design activities shall be conducted by the procedures approved by EPA in the Work Plan or by over-the-shoulder meetings and other communications as described in Section 3.0 of this SOW so that EPA is assured the appropriate quality and type of design information is being prepared.

<u>Work Defendants shall include at least the following in the Prefinal - 90% Design Package:</u>

- Design Drawings
  - Drawings from the Preliminary Design package revised as required;
  - Sections and details;
  - Typical details and sections;
  - Mechanical, electrical, and instrumentation sheets;
  - Systems integration sheets and details;
  - Phasing/construction sequencing plan;
  - Plans and details for replacement or repair of existing systems and facilities.

- Design Specifications
  - Final technical specifications for all items to be constructed;
  - Specifications and schedules for repair or replacement of any existing site facility or environmental control system that will be altered, destroyed, or abandoned during construction;
  - Special provisions of the specifications that identify contractor's responsibilities while on the site and other requirements such as QA/QC procedures, health and safety precautions, and coordination requirements;
  - Special conditions, construction and equipment specifications for handling liquids and other residuals encountered or generated during construction.
- Design Calculations (with source information referenced); liquid quantity (volumes and flowrate) estimates;
- Design Report
  - Items from the Preliminary Design, revised as required;
  - Description of staging area requirements and contractor access plans and procedures;
  - Identification of the specific elements of the design submittal related to CD-3; Excluded Work and CD-8 Excluded Work;
  - Copies of required permits, regulatory agency approvals, and access agreements obtained; or schedules for obtaining any outstanding permits, regulatory agency approvals and access agreements prior to start of construction;
  - Final construction schedule including proposed phasing, prestartup, startup, and Compliance Testing activities;
  - Final Construction Quality Assurance Plan;
  - Format for the Construction As-built Report;
  - Bid packages;
  - Draft operation and maintenance procedures which will be expanded and included in subsequent design packages;
  - Procedures for modifying final plans and designs after approval;
  - Procedures for documenting field changes during construction;
  - Prestartup and startup plans.

<u>Work Defendants shall include at least the following in the Final - 100% Design Package:</u>

- Design Drawings
  - Revision to the 90% Design drawings as required.
- Design Specifications
  - Revision to the 90% technical and general specifications as required.
- Design Calculations
  - Revisions to the 90% Design calculations as required;
  - Final quantity estimates.
- Design Report
  - Revisions to the 90% Design Report as required.

- Bid Packages
  Revisions to the 90% Bid Package as required.
- Amendments to the SHERP, QA/QC Plan, and activity-specific sampling plans as required;
- Refined draft of operation and maintenance procedures which will be finalized following completion of construction and startup, incorporated in the Operations Plan, and used for operations of the systems implemented;
- Final prestartup and startup plans.

5.5 Construction Activities

Work Defendants shall begin construction pursuant to the construction schedule presented in each Final Design, as approved by EPA.

Work Defendants shall perform construction activities in accordance with the approved Work Plan and Final Design(s). Work Defendants shall provide technical supervision and construction management during the Work construction.

Except as modified by the Final Design(s), activities shall include:
- Construction;
- System inspection(s);
- Punch list activities as necessary;
- Reinspections as necessary;
- Pre-startup testing;
- Startup testing;
- Final inspection;
- Punch list activities as necessary;
- Reinspections as necessary;
- System startup.

Design modifications, field changes, and schedule revisions, shall be documented and submitted to EPA for approval, in accordance with procedures presented in the Work Plan and Final Design(s).

Construction As-Built Report
At the completion of construction for each of the systems and facilities described in Section 5.4 of this SOW and for the perimeter liquids control components installed in the SWEAP area by CD-3 Work Defendants outside the scope of CD-8, the Work Defendants shall prepare and submit Construction As-built Reports which shall include at least the following items:
- Introduction;
- As-built plans;
- QA/QC records;

- Summary of design changes;
- Amendments to operation and maintenance procedures;
- Professional Engineer certification that construction has been completed according to design, and that the As-built plans are accurate.

Construction Completion Report
At completion of compliance testing activities specified in Section 5.6 of this SOW, Work Defendants shall submit Construction Completion Reports.

Work Defendants shall submit a report for each newly constructed site facility improvement and each environmental control system (e.g., Perimeter Liquids Control System components including those installed in the SWEAP area by other parties, LTS Modifications, and others as required).

Each report shall include discussion on original construction and modifications that may have followed from compliance testing.

Finalized amendments to the Operation Plan shall be included.

5.6 Compliance Testing and Evaluation Activities

The Work Defendants shall perform compliance testing of the remedial systems and components implemented under CD-8 and those systems installed in the SWEAP area by other parties under agreements outside the scope of CD-8 to demonstrate compliance with Performance Standards. The following systems and components are subject to compliance testing: (1) Perimeter Liquids Control System, and (2) Leachate Treatment System. Additionally, Work Defendants shall perform compliance monitoring and evaluation to demonstrate that the natural attenuation groundwater remedy is progressing as required to achieve long-term groundwater cleanup standards. The requirements for compliance testing of these systems and components are described below.

5.6.1 Perimeter Liquids Control System

Work Defendants shall perform compliance testing for each segment of the Perimeter Liquids Control System constructed and operated, including the SWEAP perimeter liquids control system in its entirety. Work Defendants shall use hydraulic control (as described in Section 2.2.1 of this SOW), or potentially other measures acceptable to EPA, to demonstrate System compliance.

Compliance Testing Plan - The Work Defendants shall develop a Compliance Testing Plan to describe the procedures to demonstrate compliance and guide the compliance testing activities and acceptance procedures. The Compliance Testing Plan shall be submitted to EPA for review and approval at two levels of completeness (Draft and Final) concurrent with the preliminary and

final design submittals. For components implemented in the SWEAP area as early remedial action under CD-3, Work Defendants shall submit the Compliance Testing Plan concurrent with prefinal and final designs being submitted by the CD-3 Work Defendants. The Compliance Testing Plan shall include at a minimum:

- Identification of Performance Standards;
- Discussion of overall approach to demonstrating compliance with the identified; Performance Standards, including the manner in which statistical, temporal, and non-systemic performance variations will be interpreted;
- A description of the specific monitoring and testing procedures that will demonstrate compliance with the Performance Standards, including monitoring frequency within the compliance testing periods;
- Sampling and analysis procedures, as necessary (or reference to applicable monitoring and sampling plans);
- The format for the Compliance Testing Report.

Compliance Testing Request - After EPA approval of the Final Construction As-Built Report(s) and the Final Compliance Testing Plan, the Work Defendants shall submit a Compliance Testing Request that specifies the perimeter liquids control system to be tested and the start date for the compliance testing period.

Compliance Testing Period - Work Defendants shall conduct compliance testing in specific Compliance Testing Periods pursuant to specific procedures as set forth in the Compliance Testing Plan. Compliance testing shall occur over a consecutive 120-day period for each segment or geographic area of the perimeter liquids control system constructed. A Compliance Testing Period shall be considered successful if EPA determines that Work Defendants have demonstrated that the perimeter liquids control remedial actions are installed consistent with the design, are operating as intended, and meet Performance Standards. The time frame for achieving Performance Standards for perimeter liquids control in each area shall be estimated in the design report. The time frame for achievement of the Performance Standards for perimeter liquids control in each area will vary, depending on the remedial actions implemented, and site-specific conditions in that area.

Compliance Testing Report - Work Defendants shall submit Compliance Testing Reports no later than eight (8) weeks after conclusion of each Compliance Testing Period. The format of the Compliance Testing Report shall be presented in the Work Plan and shall include at a minimum:

- A statement as to whether the Compliance Testing Period was successful or unsuccessful;
- A summary of monitoring and other activities related to compliance testing and evaluation conducted during the Compliance Testing Period;
- A summary of monitoring and other data collected during the Compliance Testing Period including locations and sampling dates for each data point or set of data points relating to

System performance or compliance testing;
- A summary of operating data relating to System performance or compliance testing;
- A summary of noncompliance times and locations, including the nature of any noncompliance such as operational upsets or maintenance shutdowns;
- A summary of additional monitoring conducted in response to noncompliance conditions encountered;
- Maps and figures necessary to demonstrate geographic or temporal trends with respect to compliance;
- An explanation of any noncompliance which the Work Defendants determine is due to a statistical variation or non-systemic variance (such as operational variation) and corrective actions planned;
- A description of activities planned for the next Compliance Testing Period.

Compliance Date - For each segment of the perimeter liquids control system tested, the Compliance Date shall be defined as the date of the beginning of the successful Compliance Testing Period.

5.6.2 Leachate Treatment System

The Work Defendants shall perform compliance testing for the operational components of the existing Leachate Treatment System (LTS), modified as necessary pursuant to CD-8, to treat liquids collected as part of the Work. The components subject to compliance testing may include modified or new liquids conveyance facilities, modified or new treatment processes, and the new or modified treatment plant discharge point. The Performance Standards for effluent from the LTS shall meet EPA and CSDLAC or other current regulating authority requirements.

Compliance Testing Plan - The Work Defendants shall develop a Compliance Testing Plan to describe the procedures to demonstrate compliance and guide the compliance testing activities and acceptance procedures. The Compliance Testing Plan shall be submitted to EPA for review and approval at two levels of completeness (Prefinal 90% and Final 100%) concurrent with design submittals. The Compliance Testing Plan shall include at a minimum:

- Identification of Performance Standards;
- Discussion of overall approach to demonstrating compliance with the identified Performance Standards, including the manner in which statistical, temporal, and non-systemic performance variations will be interpreted;
- A description of the specific monitoring and testing procedures that will demonstrate compliance with the Performance Standards, including monitoring frequency within the compliance testing periods;
- Sampling and analysis procedures, as necessary (or reference to applicable monitoring and sampling plans);
- Present the format for the Compliance Testing Report.

Because the changes to the LTS may vary in magnitude and significance, the LTS Compliance Testing Plan components and procedures may be modified as appropriate, subject to EPA approval.

Compliance Testing Request - After EPA approval of the Final Construction As-Built Report(s) and the Final Compliance Testing Plan, the Work Defendants shall submit a Compliance Testing Request that specifies the component(s) of the LTS to be tested and the start date for the compliance testing period.

Compliance Testing Period - Work Defendants shall conduct compliance testing in specific Compliance Testing Periods pursuant to specific procedures as set forth in the Compliance Testing Plan. Compliance testing to demonstrate conformance with Performance Standards shall occur over a consecutive 30-day period. A Compliance Testing Period shall be considered successful if EPA determines that Work Defendants have demonstrated the LTS as modified operates as designed and meets the Performance Standards.

Compliance Testing Report - Compliance Testing Reports shall be submitted by the Work Defendants no later than six (6) weeks after conclusion of each Compliance Testing Period. The format of the Compliance Testing Report shall be presented in the Work Plan and shall include at a minimum:

- A statement as to whether the Compliance Testing Period was successful or unsuccessful;
- A summary of monitoring and other activities related to compliance testing and evaluation conducted during the Compliance Testing Period;
- A summary of monitoring and other data collected during the Compliance Testing Period including locations and sampling dates for each data point or set of data points relating to System performance or compliance testing;
- A summary of operating data, as necessary, relating to System performance or compliance testing;
- A summary of noncompliance times and locations, including the nature of any noncompliance such as operational upsets or maintenance shutdowns;
- A summary of additional monitoring conducted in response to noncompliance conditions encountered;
- An explanation of any noncompliance which the Work Defendants determine is due to a statistical variation or non-systemic variance (such as operational variation) and corrective actions planned;
- A description of activities planned for the next Compliance Testing Period.

Compliance Date - For the modified LTS, the Compliance Date shall be defined as the date of the beginning of the successful Compliance Testing Period.

5.6.3 Natural Attenuation Compliance Evaluation

Demonstrating effectiveness and performance of the natural attenuation groundwater remedy will require Annual Compliance Evaluation Reviews. For each area where natural attenuation will be used for achieving groundwater cleanup standards, Work Defendants shall perform Annual Compliance Evaluation Reviews. A decision tree diagram that describes general processes for evaluation of natural attenuation is shown in Figure SOW-4. Work Defendants shall describe the results of these reviews in the Annual Groundwater Monitoring and Evaluation Report (Section 5.1.2.2) for EPA review and approval.

Work Defendants shall perform the following monitoring program and data analysis procedures and shall report the results in the Annual Groundwater Monitoring and Evaluation Report:

Subareas where groundwater cleanup standards exceedances have not been verified

- annual testing for volatile organics, metals, and cations/anions in accordance with the Long-Term Groundwater Monitoring Plan, as approved by EPA (Section 5.1.1);
- annual evaluation of groundwater cleanup standard exceedances in each monitoring well, with verification over the next one to two semiannual sampling events if any exceedances are reported in individual wells;
- annual trend analysis based on the prior three-year sampling record of 10 to 15 selected constituents (these constituents shall be identified in the Long-term Groundwater Monitoring Plan). This analysis shall commence when three consecutive years of water quality data are available for a monitoring well.

Subareas where groundwater cleanup standards exceedances have been verified

- semiannual testing of groundwater for volatile organics, metals, and cations/anions in accordance with the Long-Term Groundwater Monitoring Plan, as approved by EPA (Section 5.1.1);
- annual update of the evaluation of groundwater cleanup standards exceedances at individual wells;
- annual trend analysis for individual wells based on the prior three-year sampling record of 10 to 15 selected constituents (these constituents shall be identified in the Long-Term Groundwater Monitoring Plan);
- comparison of the trend analyses to the requirements described in Table SOW-2 and Table SOW-3;

- annual subarea-wide trend analysis of cleanup standards attainment based on multi-well average concentrations over the associated subarea. Subareas and associated monitoring wells, as defined in the Long-Term Monitoring Plan (Section 5.1.1), shall be used for this analysis.

Work Defendants shall include in the annual compliance evaluation an analysis to verify that the groundwater monitoring program is adequate to evaluate the effectiveness of the natural attenuation remedial action, and shall identify/recommend modifications to the monitoring program, for EPA review and approval.

Work Defendants shall describe the program and procedures for evaluating the performance of the natural attenuation groundwater remedy in the Long-Term Groundwater Monitoring Plan (Section 5.1.1).

As described in Section 2.2.3, if EPA determines that the annual compliance evaluation indicates natural attenuation is not progressing as intended (e.g., in accordance with the times and distances presented in Table SOW-2), the Work Defendants shall perform contingency measures as required by EPA in accordance with the processes outlined in Figure SOW-4.

If verified groundwater cleanup standard exceedances are detected that are not attributable to currently known areas where contamination exceeds groundwater cleanup standards, the Work Defendants shall perform additional evaluation of conditions in the area as determined by EPA. Based on these evaluations, EPA will determine natural attenuation time and distance Performance Standards and Groundwater Compliance Lines as are presented in Table SOW-2 and Figure SOW-3 for other areas. EPA may also require other contingency measures in these areas.

The Work Defendants shall implement natural attenuation remedial actions until EPA determines that contaminant concentrations beyond the point of compliance have not exceeded the groundwater cleanup standards for three consecutive years and that no additional action is required. Once all wells in a subarea beyond the landfill boundary have been in compliance with groundwater cleanup standards for three consecutive years, the Work Defendants may request EPA to suspend groundwater monitoring in that subarea. Work Defendants shall continue implementation of natural attenuation monitoring, including contingency measures required by EPA, until EPA approves this request. If EPA determines that groundwater cleanup standards for that subarea have not been met and that further actions are warranted, EPA will notify the Work Defendants in writing of the required actions. If EPA concludes that groundwater cleanup standards have been met and that actions may be suspended, EPA will notify the Work Defendants in writing and the Work Defendants may suspend natural attenuation monitoring for that subarea while they continue monitoring of natural attenuation in other subareas. However, if groundwater cleanup standard exceedances continue to be observed at the upgradient point of compliance, or if EPA determines that conditions warrant continued monitoring, EPA may

require the Work Defendants to continue (or later to restart) monitoring in the subarea.

The overall natural attenuation remedial action shall be considered complete when EPA determines that the groundwater cleanup standards identified in *Table 15* from the *Final ROD* have been met in all groundwater monitoring wells beyond the point of compliance for three consecutive years. Work Defendants shall continue monitoring, as provided in this SOW, until EPA approval of the Final Work Completion Report.

If EPA determines that natural attenuation is not progressing as expected (based on the requirements described in Section 2.2.3, Table SOW-2, Table SOW-3, and Figure SOW-3), the Work Defendants shall, in accordance with the general processes outlined in Figure SOW-4, submit plans for implementation of natural attenuation contingency actions necessary to meet Performance Standards. The Work Defendants shall prepare a Natural Attenuation Contingency Action Implementation Plan, if required by EPA, that includes an evaluation of possible alternative response actions, recommendations for implementation of appropriate contingency measures, and an implementation schedule. This plan shall also describe any remedial design investigations necessary to design and construct the contingency response actions.

The Work Defendants shall implement the required natural attenuation contingency actions in accordance with the schedule in the Work Defendants' contingency action design, as approved by EPA. In accordance with the general processes described in Figure SOW-4, EPA may require that the natural attenuation contingency actions include implementation of active groundwater remediation measures (e.g., focused groundwater pumping and treatment and/or disposal of extracted groundwater). Work Defendants shall operate and maintain the natural attenuation contingency measures until Performance Standards are met and suspension of said O&M is approved by EPA.

In addition, if EPA determines that an organic groundwater cleanup standard exceedance is verified at or beyond the organic Groundwater Compliance Lines shown in Figure SOW-3, or that an inorganic groundwater cleanup standard exceedance is verified at or beyond the inorganic Groundwater Compliance Lines shown in Figure SOW-3, Work Defendants shall implement active groundwater remediation contingency measures (e.g., focused groundwater pumping) in accordance with the general processes outlined in Figure SOW-4. EPA may consider alternative contingency actions if Work Defendants demonstrate to EPA's satisfaction that an alternative contingency action is appropriate. These contingency measures shall begin with the Work Defendants' submittal of a Contingency Remedial Design Investigation Work Plan within four weeks of receipt of the information verifying the noncompliance event. This plan shall include an implementation schedule.

Work Defendants shall commence operation of the focused groundwater response action in accordance with the schedule approved by EPA. Work Defendants shall operate and maintain the groundwater cleanup contingency measures until Performance Standards are met and

suspension of said O&M is approved by EPA.

5.7 Access and Institutional Controls

5.7.1 Access and Institutional Controls Work Plan

Within 120 days following lodging of this Consent Decree, the Work Defendants shall submit an Access and Institutional Controls Work Plan to EPA for review and approval. This Plan shall describe program components and plan activities for implementation of access and institutional controls within and beyond the landfill boundary. The Work Defendants shall include the following components into the Plan:

- Site Access and Security Plans;
- Identification of all properties where access agreements or use restrictions are required under either paragraph XV.A or XV.B of the Consent Decree (Access and Institutional Controls);
- Draft and final Access agreements and covenants;
- Identification of all properties where notice is required under Section XV.I. of the Consent Decree (Access and Institutional Controls) and draft and final copies of the notification to those parties;
- Identification of all State and local agencies with jurisdiction over well drilling and groundwater access and use under paragraph XV.J of the Consent Decree (Access and Institutional Controls);
- SHERP;
- Groundwater monitoring beyond the landfill boundary.

Upon EPA approval, Work Defendants shall implement the Plan.

5.7.2 Bi-Annual Work Plan Updates

The Work Defendants shall prepare and submit every two years an update of the Access and Institutional Controls Implementation Work Plan for EPA review and approval. No earlier than five (5) years after lodging of this Consent Decree, the Work Defendants may request a reduction in the frequency of the revision of the Access and Institutional Controls Work Plan, and/or the frequency of the meetings required under paragraph XV.J of this Consent Decree, and/or the frequency of the notices required under paragraph XV.I of this Consent Decree, and may implement such reduction in frequency upon EPA's written approval of the request.

This update shall include at least the following elements associated with access and institutional controls within and beyond the landfill boundary:

- On-site program review (e.g., security breaches, etc.);

- Review of groundwater monitoring results and definition of revised control boundaries;
- Beyond-the-landfill-boundary program review and update (e.g., review of documents from regulatory agency files, to determine whether offsite well construction has occurred, updates on any additional properties on which physical construction may be required, etc.);
- Revisions to the SHERP and Site Access and Security Plans;
- Draft and final access agreements and covenants;
- Draft and final notices to parties in the "natural attenuation areas" (Section XV.I. of the Consent Decree).

Work Defendants shall provide updated groundwater quality maps to the local water management agencies, subject to EPA review and approval.

5.8 Site Administration

The Work Defendants shall manage staff, order equipment, and perform necessary administrative functions to ensure that requirements and Performance Standards are met. Activities shall include health and safety monitoring and enforcement, employee training, budget administration, administrative building operation and maintenance, performance reporting, payment of applicable taxes and fees, etc.

For the interim period prior to and during transition to the CD-8 Work Defendants from other parties performing work at the Site, and in parallel to activities being conducted by the CD-3 Work Defendants, the CD-8 Work Defendants shall provide and conduct all necessary administrative activities pursuant to CD-8. CD-8 Work Defendants shall describe the required activities in the Operations Plan in accordance with the requirements in Section 4.2.4 in this SOW.

For the long-term period following transition to the CD-8 Work Defendants from the CD-3 Work Defendants and other parties performing CD-8 Excluded Work at the Site, the CD-8 Work Defendants shall provide and conduct all necessary administrative activities pursuant to CD-8. CD-8 Work Defendants shall describe required activities in the Operations Plan and shall conduct such activities for the period required by CD-8.

5.9 Site Access and Security

The CD-8 Work Defendants' activities shall conform to provisions of Site Access and Security Plans (SASP) administered by CD-3 Work Defendants, parties responsible for performing CD-8 Excluded Work, parties responsible for performing CD-7 Work, and EPA. To the extent that such activities are not performed by other parties with EPA approval, Work Defendants shall perform activities for control of access to and security of the Site. As required for coordination and integration with other parties responsible for North Parcel remediation and North Parcel

commercial development, the Work Defendants shall revise and implement the SASP as approved by EPA.

5.10 Operation and Maintenance of Facilities and Site Environmental Control Systems

Work Defendants shall perform operations, maintenance, and monitoring for the period required by CD-8 and this SOW to meet and sustain performance standards. The Work Defendants shall continue monitoring, as provided in the SOW, of all environmental control systems and groundwater at and beyond the landfill boundary until EPA approves the Final Work Completion Report pursuant to Section 5.15 of this SOW.

The Work Defendants shall prepare and implement operations plans per Section 4.2 of this SOW incorporating, and modifying as needed, procedures and documentation prepared by other parties performing work at the Site.

The Work Defendants shall develop and implement, subject to EPA approval, contingency measures in situations where Performance Standards are not met. Contingency measures shall be continued by the Work Defendants until EPA determines that Performance Standards are achieved and maintained and that contingency measures are unnecessary.

Work Defendants shall prepare for EPA review and approval, (in accordance with "Landfill Maintenance, Closure and Postclosure" and "Landfill Liquids Treatment and Disposal" ARARs in *Table 21* from the *Final ROD)* an Operations Plan pursuant to Section 4.2.4 of this SOW that includes procedures for performing long-term operation and maintenance activities of all facilities and environmental control components at the OII Site, including those activities that are being performed under CD-3, or as CD-3 Excluded Work, or by other parties performing CD-8 Excluded Work at the Site, and including operation and maintenance of remedial systems implemented for the North Parcel as directed by EPA. Upon EPA approval of this Plan, the Work Defendants shall implement and follow this Operations Plan.

If, at any time following the Compliance Date for any remedial system and during operation and maintenance, the Work Defendants fail to meet any Performance Standard, pursuant to requirements of this SOW and CD-8, the Work Defendants shall:

- Take all immediate necessary steps to protect public health and the environment.
- Submit a written Noncompliance Notification to EPA within five (5) days of receipt of the information indicating the noncompliance event. The format of Noncompliance Notification shall include at least the following:
    - Time and location of the noncompliance event;
    - The nature of the noncompliance event including quantitative monitoring data;
    - Identification of the Performance Standard(s) that were not complied with;

    - Description of the activities already performed to verify the monitoring data or to remedy the noncompliance;
    - Additional monitoring data necessary to demonstrate compliance if compliance is achieved and maintained within 5 days of receipt of the information indicating a noncompliance event.
- In event that compliance is attained and maintained within 5 days of receipt of the information indicating the noncompliance event, no further action will be required after submittal of the Noncompliance Notification.
- In the event that compliance is not attained and maintained within 15 days of receipt of information indicating the noncompliance event, the Work Defendants shall submit a Compliance Action Plan within 15 days of receipt of the information indicating the noncompliance event. The format of the Compliance Action Plan shall include at least:
    - Information presented in the Noncompliance Notification and any additional information or clarification related to that information;
    - Description of the activities necessary to attain compliance, including plans, specifications, and calculations as necessary;
    - A schedule for performance of the activities necessary to attain compliance, including the date compliance is expected to be demonstrated and the submittal date of the Noncompliance Correction Report.
- In the event that compliance is attained and maintained after submittal of Noncompliance Notification and within 15 days of receipt of information indicating the noncompliance event, a Compliance Action Plan shall not be required; however, a Noncompliance Correction Report shall be submitted in its place on that date.
- In the event that compliance is not attained and maintained prior to submittal of the Compliance Action Plan, the Work Defendants shall perform the activities pursuant to the Compliance Action Plan. Work Defendants shall commence performance of such activities upon written approval of the Compliance Action Plan by EPA. Work Defendants may commence performance of the activities described in the Compliance Action Plan upon verbal authorization to begin such activities by the EPA Project Coordinator. Such verbal authorization shall not constitute approval of the Compliance Action Plan or the schedules set forth in the Compliance Action Plan.
- If compliance is attained, the Work Defendants shall submit a Noncompliance Correction Report pursuant to the schedule set forth in the Compliance Action Plan or as provided for elsewhere in Section 5.10 of this SOW. The format of the Noncompliance Correction Plan shall include at least the following:
    - Description of activities performed pursuant to the Compliance Action Plan;
    - Description of any additional activities performed;
    - The date compliance was demonstrated;
    - Monitoring data that shows that compliance was achieved and maintained;
    - Any modifications to As-built Drawings, operations plans, or other plans as necessary.

- In the event that compliance is not achieved within the time specified in the Compliance Action Plan, the Work Defendants shall submit an additional Compliance Action Plan instead of the Noncompliance Correction Report.
- In the event that major modifications to the Work systems are required during Operation and Maintenance activities, CD-8 Work Defendants shall submit a Project Proposal/Technical Memorandum for implementing modifications as set forth in the procedures described in Section 4.2.6 of this SOW, except as modified by procedures presented in the Work Plan.

5.11 Annual Work Status Report

Work Defendants shall prepare and submit a Work Status Report at yearly intervals following the effective date of CD-8.

Contents of this report shall include at least the following information:

- A synopsis of the Work;
- Summary of annual Groundwater Monitoring activities that describes compliance with Performance Standards;
- Annual Summary of Perimeter Liquids Control activities that describes compliance with Performance Standards;
- Annual Summary of Leachate Treatment System performance that describes compliance with Performance Standards, when required;
- Annual Summary of Gas Control (including Landfill Gas Treatment System) and Cover and Surface Water Management activities that describes compliance with Performance Standards;
- Annual Summary of Access and Institutional Controls implementation and effectiveness
- Annual Summary of Costs for performing work activities pursuant to CD-8;
- Proposed shutdown and termination of operation and maintenance of any site environmental control system or control action with documentation demonstrating that performance standards have been and will continue to be met and details for continuation of monitoring of such systems as provided in this SOW, until EPA approval of the Final Work Completion Report;
- Description of Community Relations/Community Involvement Activities and results and impacts of these activities;
- Description of any outstanding activities required by CD-8 or SOW and schedule for implementation.

5.12 5-Year Work Status Report

Pursuant to Section XI of CD-8, Work Defendants shall prepare and submit a work status report in draft and final formats at five year intervals following the effective date of CD-8 for EPA

review and approval. Subject to prior EPA approval, Work Defendants may incorporate the contents of the Annual Work Status Report (Section 5.11) for that calendar year into the 5-Year Work Status Report.

Contents of this report shall include at least the following information:

- Site Summary;
- Description and Objectives of Remedial Actions;
- A synopsis of the Work;
- Summary of annual Detection/Compliance Groundwater Monitoring activities that describes compliance with Performance Standards;
- Summary of Perimeter Liquids Control activities that describes compliance with Performance Standards;
- Summary of Groundwater Cleanup activities that describes compliance with Performance Standards;
- Summary of Leachate Treatment System performance that describes compliance with Performance Standards when required;
- Summary of Gas Control and Cover and Surface Water Management activities that describes compliance with Performance Standards;
- Summary of Access and Institutional Controls implementation that describes compliance with Performance Standards;
- Description of Community Relations/Community Involvement Activities and results and impacts of these activities;
- Areas of Noncompliance and Status of Corrective Actions Implemented;
- Description of any outstanding activities required by CD-8 or SOW and schedule for implementation;
- Summary of Costs for performing work activities pursuant to CD-8;
- An analysis of newly promulgated or modified requirements of Federal and State environmental laws to assess whether they call into question the protectiveness of the remedies in place;
- Discussion of whether State or Federal environmental laws regulating substances not included as contaminants of concern have changed such that the remedy is no longer protective;
- Pending changes in zoning or land-uses that would reduce effectiveness of institutional controls established as part of the remedies;
- Analysis of O&M activities and any cost increases to determine if such increases warrant proposals of additional remedial actions to reduce O&M activities or contain rising costs;
- Recommendations for Future Response Actions.

Pursuant to Section XI of CD-8, based on reviews of monitoring and O&M data or other site-specific circumstances, EPA may require Work Defendants to perform additional studies and investigations and to summarize and analyze the results in this 5-Year Report.

5.13 Final Remedial Action Compliance Date

The Final Remedial Action Compliance Date shall be the first date when the Remedial Action has been fully performed and the Performance Standards have been attained, as determined by EPA pursuant to Section XXXVI.A of CD-8, including:

- Compliance testing for all Final Remedy systems have been completed, and the Work Defendants demonstrate to EPA's satisfaction with confirmatory sampling, monitoring, and other procedures established in the Work Plan, Long-term Groundwater Monitoring Plan, and O&M Plans in effect, that all Final Remedy systems required by EPA are in compliance and achieve Performance Standards at the same time;
- EPA determines that the natural attenuation monitoring and evaluation program is being properly implemented;
- EPA determines that Access and Institutional Controls within and beyond the landfill boundary for the OII Site are being properly implemented.

In accordance with CD-8, the Final Remedial Action Compliance Date is the date after which CD-8 O&M begins.

5.14 Final Remedial Action Completion Report

After Performance Standards relevant to the Remedial Action have been attained and all systems are in compliance at the same time, and Access and Institutional Controls are being properly implemented, as determined by EPA, Work Defendants shall submit a Final Remedial Action Completion Report in accordance with Paragraph A of Section XXXVI of CD-8.

Contents of this report shall include at least the following information:

- Site summary;
- Description and requirements of remedial actions;
- A synopsis of the Work;
- Summary of the following remedial activities that describes compliance with Performance Standards:
  - Detection/Compliance Groundwater Monitoring; Perimeter Liquids Control; Groundwater Cleanup; Leachate Treatment System; Gas Control, Landfill Cover and Surface Water Management; Access and Institutional Controls implementation and any pending changes in zoning or land-uses that would reduce effectiveness of institutional controls as part of the remedies;
- Certification that Performance Standards relevant to the Remedial Action are being met;
- Date proposed as the Final Remedial Action Compliance Date;
- Summary of actions to be taken during the Operation & Maintenance period that will cause all Performance Standards to be met;
- Community Relations/Community involvement activities and results and impacts of these

activities;

- Areas of noncompliance and corrective actions implemented;
- Status Summary for the following types of activities:
  - Site Administration and Facilities; Site Control and Maintenance; Leachate Systems Management; Site Access and Security; Status of CD-8 Excluded Work being performed by the Work Defendants under CD-8 as directed by EPA; and O&M activities being or to be assumed by the Work Defendants from other parties at the Site;
- Summary of costs for performing Work pursuant to CD-8;
- Updated as-built drawings, signed and stamped by a professional engineer.

5.15 Final Work Completion Report

After operations of all site environmental control systems and control actions have been turned off and after continued monitoring by the Work Defendants to demonstrates to EPA's satisfaction that all Performance Standards have been sustained for three consecutive years after cessation of all control actions, or for 30 years following the Final Remedial Action Compliance Date, whichever is later, Work Defendants shall submit to EPA a Final Work Completion Report for review and approval. For the purposes of this SOW, the term "control actions" shall be defined as all response actions necessary for completion of perimeter liquids control, site liquids collection, treatment and disposal, landfill gas control and destruction, landfill cover, surface water management activities, site access and security activities, and all operation and maintenance activities. Work Defendants shall continue monitoring as provided in this SOW until EPA approves the Final Work Completion Report.

The Final Work Completion Report shall include items contained in the 5-Year Work Status Report and the Final Remedial Action Completion Report in addition to the following:

- Certification that the Gas Control, Cover and Surface Water Management Systems are in conformance with Performance Standards pursuant to the Gas Control and Cover ROD, and CD-8;
- Certification that Perimeter Liquid Control Systems and Liquids Treatment System are in conformance with Performance Standards and CD-8;
- Certification that groundwater constituent concentrations within the Groundwater Compliance Lines described in Figure SOW-3 (or as modified by EPA) are below groundwater cleanup standards detailed in *Table 15* of the *Final ROD*;
- Certification that there are no data suggesting exceedance of groundwater cleanup standards beyond the Groundwater Compliance Lines as a result of site-related contaminants;
- Certification that the Access and Institutional Controls are implemented and functional in compliance with Performance Standards and CD-8;
- Index of all deliverables submitted pursuant to CD-8 and dates of modifications to these

deliverables, if any. Copies shall be provided to EPA upon request.

5.16 CD-8 Excluded Work Completion Report

In the event that the Work Defendants perform an item of CD-8 Excluded Work, or a portion thereof, pursuant to CD-8, the Work Defendants shall submit to EPA, a CD-8 Excluded Work Completion Report, for each item of Excluded Work, or portion thereof, performed. The format of the CD-8 Excluded Work Completion Report shall include, at a minimum, the necessary items required for the Final Work Completion Report.

6.0 DELIVERABLES AND REVIEW PROCEDURES

6.1 Introduction

Under CD-8, EPA may require submission of additional deliverables not specifically referenced herein. EPA shall provide written notification to the Work Defendants explaining the basis for requesting the additional deliverable.

As described by the procedures incorporated in the Work Plan (developed in accordance with requirements of Section 4 of this SOW), Work Defendants may propose modifications to the contents of each deliverable or the schedule for submittal of deliverables, subject to EPA approval.

The Work Defendants shall provide to members of the IAC and other parties for review and/or information, copies of all significant deliverables prepared pursuant to the requirements of CD-8 and this SOW. The Work Defendants and EPA together shall develop a list for distribution of these deliverables that will include at least the following parties:

- California EPA/DTSC;
- Los Angeles County Sanitation Districts;
- California Integrated Waste Management Board;
- Caltrans;
- Water Replenishment District of Southern California;
- Los Angeles Regional Water Quality Control Board;
- California Department of Justice;
- City of Montebello;
- City of Monterey Park (2 copies);
- South Coast Air Quality Management District;
- USACE;
- EPA (2 copies);
- CDM Federal Programs Corporation (2 copies);
- CD-7 Work Parties;
- CD-3 Work Defendants' legal counsel;
- OII PRP Steering Committee's legal counsel.

For the purposes of this SOW significant deliverables may include the documents noted below in Section 6.2, as determined by EPA.

In accordance with Section XLV of CD-8, after the IAC members and potentially other parties have had the opportunity to review the deliverable(s), the parties may meet with EPA to discuss the deliverables(s) and prepare collaborative comments. These collaborative comments may be

submitted to the Work Defendants at EPA's sole discretion. The Work Defendants shall respond to the EPA comments in accordance with the requirements of Section IX of CD-8. EPA may consult with the State before approving any significant deliverable required to be submitted by the Work Defendants under CD-8. EPA's failure to consult with the State will not relieve the Work Defendants of any obligation to comply with the requirements of CD-8.

As indicated below, Work Defendants shall provide copies of certain informational deliverables to the IAC and other parties as determined by EPA.

EPA shall retain sole discretionary authority to approve, conditionally approve, or disapprove deliverables, any modifications to the contents of each deliverable, or changes to the schedule for activities and submittal of deliverables proposed by the Work Defendants.

EPA shall retain sole discretionary authority to require fewer or additional deliverables based on various project factors including: increasing or decreasing project complexity; changes in the Work Defendants' work approach; and receipt of new environmental control monitoring data. EPA shall provide written notification to the Work Defendants detailing revised deliverables and associated submittal schedules at least 14 days prior to the date scheduled for the next related deliverable. The Work Defendants shall provide the deliverables as required.

6.2 Deliverables

Pursuant to Section 6.1 of this SOW, # denotes significant deliverables, and * denotes deliverables that include distribution of informational copies to IAC members and other parties as determined by EPA. Deliverables without these annotations are to be considered standard deliverables.

6.2.1 Management Plan Deliverables

Work Plan
- Work Plan Outline (being performed as an early action activity outside the scope of CD-8)
- Prefinal Work Plan #
- Final Work Plan #
- Amended Work Plan, if necessary #

Safety, Health and Emergency Response Plan
- Prefinal SHERP *
- Final SHERP *
- Amended SHERP, if necessary *

Quality Assurance/Quality Control Plan
- QA/QC Outline
- Prefinal QA/QC Plan #
- Final QA/QC Plan #
- Amended QA/QC Plan, if necessary #

Operations Plans (O&M and Site Administration)
- Operations Plan
  - Outline
  - Prefinal #
  - Final #
  - Amended Final Operations Plan, as required #

Transition Plans (as required)
- Outline
- Prefinal #
- Final #

Project Proposals/Technical Memoranda, if necessary
- Request with Outline and deliverable at 10% level of completeness
- Prefinal TM #
- Final TM, if necessary #

Sampling Plans, as required for activity-specific field investigations related to performing remedial design investigations and environmental/groundwater sampling and monitoring
- Prefinal #
- Final #

Progress Reports
- Progress Report and modifications, if required *

6.2.2 Groundwater Monitoring Deliverables

Long-Term Groundwater Monitoring Plan (being performed as an early action activity outside the scope of CD-8)
- Draft #
- Final #

Groundwater Monitoring Reports
- Final Groundwater Monitoring Data Reports #
- Annual Groundwater Monitoring and Evaluation Reports #

Natural Attenuation Contingency Action Implementation Plan(s)
Draft - If required by EPA #
Final #

Contingency Remedial Design Investigation Work Plan(s)- If required by EPA
Draft #
Final #

6.2.3 Remedial Design Investigation(s) Deliverables

Area-Specific Evaluation Report(s)
First ASE Report - Draft and Final (being performed as an early action activity outside the scope of CD-8)
Additional ASE Reports - Draft and Final #

Remedial Design Investigation Work Plan(s)
First RDIWP - Draft and Final #
Additional RDIWPs - Draft and Final #

Remedial Design Investigation Report(s)
First RDI Report - Draft and Final #
Additional RDI Reports - Draft and Final #
Note: These reports may be combined with Preliminary Design Report, subject to EPA approval

6.2.4 Preliminary Design Deliverables
- for each part of implementation of new systems required by this SOW

Preliminary Design Report
Prefinal Preliminary Design Report #
Final Preliminary Design Report #

6.2.5 Final Design Deliverables
- for follow-on to each Preliminary Design Report

Design Packages
Intermediate - If required by EPA #
Prefinal - 90% Design #
Final - 100% Design #

6.2.6 Construction Deliverables
- for construction of each part of new systems required by this SOW

Contractor Selection Notification

Construction As-Built Report
Prefinal Report #
Final Report #

Construction Completion Report
Draft and Final #

6.2.7 Compliance Testing Deliverables

Compliance Testing Plan - concurrent with design submissions
Draft and Final #

Compliance Testing Reports - for LTS and Perimeter Liquids Control Systems
Draft and Final #

6.2.8 Access and Institutional Controls Implementation Deliverables

Initial Work Plan
Work Plan #

Bi-Annual Update (Unless EPA approves a reduction in frequency of submittals)#

6.2.9 Annual Work Status Report
Final Report #

6.2.10 5-Year Work Status Report
Report Outline
Prefinal Report #
Final Report #

6.2.11 Final Remedial Action Completion Report
Report Outline
Prefinal Report #
Final Report #

6.2.12 Final Work Completion Report
Report Outline
Prefinal Report #
Final Report #

6.2.13 CD-8 Excluded Work Completion Report

Report Outline
Prefinal Report #
Final Report #

6.3 Review Approach and Procedures

Review procedures are established to provide a forum for presentation of EPA's review comments to Work Defendants and are intended to facilitate incorporation of EPA comments into the next phase of the Work submittal. EPA will review and provide comments on all Work Defendants' deliverables unless otherwise determined by EPA.

Following EPA review, a review conference may be scheduled by Work Defendants and EPA Project Coordinators to discuss EPA comments and determine required action necessary for preparation and submittal of the subsequent deliverable.

Details of the review process, including review conferences, if appropriate, shall be established by the EPA and Work Defendants' Project Coordinators in accordance with the following guidelines:

- EPA will expedite review of all deliverables considering anticipated complexity, numbers of reviewers, etc.
- EPA may transmit written comments to the Work Defendants for response by the Work Defendants. EPA may also provide verbal comments and approvals with confirmation provided by EPA in written correspondence to the Work Defendants.
- Unless approved otherwise by EPA, Work Defendants shall submit written response to all EPA comments (written or verbal) including changes made, as appropriate, in the subsequent deliverable.

For construction involving EPA inspections, multiple inspections may follow incorporation of respective phases of punch list work (i.e., implementation of final construction details necessary to conform to the project design requirements) prior to conducting startup testing activities.

Review of the Work Defendants' Construction As-built Report may include a facility tour at EPA's option.

Any deliverable not identified in this Section shall undergo, at a minimum, the review procedures described in this Section of the SOW, under the schedule set forth for the "Construction As-Built Report", and consist of draft and final submissions.

If mutually agreed, EPA and the Work Defendants may develop and implement revised review procedures to reflect current project complexities, EPA oversight policies and requirements, and other procedures designed to streamline project administrative and enforcement implementation.

7.0 SCHEDULES

7.1 Introduction

This Chapter outlines the schedules for deliverables and other activities.

If EPA determines it is appropriate, time periods set forth pursuant to this schedule may be changed by written notification from EPA, without requiring a formal modification of CD-8, management plan, or approved project deliverable.

Requests from the Work Defendants for schedule modifications shall be timely and include discussion of the reason for the request.

Work Defendants shall confirm to EPA the calendar date of subsequent deliverables.

EPA shall retain sole discretionary authority to approve, conditionally approve, or disapprove deliverables, any modifications to the contents of each deliverable, or changes to the schedule for activities and submittal of deliverables proposed by the Work Defendants.

EPA shall retain sole discretionary authority to require fewer or additional deliverables based on various project factors including: increasing or decreasing project complexity; changes in the Work Defendants' work approach; and receipt of new monitoring data. EPA shall provide written notification to the Work Defendants detailing revised deliverables and associated submittal schedules at least 14 days prior to the date scheduled for the next related deliverable. The Work Defendants shall provide the deliverables as required.

7.2 Schedules for Management Plans

7.2.1 Work Plan

Work Plan Outline	If not undertaken as an early action activity outside the scope of CD-8, 2 weeks after CD-8 lodging
Prefinal Work Plan	8 weeks after receipt of EPA approval of the Work Plan Outline, or 8 weeks after CD-8 lodging if the Work Plan Outline was prepared as an early action activity outside the scope of CD-8, whichever is later

Final Work Plan	4 weeks after receipt of EPA approval of the Prefinal Work Plan
Amended Work Plan, if necessary	With Remedial Design Investigation (RDI) Report, if necessary; or as required by EPA

7.2.2 Final Remedy SHERP

Prefinal SHERP	4 weeks after receipt of EPA comments on the Work Plan Outline
Final SHERP	4 weeks after receipt of EPA comments on the Prefinal SHERP
Amended SHERP, if necessary	With Final Design Packages or as warranted by changes in site conditions

7.2.3 QA/QC Plan

QA/QC Outline	8 weeks after CD-8 lodging
Prefinal QA/QC Plan	8 weeks after receipt of EPA approval of the QA/QC Plan Outline
Final QA/QC Plan	4 weeks after receipt of EPA approval of Prefinal QA/QC Plan
Amended QA/QC Plan, if necessary	With Final Design Packages

7.2.4 Operations Plans (O&M and Site Administration)

Operations Plan Outline	As established in the Final Work Plan
Prefinal Operations Plan	8 weeks after receipt of EPA approval of the Plan Outline
Final Operations Plan	4 weeks after receipt of EPA approval of the Prefinal Plan
Revised Final Operations Plan (Prefinal and Final Submittals)	Concurrent with transition plans as required by EPA

Amended Final Operations Plan, as required	As established in the Compliance Action Plan

7.2.5 **Transition Plans (as required)**

Outline	As established in the Final Work Plan
Prefinal	8 weeks after receipt of EPA approval of the Outline
Final	4 weeks after receipt of EPA approval of the Prefinal Plan

7.2.6 **Project Proposal/Technical Memoranda**

Draft Technical Memorandum	As approved by EPA
Final Technical Memorandum	4 weeks after receipt of EPA approval of the Draft Technical Memorandum

7.2.7 **Sampling Plans**

Draft	As established in Final Work Plan, ASE Report, RDIWP, or Project Proposal/TM, as appropriate
Final	4 weeks after receipt of EPA approval of the Draft Plan

7.2.8 **Progress Reports**

Progress Report	Monthly or quarterly, pursuant to Section VII C.4.b. of CD-8, by the 21st of the month beginning in second full month following the effective date of CD-8
Progress Report modifications, if required	EPA comments shall be incorporated into the next Progress Report due more than two weeks from the date the comments are received

7.3 **Schedules for Groundwater Monitoring Activities**

7.3.1 **Long-Term Groundwater Monitoring Plan (if not undertaken as an early action activity outside the scope of CD-8)**

Draft	8 weeks after CD-8 lodging
Final	4 weeks after receipt of EPA approval of the Draft Plan

7.3.2 **Groundwater Monitoring Reports**

7.3.2.1 **Groundwater Data Report**

Final	12 weeks after the first groundwater monitoring and sampling event performed each calendar year

7.3.2.2 **Annual Groundwater Monitoring and Evaluation Report**

Draft	Annually within 16 weeks following completion of the second groundwater monitoring event performed each calendar year
Final	4 weeks after receipt of EPA approval of the Draft Report

7.3.3 **Natural Attenuation Contingency Action Implementation Plan(s)**

Draft Plan, if required by EPA	6 weeks after receipt of EPA notification that natural attenuation is not progressing as intended
Final Plan	4 weeks after receipt of EPA approval of the Draft Plan

7.3.4 **Contingency Remedial Design Investigation Work Plan(s), if required by EPA**

Draft Plan	4 weeks after receipt of verification of a groundwater cleanup standard exceedance at or beyond the Groundwater Compliance Lines, as directed by EPA

Final Plan	2 weeks after receipt of EPA approval of the Draft Plan

7.4 Schedules for Remedial Design Investigation Activities for Perimeter Liquids Control Actions

7.4.1 First Area-Specific Evaluation (ASE) (for areas described in Section 5.2.2 of this SOW; if not undertaken as an early action activity outside the scope of CD-8)

Draft Report	12 weeks after CD-8 lodging
Final Report	2 weeks after receipt of EPA approval of the Draft Report

7.4.2 Additional Area-Specific Evaluations

Draft Report	8 weeks after verification of chemical performance standard exceedance as reported in either the Draft Annual Groundwater Monitoring and Evaluation Report or the Groundwater Data Report
Final Report	2 weeks after receipt of EPA approval of the Draft Report

7.4.3 First Remedial Design Investigation Work Plan (RDIWP) - (for areas described in Section 5.3 of this SOW)

Draft RDIWP	8 weeks after First Final ASE Report
Final RDIWP	2 weeks after receipt of EPA approval of Draft RDIWP

7.4.4 Additional RDIWPs

Draft RDIWP	8 weeks after Final ASE Report
Final RDIWP	2 weeks after receipt of EPA approval of the Draft RDIWP

7.4.5 Remedial Design Investigations (RDIs)

Field Activities	As established in the Final ASE Report or the Final RDIWP
Draft Report (if required)	Within 6 weeks from completion of field activities
Final Report	2 weeks after receipt of EPA approval of the Draft Report

7.5 Schedules for Preliminary Design Deliverables

Prefinal Preliminary Design Report	8 weeks after receipt of EPA approval of: Area-Specific Evaluation Report; or RDI Report; or Project Proposal/TM, as appropriate
Final Preliminary Design Report	4 Weeks after receipt of EPA approval of the Prefinal Preliminary Design Report

7.6 Schedules for Final Design(s) Activities

Intermediate Design, if required by EPA	8 weeks after receipt of EPA approval of the Preliminary Design
90% Design and Report	8 weeks after receipt of EPA approval of the Final Preliminary Design Report
100% Final Design and Report	4 weeks after receipt of EPA approval of the 90% Design Report

7.7 Schedules for Construction Activities

7.7.1 Contractor Selection

Contractor Selection and Construction Start	In accordance with schedule approved in the Final Design

7.7.2 Construction Schedule

Construction Schedule	As established by the Final Design

7.7.3 System Startup(s)

Pre-Startup Testing	As established in Final Design
Transition to New Systems	As established in Final Design
Initial Field Monitoring	As established in Final Design

7.7.4 **Construction As-Built Report(s)**

Prefinal Report	4 weeks after start of Pre-startup Testing
Final Report	4 weeks after receipt of EPA approval of the Prefinal Report

7.7.5 **Construction Completion Reports**

Draft	4 weeks after end of last successful PLC compliance test; 4 weeks after LTS compliance test
Final	2 weeks after receipt of EPA approval of the draft report

7.8 **Schedules for Compliance Testing and Evaluation (includes components installed by other parties under agreements outside the scope of CD-8)**

7.8.1 **Compliance Testing Plans**

Draft	Concurrent with Preliminary Design submittal
Final	Concurrent with Final Design submittal

7.8.2 **Compliance Testing**

Perimeter Liquids Control (PLC)	120 consecutive days following approved startup for each PLC system constructed (including components installed by other parties under agreements outside the scope of CD-8)
Natural Attenuation	Annual report incorporated into Annual Groundwater Monitoring and Evaluation Report

LTS Modifications	30 consecutive days following EPA approval of systems pretesting

7.8.3 **Compliance Testing Reports**

Draft	8 weeks after completion of the Compliance Testing Period
Final	2 weeks after receipt of EPA approval of the Draft Report

7.9 **Schedules for Implementation of Access and Institutional Controls**

7.9.1 **Work Plan**

Work Plan	120 days following CD lodging

7.9.2 **Bi-Annual Update (Subject to frequency reductions no earlier than 5 years after lodging of this Consent Decree as approved by EPA)**

Final Bi-Annual Work Plan Update	Every two years, concurrent with the Annual Groundwater Monitoring and Evaluation Report for the relevant year

7.10 **Schedule for Annual Work Status Report**

Draft Report	Concurrent with submittal of Draft Annual Groundwater Monitoring and Evaluation Report
Final Report	Concurrent with submittal of Final Annual Groundwater Monitoring and Evaluation Report

7.11 **Schedule for 5-Year Work Status Report**

The 5-Year Work Status Report in draft and final form shall be submitted by the Work Defendants to EPA concurrent with submittal of the Annual Work Status Report.

7.12 **Schedule for Final Remedial Action Completion Report**

The Remedial Action Completion Report shall be submitted by the Work Defendants to EPA in accordance with Section XXXVI of CD-8.

7.13 Schedule for Final Work Completion Report

The Final Work Completion Report shall be submitted by the Work Defendants to EPA in accordance with Section XXXVI of CD-8.

7.14 Schedule for CD-8 Excluded Work Completion Report

The CD-8 Excluded Work Completion Report shall be submitted by the Work Defendants to EPA in accordance with Section VIII C. of CD-8.

Table SOW-1

Potential Perimeter Liquids Control Remedial Actions

- Enhanced landfill gas recovery and control;
- Enhanced liquids recovery in CD-3 gas recovery wells;
- Focused liquids extraction within/beneath landfill in areas upgradient of POC;
- In-situ remediation technologies to enhance volatile constituent recovery or bioremediation;
- Focused liquids extraction wells in perimeter "hot spot" areas;
- Shallow perimeter liquids/leachate collection trench;
- Expanded source control by leachate extraction from the waste near perimeter areas;
- Full (continuous) liquids extraction in affected perimeter areas.

Notes:

- Enhanced landfill gas recovery, liquids recovery from CD-3 gas recovery wells, and focused liquids extraction systems in perimeter or upgradient areas may require more complete characterization of the release mechanisms of contamination and migration pathways.
- Enhanced groundwater monitoring may also be implemented, if appropriate, as an initial remedial action during the Area-Specific Evaluation and the Remedial Design Investigation to collect additional information to evaluate the specific remedial action(s) which may be needed and to implement a PLC response.

Table SOW-2
- OII Site Natural Attenuation Requirements -
Maximum Times (a) and Distances (b) to Reach Cleanup Standards in Groundwater

	Organic Constituents		Inorganic Constituents	
Area	Years	*Distance (feet)*	Years	*Distance (feet)*
Northwest Area - Shallow Units	12	*0*	56	*600*
Northwest Area - Deeper Units	12	*0*	56	*600*
Southwest Area - Shallow Units	34	*200*	150	*1,000*
Eastern Area	18	*0*	56	*600*

Note: Times and distances are from *Table 17* of the *Final ROD*.
(a) Times are years for contaminant concentrations in groundwater to be reduced to cleanup standards from the first date when perimeter liquids control meets Performance Standards at the upgradient POC in that subarea.
(b) Distances listed refer to distances beyond the Extent of Groundwater Cleanup Standard Exceedances shown on Figure SOW-3. These distances, graphically represented on Figure SOW-3, form the Groundwater Compliance Lines.

Table SOW-3

Examples of Trend Analyses "Triggers" for Initiating Natural Attenuation Contingency Response Actions

- conditions that indicate to EPA a continued release of landfill liquids into offsite areas is occurring (i.e., unexpected increases in concentration of landfill constituents in individual wells located beyond, but near the POC, or an extended period of time during which the concentration of landfill constituents in wells near the POC do not decline following the achievement of perimeter liquids control Performance Standards at the upgradient POC);
- a statistically significant trend in sub-area wide average concentrations inconsistent with the natural attenuation requirements presented in Table SOW-2, or an extended period without decreases in the sub-area wide average concentration that indicates to EPA that groundwater cleanup standards exceedances will extend beyond the maximum cleanup times provided in Table SOW-2 for the corresponding sub-area;
- increasing constituent concentrations at individual wells located near the downgradient extent of contamination that indicate to EPA that the potential for groundwater cleanup standard exceedances beyond the Groundwater Compliance Lines shown on Figure SOW-3;
- verification of a groundwater cleanup standard exceedance at or beyond the Groundwater Compliance Lines.

Appendix I

REFERENCES

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STAND-ALONE EMERGENCY RESPONSE PLAN, CHAPTER 16.0 OF THE SAFETY, HEALTH AND EMERGENCY RESPONSE PLAN (SHERP) INCLUDING APPENDED REFERENCES OII LANDFILL, CD-1 and CD-3 ACTIVITIES. Prepared for: CURE, Inc. and New Cure, Inc. September 15, 1994.

VOLUMES 1 THROUGH 6, FINAL LTS CLOSEOUT REPORT, Operating Industries, Inc. (OII) Landfill Monterey Park, California. July 1995, Revised November 1995. Prepared for: CURE, Inc. Prepared by: New Cure, Inc., in association with Bryan A. Stirrat & Associates, Environmental Solutions, Inc.

Meteorological Monitoring Station System Operation and Maintenance and Data Quality Assurance Plan, Operating Industries, Inc. Superfund Site - Monterey Park, California. Prepared for U. S. Army Corps of Engineers - Los Angeles District. Prepared by CDM Federal Programs Corporation, Revision 1, July 1995.

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Survey Report of Site Survey Control Points and Boundary Survey for OII Landfill CD-3 Activities. Prepared for New Cure, Inc. Prepared by Lockman & Associates, May 14, 1996.

Site Operations Plan. Prepared for New Cure, Inc. Prepared by Foster Wheeler Environmental Corporation in association with Advanced Earth Sciences, Inc., GeoSyntec Consultants, and SCS Engineers, August 1997.

SASP - Site Access and Security Plan, Operating Industries, Inc. (OII) Landfill, Monterey Park, California. Prepared for New Cure, Inc. Prepared by Foster Wheeler Environmental Corporation, September 1998.

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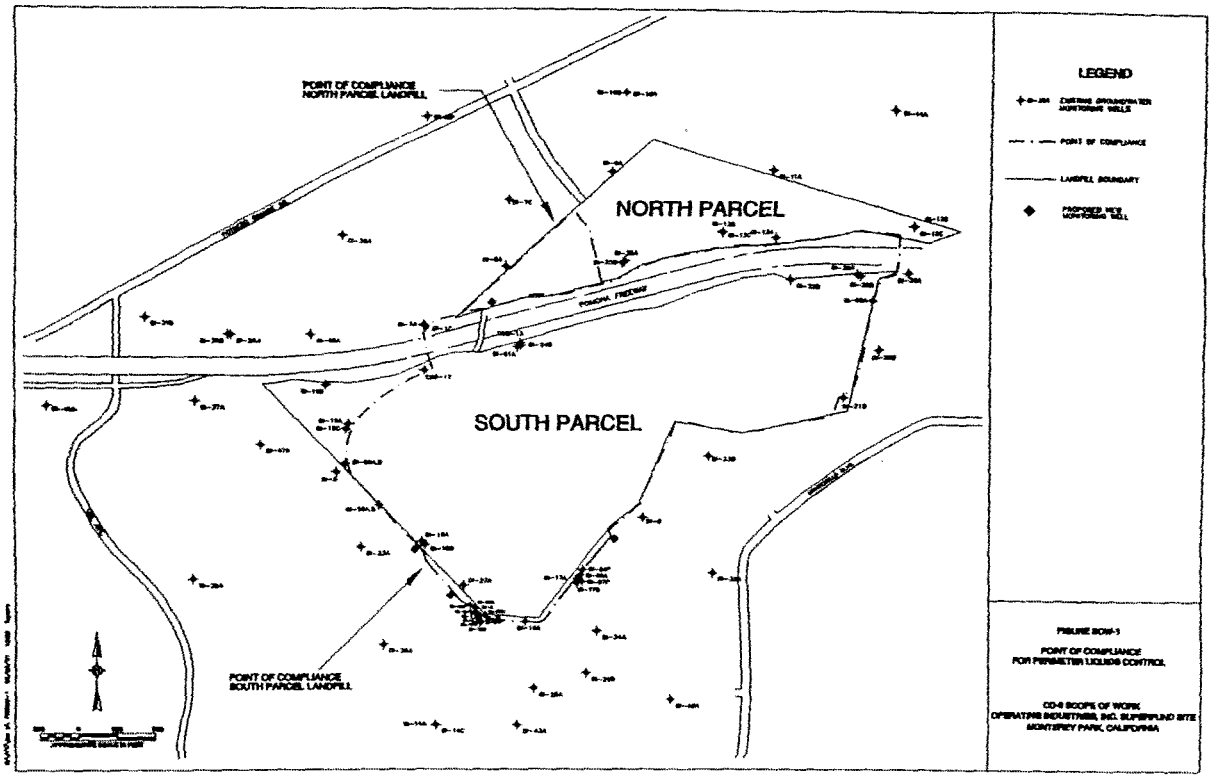

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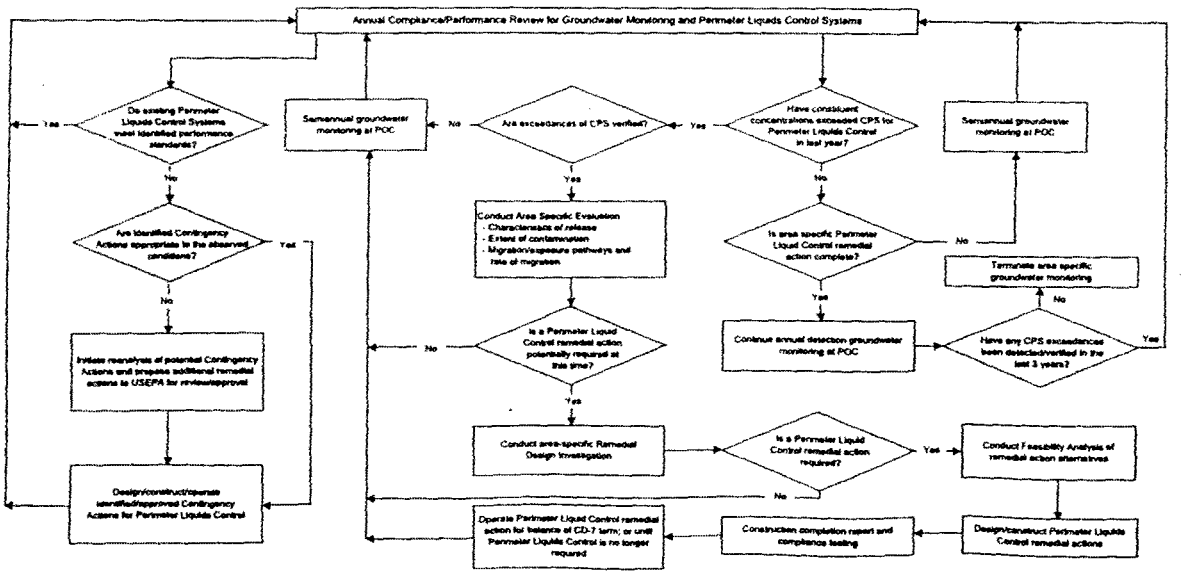
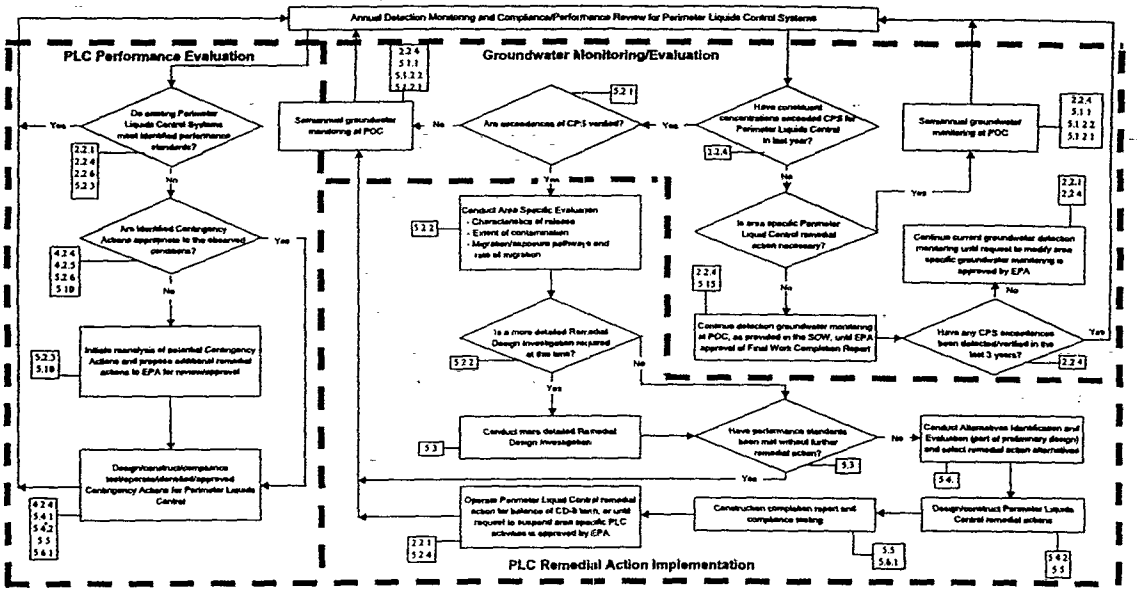
FIGURE SOW-2A
Decision Tree Chart



00959

FIGURE SOW - 2B
DECISION PROCESS FOR PERIMETER LIQUIDS CONTROL IMPLEMENTATION



Note: [5.1.1] is reference to SOW section

Figure SOW - 2B
DECISION PROCESS
FOR PERIMETER LIQUIDS CONTROL
IMPLEMENTATION

CD-8 Scope of Work
Operating Industries, Inc. Superfund Site
Monterey Park, California

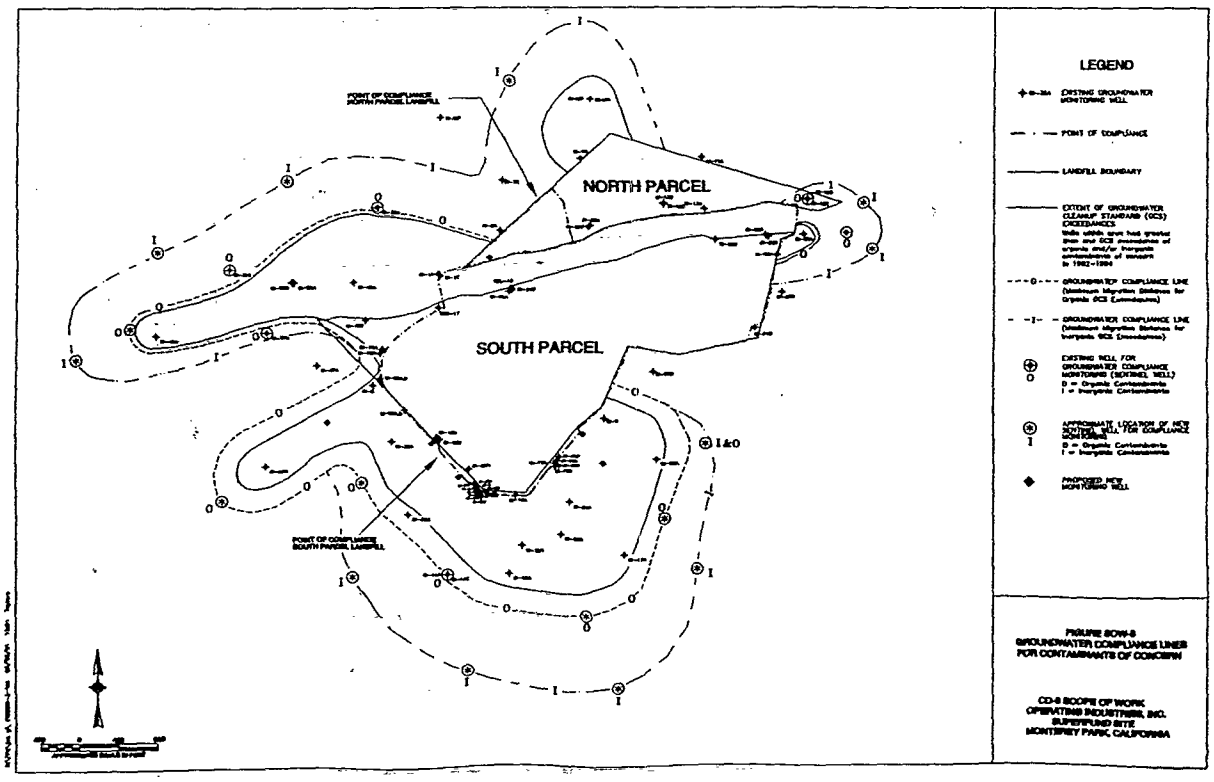


FIGURE SOW-8
GROUNDWATER COMPLIANCE LINES
FOR CONTAMINANTS OF CONCERN

CD-8 SCOPE OF WORK
OPERATING INDUSTRIES, INC.
SUPERFUND SITE
MONTEREY PARK, CALIFORNIA

FIGURE SOW-4
DECISION PROCESS FOR MONITORED NATURAL ATTENUATION

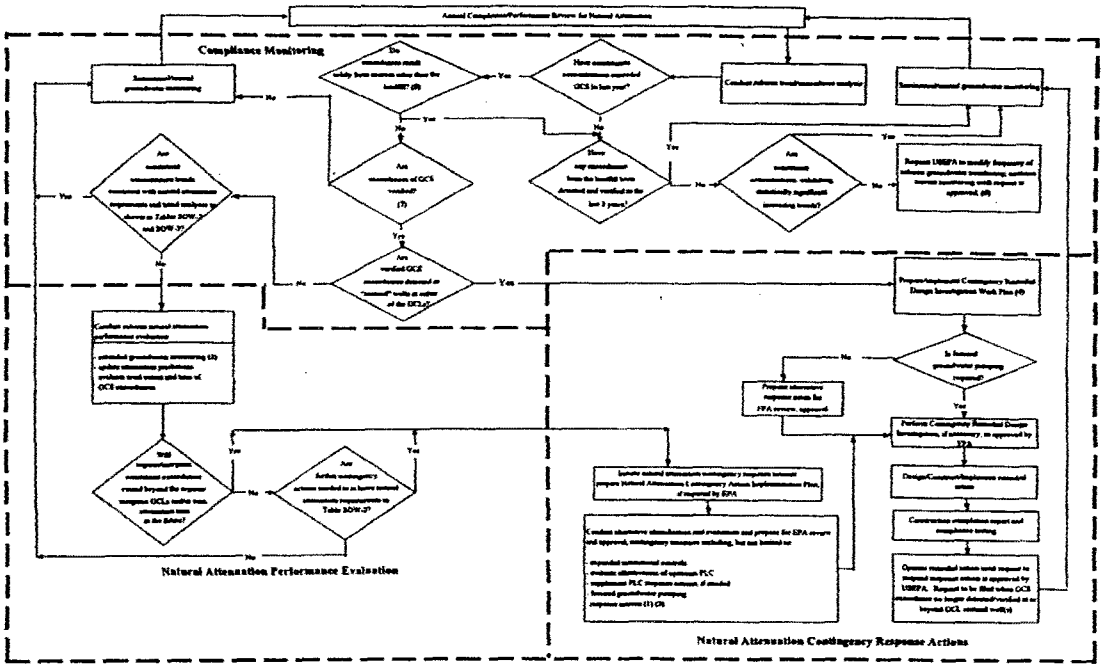


FIGURE SOW-4
DECISION PROCESS FOR MONITORED NATURAL ATTENUATION

Notes:

(1) Factors that EPA may consider before requiring a focused groundwater pumping response action include EPA determination that 1) other contingency actions are or will be ineffective in achieving natural attenuation cleanup requirements, or 2) GCS exceedances of arsenic or manganese are predicted to extend beyond either the onsite or offsite GCL, respectively, or to exceed the maximum time to achieve the GCS for the subarea as presented in Table SOW-2; see Table SOW-3 for additional detail

(2)

(3) If contingency measures represent a significant departure from the remedy selected by EPA in the Final ROD, a ROD amendment or Explanation of Significant Difference may be appropriate.

(4) The evaluation of alternative designs to implement the focused groundwater pumping response action in the remedial design investigation shall consider the potential mobility, toxicity and persistence of the constituents at issue, the degree to which the GCS has been exceeded at the GCL, the proximity to any nearby areas that may be used as a source of groundwater supply, hydrogeologic conditions in the affected groundwater zone that may influence the implementation and effectiveness of groundwater pumping in limiting constituent migration, access to offsite properties, and impacts on the community.

(5) The evaluation to determine whether sources other than the landfill have caused exceedance of the GCS in areas beyond the POC shall consider, but is not limited to the following: the specific detected constituent(s) and concentrations in comparison to upgradient wells and the POC, the presence of other known and/or potential upgradient sources of the detected constituent(s); the presence/absence of other landfill constituents in the subject well and in other upgradient wells, and the history of detection of the same constituent(s) in other nearby wells.

(6) If GCS exceedances are verified at any time at the upgradient point of compliance, or if EPA determines that conditions warrant continued monitoring, EPA may require Work Defendants to continue (or later restart) monitoring selected wells in the subarea.

(7) If verified exceedances of groundwater cleanup standards are detected in areas that are not currently contaminated above groundwater cleanup standards and are not located downgradient of currently contaminated areas, EPA will determine natural attenuation time and distance performance standards and Groundwater Compliance Lines as are presented in Table SOW-2, and Figure SOW-3, respectively, for other areas. EPA may also require new sentinel wells and contingency measures in these areas.

EIGHTH PARTIAL CONSENT DECREE

EXHIBIT D

TABLE OF CASH DEFENDANTS

Company Name	Cash Defendant Type (Cash-1, Cash-1/R, Cash-2, Cash-2/R)	Applicable Covenants: Covenants for the Cash-1 and Cash-1/R Defendants (Section XXIX)	Applicable Covenants: Covenants for the Cash-2 and Cash-2/R Defendants (Section XXXI)	Applicable Covenants: Covenant for Matters Addressed in the First and Third Decrees (Section XXXII)	Settlement Payment
Active USA, Inc.					$243,331
Kenosha Auto Transport Corporation (198)	Cash-1	xxx			
AK Steel Corporation					$310,012
Armco (175)	Cash-1	xxx			
American Home Products Corporation					$34,979
EKCO (Packaging Corp of America) (761)	Cash-1	xxx			
American Pacific International					$5,562,106
American Pacific International (47)	Cash-1/R	xxx		xxx	
American Petrolina Holding Company					$588,336
American Petrolina (94)	Cash-1	xxx			
AmeriPride Services, Inc.					$279,125
Welch's Overall Cleaning Company (149)	Cash-2		xxx		
Amtrak					$222,768
Amtrak (210)	Cash-1	xxx			
ANACO					$279,659
Anaheim Foundry (180)	Cash-1	xxx			
Anadarko Petroleum Corporation					$4,256,460
Champlin Petroleum (25)	Cash-1	xxx			
Anchorlok Lear Siegler Corp.					$542,275
Anchorlok (102)	Cash-1	xxx			
Aramark Uniform and Career Apparel, Inc.					$1,183,755
Red Star Industrial Service (154)	Cash-1	xxx			
Industrial Control Systems (287)	Cash-1/R	xxx		xxx	
New Fashion Cleaners (344)	Cash-1/R	xxx		xxx	
U.S. Industrial Glove (523)	Cash-1/R	xxx		xxx	
Complete Uniform (733)	Cash-1/R	xxx		xxx	

Company Name	Cash Defendant Type (Cash-1, Cash-1/R, Cash-2, Cash-2/R)	Applicable Covenants: Covenants for the Cash-1 and Cash-1/R Defendants (Section XXIX)	Applicable Covenants: Covenants for the Cash-2 and Cash-2/R Defendants (Section XXXI)	Applicable Covenants: Covenant for Matters Addressed in the First and Third Decrees (Section XXXII)	Settlement Payment
Atofina					$374,083
Purex (Carson Facility only) (234)	Cash-1	xxx			
M & T Chemicals (332)	Cash-1	xxx			
Penwalt Corp. (522)	Cash-1	xxx			
Perex Corp. (1604)	Cash-1/R	xxx		xxx	
Bandag, Incorporated					$120,580
Master Processing (331)	Cash-1	xxx			
BASF Corporation					$205,115
Inmont Ink (162)	Cash-1	xxx			
BASF Wyandotte Corp. (787)	Cash-1/R	xxx		xxx	
BCI Coca Cola Bottling Company of Los Angeles					$878,090
Dr. Pepper Bottling (187)	Cash-1/R	xxx		xxx	
Coca-Cola Bottling Co. (206)	Cash-1	xxx			
National Drinks Inc. (581)	Cash-1/R	xxx		xxx	
Behr Process					$10,812
Behr Process (1570)	Cash-1	xxx			
Berwind Railway Service Co.					$405,552
Berwind Railway Service (142)	Cash-1	xxx			
Beylik Drilling, Inc. [1,3]					$301,190
Beylik Drilling (278)	Cash-1/R	xxx		xxx	
BJ Services Company					$300,164
BJ Service Equipment (233)	Cash-1	xxx			
B.J. Hughes (370)	Cash-1	xxx			
Borden, Inc.					$315,962
Borden, Inc. (172)	Cash-1	xxx			
BP Chemicals, Inc. [3]					$1,104,430
Filon (160)	Cash-1/R	xxx		xxx	
Budget Uniform Rental Supply, Inc. [1]					$213,737
Budget Uniform Rental (226)	Cash-1	xxx			
Burns International Services Corporation					$846,077
Byron Jackson Pump (68)	Cash-1	xxx			
Borg-Warner (1576)	Cash-1	xxx			
CalMat Company					$237,428
Conrock Co. (201)	Cash-1	xxx			
Chrome Crankshaft Company, Inc.					$129,729
Chrome Crankshaft Company, Inc. (262)	Cash-2		xxx		

Company Name	Cash Defendant Type (Cash-1, Cash-1/R, Cash-2, Cash-2/R)	Applicable Covenants			Settlement Payment
		Covenants for the Cash-1 and Cash-1/R Defendants (Section XXIX)	Covenants for the Cash-2 and Cash-2/R Defendants (Section XXXI)	Covenant for Matters Addressed in the First and Third Decrees (Section XXXII)	
City of Los Angeles					$316,597
Dept. of Public Works, City of Los Angeles (3971)	Cash-1	xxx			
City of Los Angeles					$1,132,242
Dept. of Water & Power, City of Los Angeles (42)	Cash-1	xxx			
Clean Steel, Inc.					$153,081
Clean Steel (279)	Cash-1	xxx			
Clougherty Packing Company					$537,460
Clougherty Packing (138)	Cash-1	xxx			
Farmer John (320)	Cash-1/R	xxx		xxx	
CNA Holdings, Inc. [2]					$1,500
Celanese Coatings & Polymer (197)	Cash-1	xxx			
Coca-Cola Company					$44,499
Coca Cola Company (643)	Cash-1	xxx			
Conopco, Inc.					$309,808
Lever Bros. (161)	Cash-1	xxx			
Consolidated Drum Reconditioning Co. [2,3]					$830,025
S. Rose Cooperage (135)	Cash-2/R		xxx	xxx	
Crosby & Overton, Inc. [1,2]					$996,592
Crosby & Overton (114)	Cash-2/R		xxx	xxx	
Crown Cork & Seal Co., Inc.					$10,986
Crown Cork & Seal (2340)	Cash-1/R	xxx		xxx	
DaimlerChrysler Corporation					$183,164
Nu Car Prep Systems (248)	Cash-1	xxx			
Chrysler Motor (2866)	Cash-1	xxx			
De Calta International Corp.					$271,776
De Calta Oil Co. (183)	Cash-1	xxx			
Delt Incorporated					$230,660
Delt Incorporated (209)	Cash-1	xxx			
Deutsch Company					$162,479
Deutsch Company (255)	Cash-1	xxx			
Dresser Industries, Inc.					$381,478
Magcobar Co. (230)	Cash-1	xxx			
Pacific Pumps (239)	Cash-1	xxx			
Dunn-Edwards Corporation					$331,487
Dunn-Edwards Corporation (184)	Cash-1	xxx			

Exhibit D, Eighth Partial Consent Decree, Table of Cash Defendants.

Company Name	Cash Defendant Type (Cash-1, Cash-1/R, Cash-2, Cash-2/R)	Applicable Covenants			Settlement Payment
		Covenants for the Cash-1 and Cash-1/R Defendants (Section XXIX)	Covenants for the Cash-2 and Cash-2/R Defendants (Section XXXI)	Covenant for Matters Addressed in the First and Third Decrees (Section XXXII)	
Fairchild Holding Corp.					$252,298
Voi Shan Manufacturing (243)	Cash-2		xxx		
Kaynar Mfg. Co. (754)	Cash-2/R		xxx	xxx	
Fairchild (1303)	Cash-2/R		xxx	xxx	
Greer Hydraulics (1806)	Cash-2/R		xxx	xxx	
Natter Mfg. (2312)	Cash-2/R		xxx	xxx	
Ferro Corporation					$362,984
Productol Chemical (150)	Cash-1	xxx			
Flint Ink Corporation					$541,171
Flint Ink Corporation (65)	Cash-1	xxx			
Cal. Ink Co. (1120)	Cash-1/R	xxx		xxx	
GC International, Inc. [1]					$149,840
Raytee Co. (111)	Cash-1	xxx			
Gemini Industries, Inc.					$200,200
Gemini Industries (189)	Cash-2		xxx		
General Electric					$244,910
General Electric (225)	Cash-1	xxx			
Pacific Airmotive (1028)	Cash-1/R	xxx		xxx	
General Latex & Chemical Corporation					$299,825
General Latex (171)	Cash-1	xxx			
Georgia Pacific Corporation					$224,304
Georgia Pacific Corporation (218)	Cash-1	xxx			
Georgia Pacific Corporation					$104,312
Fort James/Crown Zellerbach (415)	Cash-1	xxx			
Gould, Inc.					$218,566
Gould, Inc. (179)	Cash-2		xxx		
Hellman Properties LLC					$257,475
Hellman Properties (191)	Cash-1	xxx			
Herbell Oil Exploration; William P. Herder [1]					$57,000
Herbell Oil (54)	Cash-1	xxx			
Hydril Company					$302,749
Hydril Company (141)	Cash-1	xxx			
IMC Global Inc.					$264,030
Petro-Lewis Corporation (188)	Cash-1	xxx			
Inglewood, City of					$189,964
Inglewood, City of (176)	Cash-1	xxx			

Exhibit D, Eighth Partial Consent Decree, Table of Cash Defendants.

Company Name	Cash Defendant Type (Cash-1, Cash-1/R, Cash-2, Cash-2/R)	Applicable Covenants			Settlement Payment
		Covenants for the Cash-1 and Cash-1/R Defendants (Section XXIX)	Covenants for the Cash-2 and Cash-2/R Defendants (Section XXXI)	Covenant for Matters Addressed in the First and Third Decrees (Section XXXII)	
Inland Paperboard and Packaging, Inc.					$194,713
Inland Container (325)	Cash-1	xxx			
Pacific Kraft (917)	Cash-1/R	xxx		xxx	
International Paper Company					$974,649
International Paper (118)	Cash-1	xxx			
St. Regis Paper (211)	Cash-1	xxx			
Hoerner-Waldorf Corp. (388)	Cash-1/R	xxx		xxx	
Federal Paper Board Corp. (704)	Cash-1/R	xxx		xxx	
Trend Mills (961)	Cash-1/R	xxx		xxx	
Karpen Plywood (1354)	Cash-1/R	xxx		xxx	
Champion International Fed En (3702)	Cash-1	xxx			
Jura Services Inc					$172,216
Hentex (259)	Cash-1	xxx			
Kern Foods Shareholders Liquidating Trust [1]					$571
Kerns Foods, Inc. (61)	Cash-1	xxx			
Kinder Morgan Energy Partners LLP					$249,295
GATX Terminals Corporation (167)	Cash-2		xxx		
Caty Tank Storage Corp. (1485)	Cash-2/R		xxx	xxx	
Longview Fibre Company					$266,464
Longview Fibre (181)	Cash-1	xxx			
Los Angeles County Metropolitan Transportation Authority					$1,562,898
So Cal RTD (45)	Cash-1	xxx			
Lunday-Thagard Company					$165,547
Lunday Thagard Oil Co. (222)	Cash-2		xxx		
Maytag Corporation					$331,130
Gaffers & Sattler (117)	Cash-2		xxx		
Magic Chef West (1994)	Cash-2/R		xxx	xxx	
McAuley LCX Corporation					$333,560
McAuley Oil Company (155)	Cash-1	xxx			
McKesson Corporation					$189,651
Sparkletts (200)	Cash-2		xxx		
Merck & Co., Inc.					$776,260
Calgon Corporation (70)	Cash-1	xxx			
Mydrin Inc.					$221,625
H & D Latex (214)	Cash-1	xxx			
Nestle USA, Inc.					$363,147
Carnation Company (143)	Cash-1	xxx			

Exhibit D, Eighth Partial Consent Decree, Table of Cash Defendants.

Company Name	Cash Defendant Type (Cash-1, Cash-1/R, Cash-2, Cash-2/R)	Applicable Covenants			Settlement Payment
		Covenants for the Cash-1 and Cash-1/R Defendants (Section XXIX)	Covenants for the Cash-2 and Cash-2/R Defendants (Section XXXI)	Covenant for Matters Addressed in the First and Third Decrees (Section XXXII)	
NL Industries, Inc.					$566,344
NL Industries, Inc. (82)	Cash-1	xxx			
Northrop Grumman Corporation					$154,332
Northrop Corporation (277)	Cash-1	xxx			
Norton & Son of CA dba Olympic Paint & Chemical Co. [2]					$380,060
Olympic Paint (252)	Cash-1/R	xxx		xxx	
Owens-Illinois, Inc.					$195,083
Owens-Illinois, Inc. (163)	Cash-2		xxx		
Pacific Telesis Group					$156,468
Pacific Telephone (Pac Bell) (274)	Cash-1	xxx			
Pacific Tube Co.					$201,579
Pacific Tube Co. (217)	Cash-1	xxx			
PakTank Corporation					$363,568
Wilmington Liquid Bulk (131)	Cash-1	xxx			
Parker-Hannifin Corporation					$657,093
Bertea & Parker Seal (88)	Cash-1	xxx			
Petrominerals Corporation [1]					$483,333
Century Oil Management (232)	Cash-1/R	xxx		xxx	
Redondo Oil Co. (382)	Cash-1/R	xxx		xxx	
Purex Industries, Inc.					$405,403
Baron & Blakeslee, Inc. (Gardena Facility) (257)	Cash-1/R	xxx		xxx	
Quebecor Printing, Inc.					$174,188
California Rotogravure (254)	Cash-1	xxx			
Reichhold, Inc.					$443,820
Reichhold Chemicals, Inc. (96)	Cash-2		xxx		
Reliance Upholstery Supply Company [1]					$119,050
Reliance Upholstery Supply Company (281)	Cash-2		xxx		
Revlon Consumer Products Corporation					$159,726
Max Factor Co. (216)	Cash-2		xxx		
Royal Aluminum Company, Inc.					$194,311
Royal Aluminum Co. (224)	Cash-1	xxx			
Royal Industries International					$215,832
Royal Industries (223)	Cash-1	xxx			
Safeway Inc.					$360,446
Safeway (123)	Cash-1	xxx			

Exhibit D, Eighth Partial Consent Decree, Table of Cash Defendants.

Company Name	Cash Defendant Type (Cash-1, Cash-1/R, Cash-2, Cash-2/R)	Applicable Covenants			Settlement Payment
		Covenants for the Cash-1 and Cash-1/R Defendants (Section XXIX)	Covenants for the Cash-2 and Cash-2/R Defendants (Section XXXI)	Covenant for Matters Addressed in the First and Third Decrees (Section XXXII)	
Sara Lee Corporation					$220,273
Shasta Beverages (250)	Cash-1	xxx			
Larrys Food Products Inc. (1188)	Cash-1/R	xxx		xxx	
Soule Liquidating Agency [1,3]					$1,500
Soule Steel (12)	Cash-1	xxx			
Southern California Edison Company					$1,307,120
Southern California Edison Company (41)	Cash-1	xxx			
Southern California Gas Co.					$5,660,041
Southern California Gas Company (16)	Cash-1	xxx			
Pacific Gas and Lighting (663)	Cash-1/R	xxx		xxx	
Pacific Lighting & Service Co. (1192)	Cash-1/R	xxx		xxx	
Southwest Processors, Inc. [1]					$140,000
Southwest Processors & Ameroil (64)	Cash-1	xxx			
Star-Kist Foods, Inc.					$199,920
Star-Kist Foods, Inc. (229)	Cash-1	xxx			
Steelscape, Inc.					$267,845
Supracote, Inc. (177)	Cash-1	xxx			
Superior Industries International, Inc,					$387,360
Superior Industries International, Inc, (133)	Cash-1	xxx			
Surface Protection Industries, Inc.					$224,367
Zolatone Process (213)	Cash-1	xxx			
TDY Industries, Inc.					$110,479
TDY Industries, Inc (253)	Cash-1	xxx			
Teledyne-Post	Cash-1	xxx			
Teledyne-Linair	Cash-1	xxx			
Teledyne-Sprague	Cash-1	xxx			
Teledyne (651 W. Knox facility)	Cash-1	xxx			
Teledyne Technologies, Inc.					$55,239
Teledyne Technologies, Inc. (3974)	Cash-1	xxx			
Teledyne Cast Products	Cash-1	xxx			
Teledyne Microelectronics/Teledyne Micro	Cash-1	xxx			
Teledyne Pro Industry/Teledyne Pico Industries	Cash-1	xxx			
Teledyne (19264 Panama facility)	Cash-1	xxx			

Exhibit D, Eighth Partial Consent Decree, Table of Cash Defendants.

Company Name	Cash Defendant Type (Cash-1, Cash-1/R, Cash-2, Cash-2/R)	Applicable Covenants			Settlement Payment
		Covenants for the Cash-1 and Cash-1/R Defendants (Section XXIX)	Covenants for the Cash-2 and Cash-2/R Defendants (Section XXXI)	Covenant for Matters Addressed in the First and Third Decrees (Section XXXII)	
Textile Rubber & Chemical Co.					$771,035
Textile Rubber & Chemical (62)	Cash-2		xxx		
The Flintkote Company					$190,559
Flintkote Company (264)	Cash-1	xxx			
Genstar Building Materials (1535)	Cash-1/R	xxx		xxx	
The Hertz Corporation					$248,975
Hertz Corporation (140)	Cash-1	xxx			
The Marquardt Company [1]					$57,337
Marquardt Co. (208)	Cash-1	xxx			
The Pillsbury Company					$152,556
Pillsbury Company & Speas Vinegar (280)	Cash-1	xxx			
The Procter & Gamble Manufacturing Company					$418,669
Procter & Gamble Company (122)	Cash-1	xxx			
Thermal Engineering International USA, Inc.					$425,054
Thermal Engineering International (120)	Cash-1	xxx			
Todd Pacific Shipyards Corporation					$388,305
Todd Shipyards Corporation (134)	Cash-1	xxx			
Tree Island Steel					$270,177
Tree Island Steel (170)	Cash-1	xxx			
Tribune Company and Los Angeles Times Communications LLC					$137,795
Los Angeles Times (275)	Cash-1	xxx			
Times Mirror	Cash-1	xxx			
Times Mirror Press	Cash-1	xxx			
Trico Industries					$232,832
Kobe, Inc. (205)	Cash-1	xxx			
U.S. Borax, Inc.					$371,035
U.S. Borax & Chemical (145)	Cash-1	xxx			
Unified Western Grocers, Inc.					$206,242
Certified Grocers (184)	Cash-2		xxx		
United Airlines					$228,240
United Airlines (168)	Cash-2		xxx		
United Parcel Service, Inc.					$227,446
United Parcel Service, Inc. (204)	Cash-1	xxx			
Vest, Inc.					$319,300
Bernard Epps (173)	Cash-1	xxx			

Exhibit D, Eighth Partial Consent Decree, Table of Cash Defendants.

Company Name	Cash Defendant Type (Cash-1, Cash-1/R, Cash-2, Cash-2/R)	Applicable Covenants			Settlement Payment
		Covenants for the Cash-1 and Cash-1/R Defendants (Section XXIX)	Covenants for the Cash-2 and Cash-2/R Defendants (Section XXXI)	Covenant for Matters Addressed in the First and Third Decrees (Section XXXII)	
Viacom, Inc.					$310,740
Seven-Up / Royal Crown Bottling Corporation (153)	Cash-1	xxx			
Westinghouse (799)	Cash-1	xxx			
Fortin Laminating Corporation (1046)	Cash-1/R	xxx		xxx	
Water Pik Technologies, Inc.					$6,904
Water Pik Technologies, Inc. (3973)	Cash-1	xxx			
Teledyne Laars	Cash-1	xxx			
Waterford Wedgewood USA, Inc.					$439,968
Franciscan (113)	Cash-1	xxx			
Willamette Industries, Inc.					$368,464
Western Kraft (146)	Cash-1	xxx			
Witco Corporation					$416,597
Witco Chemical (151)	Cash-2		xxx		
Southwest Grease & Oil (665)	Cash-2/R		xxx	xxx	
Golden Bear (775)	Cash-2/R		xxx	xxx	
Wyman-Gordon Company					$260,467
Heisner Metals (190)	Cash-1	xxx			
Xerox Corporation					$785,209
Xerox Corporation (66)	Cash-1	xxx			
Xtra Energy Corporation [3]					$1,909,266
Xtra Energy (99)	Cash-1/R	xxx		xxx	

Footnote 1: The settlement payment shown for this company reflects EPA's determination that a reduction of the payment, and/or installment payments, is justified based upon the company's financial condition. EPA has determined that this company is unable to pay its full volumetric allocation in the Eighth Partial Consent Decree in one installment without jeopardizing its financial viability. For parties with installment payments or other individual payment terms, the detailed payment terms are reflected on the signature pages.

Footnote 2: The settlement payment shown for this company reflects a credit for work performed and/or amounts paid by it or by one of its listed related entities in compliance with Unilateral Administrative Order #94-01 or #97-02.

Footnote 3: This company (or one of its listed related entities) has entered into a settlement of contribution litigation related to the Oil Site. The settlement payment for this company reflects a credit for this settlement.

EIGHTH PARTIAL CONSENT DECREE

EXHIBIT E

TABLE OF WORK DEFENDANTS

Company Name	Work Defendant Type (Work, Work-Related)	Applicable Covenants		Settlement Payment
		Covenants for the Work and Work-Related Defendants (Section XXVIII)	Covenant for Matters Addressed in the First and Third Decrees (Section XXXII)	
Alcoa, Inc.				$94,448
Alcoa (Weslock) (19)	Work	xxx		
Reynolds Aluminum (75)	Work	xxx		
Modern Faucet Manufacturing (651)	Work-Related	xxx	xxx	
Alcoa Sport Products (1026)	Work-Related	xxx	xxx	
Advance Structures (1167)	Work-Related	xxx	xxx	
American Airlines, Inc.				$0
American Airlines, Inc. (59)	Work	xxx		
American National Can				$0
American National Can (4)	Work	xxx		
ARCO				$156,429
Atlantic Richfield & Anaconda (2)	Work	xxx		
Four Corners Pipe Line Company (290)	Work-Related	xxx	xxx	
BetzDearborn, Inc.				$0
Betz Labs (104)	Work	xxx		
Bird, Inc.				$0
Bird Corporation (238)	Work	xxx		
Black & Decker Corporation				$35,906
Black & Decker (228)	Work	xxx		
Kwikset Lock (940)	Work-Related	xxx	xxx	
Brenntag West, Inc.				$0
Soco-Western Chem (112)	Work	xxx		
Bridgestone/Firestone, Inc.				$0
Bridgestone/Firestone, Inc. (129)	Work	xxx		
Chevron Environmental Management Company				$0
Chevron & Gulf (1)	Work	xxx		
Cognis Corporation				$0
Emery (60)	Work	xxx		
Henkle Chem. Inc. (494)	Work	xxx		
Coltec Industries				$0
Menasco, Inc. (80)	Work	xxx		
Conoco, Inc.				$0
Conoco & Douglas Oil Co. (26)	Work	xxx		

Company Name	Work Defendant Type (Work, Work-Related)	Applicable Covenants: Covenants for the Work and Work-Related Defendants (Section XXVIII)	Applicable Covenants: Covenant for Matters Addressed in the First and Third Decrees (Section XXXII)	Settlement Payment
Cooper & Brain Inc.				$0
Cooper & Brain Inc. (185)	Work	xxx		
Crowley Maritime Corporation				$0
Crowley Maritime Corporation (89)	Work	xxx		
Crowley	Work	xxx		
Crowley Environmental Services	Work	xxx		
Crowley Towing & Transfer	Work	xxx		
Crown Beverage Packaging, Inc.				$0
Continental Can Co. (18)	Work	xxx		
Delta Air Lines, Inc.				$0
Western & Delta Airlines (119)	Work	xxx		
Exxon Mobil Corporation				$0
Exxon (5)	Work	xxx		
Mobil & Superior Oil (11)	Work	xxx		
Federal Express Corporation				$0
Flying Tigers (182)	Work	xxx		
Ford Motor Company				$0
Ford Motor Company (194)	Work	xxx		
Gaylord Container Corporation				$0
Crown Zellerbach (272)	Work	xxx		
General Motors Corporation				$8,595
General Motors Corporation (22)	Work	xxx		
Lane, Richard Company (1980)	Work-Related	xxx	xxx	
H & L Tooth Company				$0
Hi-Production Forge (108)	Work	xxx		
Precision Heat Treating	Work	xxx		
Honeywell International				$164,225
Bendix & Garrett (AireSearch) (49)	Work	xxx		
Honeywell, Inc. (260)	Work	xxx		
Allied Chemical (408)	Work-Related	xxx	xxx	
Fluid Systems (1365)	Work-Related	xxx	xxx	
Roto Master (1533)	Work-Related	xxx	xxx	
Hunt-Wesson Inc.				$0
Hunt Wesson-Beatrice (63)	Work	xxx		
Ingersoll-Rand Company				$0
Proto-Tool Company (73)	Work	xxx		
Interstate Brands Corporation				$214,206
Interstate Brands Corporation (186)	Work	xxx		
Four S Bakery (286)	Work-Related	xxx	xxx	
Millbrook Bakery (2235)	Work-Related	xxx	xxx	

Exhibit E, Eighth Partial Consent Decree, Table of Work Defendants.

Company Name	Work Defendant Type (Work, Work-Related)	Applicable Covenants: Covenants for the Work and Work-Related Defendants (Section XXVIII)	Applicable Covenants: Covenant for Matters Addressed in the First and Third Decrees (Section XXXII)	Settlement Payment
Jefferson Smurfit Corporation (U.S.) and Stone Container Corporation				$183,769
Container Corp. of America (97)	Work	xxx		
Southwest Forest Industries (269)	Work	xxx		
Continental Forest (300)	Work-Related	xxx	xxx	
Sierra Pacific (1002)	Work-Related	xxx	xxx	
Kerr McGee Corporation				$32,088
Sun Oil (9)	Work	xxx		
Sun Product Company (1003)	Work-Related	xxx	xxx	
Keysor-Century Corporation				$0
Keysor Century (50)	Work	xxx		
Liberty Vegetable Oil Company				$0
Liberty Vegetable Oil (103)	Work	xxx		
Lockheed Martin Corporation				$8,788
Martin Marietta Aluminum (10)	Work	xxx		
Lockheed Corporation (24)	Work	xxx		
Singer Librascope (1966)	Work-Related	xxx	xxx	
Long Beach Oil Development				$0
Long Beach Oil Development (28)	Work	xxx		
Masco Corporation				$288,468
Price-Pfister (351)	Work-Related	xxx	xxx	
Waste King Universal (584)	Work-Related	xxx	xxx	
American Metal Prod (1216)	Work-Related	xxx	xxx	
Cal-Style Furniture (1229)	Work-Related	xxx	xxx	
Thermador Waste King (1283)	Work-Related	xxx	xxx	
Brass Kraft (2003)	Work-Related	xxx	xxx	
Metaldyne				$0
NI Industries & Weiser Lock & Norris (21)	Work	xxx		
Grant Oil Tool Company (261)	Work	xxx		
Michelin North America, Inc.				$8,022
Uniroyal Goodrich Tire Company (48)	Work	xxx		
U.S. Rubber (1162)	Work-Related	xxx	xxx	
Mitchell Energy Company L.P.				$0
Mitchell Energy Corporation (46)	Work	xxx		
MRC Holdings, Inc.				$0
American Can Company (109)	Work	xxx		
Occidental Petroleum Co.				$88,242
Occidental Petroleum Co (15)	Work	xxx		
Crestmont Oil Co. (542)	Work-Related	xxx	xxx	
Pervo Paint Company				$0
Pervo Paint Co. (256)	Work	xxx		

Exhibit E, Eighth Partial Consent Decree, Table of Work Defendants.

Company Name	Work Defendant Type (Work, Work-Related)	Applicable Covenants: Covenants for the Work and Work-Related Defendants (Section XXVIII)	Applicable Covenants: Covenant for Matters Addressed in the First and Third Decrees (Section XXXII)	Settlement Payment
PPG Industries, Inc				$11,230
PPG Industries Inc. (77)	Work	XXX		
Bowers Printing (1781)	Work-Related	XXX	XXX	
Prudential Overall Supply				$0
Prudential Overall Supply (207)	Work	XXX		
Raytheon Company				$0
Hughes Aircraft (84)	Work	XXX		
SBC Holdings, Inc.				$0
Joseph Schlitz Brewing (51)	Work	XXX		
Shell Oil Company				$0
Shell Oil (8)	Work	XXX		
Shell	Work	XXX		
Shell Chemical Company	Work	XXX		
Shell Station	Work	XXX		
Shell Refinery	Work	XXX		
Shell Oil Corp.	Work	XXX		
Texaco, Inc. [2,3]				$1,453,948
Texaco & Getty Oil (3)	Work	XXX		
Santa Fe Resources (13)	Work	XXX		
Seaboard Oil and Gas (92)	Work-Related	XXX	XXX	
McFarland Energy (193)	Work-Related	XXX	XXX	
Bawden Drilling (305)	Work-Related	XXX	XXX	
The Boeing Company				$0
McDonnell Douglas (7)	Work	XXX		
Rockwell International (130)	Work	XXX		
RocketDyne Division (404)	Work-Related	XXX	XXX	
Energy System Group Rockwell (1117)	Work-Related	XXX	XXX	
Atomics International (1373)	Work-Related	XXX	XXX	
The Glidden Company				$0
Ameritone/Trewax (79)	Work	XXX		
Thums Long Beach Company				$0
Thums Long Beach (72)	Work	XXX		
TRW Inc.				$0
TRW Inc. (81)	Work	XXX		
Union Pacific Railroad Company				$50,026
Southern Pacific Transportation (44)	Work	XXX		
Union Pacific Railroad (56)	Work	XXX		
Pacific Motor Trucking (755)	Work-Related	XXX	XXX	
Unocal Corporation				$325,793
Union Oil of California (6)	Work	XXX		
Collier Carbon & Chemical (244)	Work-Related	XXX	XXX	

Exhibit E, Eighth Partial Consent Decree, Table of Work Defendants.

Company Name	Work Defendant Type (Work, Work-Related)	Applicable Covenants: Covenants for the Work and Work-Related Defendants (Section XXVIII)	Applicable Covenants: Covenant for Matters Addressed in the First and Third Decrees (Section XXXII)	Settlement Payment
Sansenina (686)	Work-Related	XXX	XXX	
Devine Salvage (964)	Work-Related	XXX	XXX	
Union Collier (2207)	Work-Related	XXX	XXX	
Viad Corp.				$5,290
Greyhound Lines & Transportation Leasing (125)	Work	XXX		
Aircraft Service (2511)	Work-Related	XXX	XXX	
Vopak USA Inc.				$0
Van Waters & Rogers (116)	Work	XXX		
Waste Management Inc.				$155,378
Oil & Solvent Process Company (91)	Work	XXX		
Universal Refuse Removal (425)	Work-Related	XXX	XXX	
G.I. Ecology Waste Assn. (1236)	Work-Related	XXX	XXX	
Fleet Disposal (1629)	Work-Related	XXX	XXX	

Footnote 1: The settlement payment shown for this company reflects EPA's determination that a reduction of the payment, and/or installment payments is justified based upon the company's financial condition. EPA has determined that this company is unable to pay its full volumetric allocation in the Eighth Partial Consent Decree in one installment without jeopardizing its financial viability. For parties with installment payments or other individual payment terms, the detailed payment terms are reflected on the signature pages.

Footnote 2: The settlement payment shown for this company reflects a credit for work performed and/or amounts paid by it or by one of its listed related entities in compliance with Unilateral Administrative Order #94-01 or #97-02.

Footnote 3: This company (or one of its listed related entities) has entered into a settlement of contribution litigation related to the Site. The settlement payment for this company reflects a credit for this settlement.

Exhibit E, Eighth Partial Consent Decree, Table of Work Defendants.

EXHIBIT F
EIGHTH PARTIAL CONSENT DECREE VOLUMETRIC LIST

Name of Settling Party / Generator Name (PRP Code)	Volume	CD1	CD2	CD3	CD4	CD5	Status
Active USA, Inc.							
Kenosha Auto Transport Corporation (198)	178,920	Work		Work	Gen		Strcom
Total Volume	178,920						
Advanced Chemical Technology							
Ted Levine Cooperage (53)	948,123		Recl			Recl	Recal
Total Volume	948,123						
AK Steel Corporation							
Armco (175)	227,950	Cash		Work	Gen		Strcom
Total Volume	227,950						
ALCAN Aluminum Corp.							
Luxfer USA (152)	252,091	Cash		Cash			Cash
Total Volume	252,091						
Alcoa, Inc.							
Alcoa (Westlock) (19)	2,880,754	Cash		Work	Gen		Strcom
Reynolds Aluminum (75)	565,698	Work		Work	Gen		Strcom
Modern Faucet Manufacturing (851)	22,170						DM
Alcoa Sport Products (1026)	14,680						DM
Advance Structures (1167)	12,600						DM
Total Volume	3,495,902						
American Airlines, Inc.							
American Airlines, Inc. (59)	796,136	Work		Work	Gen		Strcom
Total Volume	796,136						
American Home Products Corporation							
EKCO (Packaging Corp of America) (761)	25,720	Recl	Cash	Work	Gen		Strcom
Total Volume	25,720						
American National Can							
American National Can (4)	9,768,423	Cash		Work	Gen		Strcom
Total Volume	9,768,423						
American Pacific International							
American Pacific International (47)	1,028,116	Recl	Recl			Recl	Recal
Total Volume	1,028,116						
American Petrofina Holding Company							
American Petrofina (94)	432,600		Cash	Recl		Cash	Cash 5
Total Volume	432,600						
AmeriPride Services, Inc.							
Welch's Overall Cleaning Company (149)	268,390	Work		Work	Gen		Strcom
Total Volume	268,390						
Amtrak							
Amtrak (210)	163,800	Recl	Cash	Work			Strcom
Total Volume	163,800						
ANACO							

Name of Settling Party / Generator Name (PRP Code)	Volume	CD1	CD2	CD3	CD4	CD5	Status
Anaheim Foundry (180)	205,632	Recl	Recl			Cash	Cash 5
Total Volume	205,632						
Anadarko Petroleum Corporation							
Champlin Petroleum (25)	3,129,750	Cash		Work	Gen		Strcom
Total Volume	3,129,750						
Anchorlok Lear Siegler Corp.							
Anchorlok (102)	398,732	Cash		Cash			Cash
Total Volume	398,732						
Aramark Uniform and Career Apparel, Inc.							
Red Star Industrial Service (154)	250,390	Cash		Cash			Cash
Industrial Control Systems (287)	108,000					DD4	DD4
New Fashion Cleaners (344)	74,258					DD4	DD4
U.S. Industrial Glove (523)	47,860						DM
Complete Uniform (733)	27,750						DM
Total Volume	508,258						
ARCO							
Atlantic Richfield & Anaconda (2)	13,406,224	Cash		Work	Gen		Strcom
Four Corners Pipe Line Company (290)	81,900						DM
Total Volume	13,488,124						
Armstrong World Industries, Inc.							
Armstrong Cork (236)	141,350		Cash	Work	Gen		Strcom
Total Volume	141,350						
Artra Group Incorporated							
Synkoloid Company (169)	220,080		Cash	Recl		Recl	Recal 3
Dutch Boy Paints (829)	22,820						DM
Total Volume	242,900						
Asbury Oil Company							
Asbury Oil (29)	2,325,640	Recl	Recl			Recl	Recal
Total Volume	2,325,640						
Atofina							
Purex (Carson Facility only) (234)	132,560		Cash	Work	Gen		Strcom
M & T Chemicals (332)	76,300			Cash			Cash
Penwalt Corp. (522)	48,025			Cash			Cash
Perex Corp. (1604)	7,560						DM
Total Volume	264,445						
B & C Plating Company							
B & C Plating Company (127)	303,240	Recl	Cash	Cash			Cash
Total Volume	303,240						
Bandag, Incorporated							
Master Processing (331)	88,662		Cash	Work	Gen		Strcom
Total Volume	88,662						
BASF Corporation							
Inmont Ink (162)	126,525		Cash	Cash			Cash
BASF Wyandotte Corp. (787)	24,295						DM
Total Volume	150,820						
BCI Coca Cola Bottling Company of Los Angeles							
Dr. Pepper Bottling (187)	191,440		Recl			Recl	Recal

Name of Settling Party Generator Name (PRP Code)	Volume	CD1	CD2	CD3	CD4	CD5	Status
Coca-Cola Bottling Co. (206)	157,206	Cash		Cash			Cash
National Drinks Inc. (581)	42,000						DM
Total Volume	390,646						
Behr Process							
Behr Process (1570)	7,950		Cash	Work	Gen		Strcom
Total Volume	7,950						
Benjamin Moore & Co.							
Benjamin Moore Paints (267)	121,674					Recl	Recal
Total Volume	121,674						
Berwind Railway Service Co.							
Berwind Railway Service (142)	298,200	Recl	Cash	Cash			Cash
Total Volume	298,200						
Bethlehem Steel Corporation							
Bethlehem Steel (34)	1,692,875	Work		Work	Gen		Strcom
Total Volume	1,692,875						
BetzDearborn, Inc.							
Betz Labs (104)	332,491	Work		Work	Gen		Strcom
Total Volume	332,491						
Beylik Drilling, Inc.							
Beylik Drilling (278)	112,560		Recl			Recl	Recal
Total Volume	112,560						
Bird, Inc.							
Bird Corporation (238)	138,094		Cash	Work	Gen		Strcom
Total Volume	138,094						
BJ Services Company							
BJ Service Equipment (233)	144,480	Cash		Cash			Cash
B.J. Hughes (370)	76,230			Cash			Cash
Total Volume	220,710						
Black & Decker Corporation							
Black & Decker (228)	147,390		Cash	Work	Gen		Strcom
Kwikset Lock (940)	18,800						DM
Total Volume	166,190						
Boral Industries, Inc.							
Blacktop Materials Company (199)	179,550	Recl	Cash	Work	Gen		Strcom
Total Volume	179,550						
Borden, Inc.							
Borden, Inc. (172)	232,325	Cash		Work	Gen		Strcom
Total Volume	232,325						
BP Chemicals, Inc.							
Filon (160)	235,700	Recl	Recl			Recl	Recal
Total Volume	235,700						
Brenntag West, Inc.							
Soco-Western Chem (112)	222,950		Cash	Work	Gen		Strcom
Total Volume	222,950						

Name of Settling Party Generator Name (PRP Code)	Volume	CD1	CD2	CD3	CD4	CD5	Status
Bridgestone/Firestone, Inc.							
Bridgestone/Firestone, Inc. (129)	300,360	Cash		Work	Gen		Strcom
Total Volume	300,360						
Budget Uniform Rental Supply, Inc.							
Budget Uniform Rental (226)	148,190					Cash	Cash 5
Total Volume	148,190						
Burns International Services Corporation							
Byron Jackson Pump (68)	614,346	Work		Work	Gen		Strcom
Borg-Warner (1576)	7,770			Cash			Cash
Total Volume	622,116						
California Milk Producers							
California Milk Producers (98)	419,274	Recl	Recl			Cash	Cash 5
Total Volume	419,274						
CalMat Company							
Conrock Co. (201)	174,580	Cash		Cash			Cash
Total Volume	174,580						
Camay Drilling Company							
Camay Drilling (147)	269,640		Recl			Recl	Recal
Total Volume	269,640						
Capitol Metals Co., Inc.							
Capitol Metals (159)	173,530	Recl	Cash	Cash			Cash
Total Volume	173,530						
Casino USA, Inc.							
Thriftimart (276)	113,800		Recl			Recl	Recal
Total Volume	113,800						
Challenge Foods Company							
Challenge Food Dairy (249)	132,514		Recl			Recl	Recal
Total Volume	132,514						
Chevron Environmental Management Company							
Chevron & Gulf (1)	17,063,925	Work		Work	Gen		Strcom
Total Volume	17,063,925						
Chrome Crankshaft Company, Inc.							
Chrome Crankshaft Company, Inc. (262)	124,740		Cash	Work	Gen		Strcom
Total Volume	124,740						
City of Los Angeles							
Dept. of Public Works, City of Los Angeles (3971)	232,792		Cash	Work	Gen		Strcom
Total Volume	232,792						
City of Los Angeles							
Dept. of Water & Power, City of Los Angeles (42)	832,531	Cash		Work	Gen		Strcom
Total Volume	832,531						
Clean Steel, Inc.							
Clean Steel (279)	112,560					Cash	Cash 5
Total Volume	112,560						

Name of Settling Party Generator Name (PRP Code)	Volume	CD1	CD2	CD3	CD4	CD5	Status
Clougherty Packing Company							
Clougherty Packing (138)	230,370		Cash	Cash			Cash
Farmer John (320)	93,030						DM
Total Volume	323,400						
CNA Holdings, Inc.							
Celanese Coatings & Polymer (197)	180,690		Recl			Cash	Cash 5
Total Volume	180,690						
Coca-Cola Company							
Coca Cola Company (643)	32,720	Cash		Cash			Cash
Total Volume	32,720						
Cognis Corporation							
Emery (60)	751,760	Cash		Work	Gen		Strcom
Henkle Chem. Inc. (494)	52,416			Cash			Cash
Total Volume	804,176						
Coltec Industries							
Menasco, Inc. (80)	527,850	Work		Work	Gen		Strcom
Total Volume	527,850						
Conoco, Inc.							
Conoco & Douglas Oil Co. (26)	2,551,962	Work		Work	Gen		Strcom
Total Volume	2,551,962						
Conopco, Inc.							
Lever Bros. (161)	227,800	Work		Work	Gen		Strcom
Total Volume	227,800						
Consolidated Drum Reconditioning Co.							
S. Rose Cooperage (135)	281,660	Recl	Recl			Recl	Recal
Total Volume	281,660						
Cooper & Brain Inc.							
Cooper & Brain Inc. (185)	210,900	Recl	Cash	Work	Gen		Strcom
Total Volume	210,900						
Cooper Drum							
Superior Drum Company (78)	552,380	Work		Work	Gen		Strcom
Total Volume	552,380						
Crosby & Overton, Inc.							
Crosby & Overton (114)	339,328	Recl	Recl			Recl	Recal
Total Volume	339,328						
Crowley Maritime Corporation							
Crowley Maritime Corporation (89)	458,460	Work		Work	Gen		Strcom
Total Volume	458,460						
Crown Beverage Packaging, Inc.							
Continental Can Co. (18)	3,817,135	Cash		Work	Gen		Strcom
Total Volume	3,817,135						
Crown Cork & Seal Co., Inc.							
Crown Cork & Seal (2340)	3,360						DM
Total Volume	3,360						
DaimlerChrysler Corporation							
Nu Car Prep Systems (248)	133,980		Cash	Work	Gen		Strcom
Chrysler Motor (2866)	700			Cash			Cash
Total Volume	134,680						
De Calta International Corp.							

Exhibit F, Eighth Partial Consent Decree Volumetric List. Volumes are subject to change.

Name of Settling Party Generator Name (PRP Code)	Volume	CD1	CD2	CD3	CD4	CD5	Status
De Calta Oil Co. (183)	199,836		Cash	Cash			Cash
Total Volume	199,836						
Deft Incorporated							
Deft Incorporated (209)	169,603	Work		Work	Gen		Strcom
Total Volume	169,603						
Delta Air Lines, Inc.							
Western & Delta Airlines (119)	320,560	Work		Work	Gen		Strcom
Total Volume	320,560						
Deutsch Company							
Deutsch Company (255)	119,470		Cash	Work	Gen		Strcom
Total Volume	119,470						
Don Miguel Mexican Foods, Inc.							
Alex Foods (87)	489,240	Recl	Recl			Recl	Recal
Total Volume	489,240						
Dresser Industries, Inc.							
Magcobar Co. (230)	145,150		Cash	Cash			Cash
Pacific Pumps (239)	135,349		Cash	Cash			Cash
Total Volume	280,499						
Dunn-Edwards Corporation							
Dunn-Edwards Corporation (164)	243,741	Work		Work	Gen		Strcom
Total Volume	243,741						
Energy Production & Sales Co.							
Energy Production (242)	137,760		Recl			Recl	Recal
Total Volume	137,760						
Exxon Mobil Corporation							
Exxon (5)	8,361,684	Cash		Work	Gen		Strcom
Mobil & Superior Oil (11)	4,977,490	Work		Work	Gen		Strcom
Total Volume	13,339,174						
Fairchild Holding Corp.							
Voi Shan Manufacturing (243)	111,605		Cash	Cash			Cash
Kaynar Mfg. Co. (754)	26,200						DM
Fairchild (1303)	10,710						DM
Greer Hydraulics (1806)	5,700						DM
Natter Mfg. (2312)	3,570						DM
Total Volume	157,785						
Federal Express Corporation							
Flying Tigers (182)	199,386	Work		Work	Gen		Strcom
Total Volume	199,386						
Ferro Corporation							
Productol Chemical (150)	266,900		Cash	Work	Gen		Strcom
Total Volume	266,900						
Fletcher Oil & Refining Company							
Fletcher Oil & Refining (105)	394,800	Recl	Recl			Recl	Recal
Total Volume	394,800						

Exhibit F, Eighth Partial Consent Decree Volumetric List. Volumes are subject to change.

Name of Settling Party Generator Name (PRP Code)	Volume	CD1	CD2	CD3	CD4	CD5	Status
Flint Ink Corporation							
Flint Ink Corporation (65)	365,100	Cash		Work	Gen		Strcom
Cal. Ink Co. (1120)	13,650						DM
Total Volume	378,750						
Ford Motor Company							
Ford Motor Company (194)	176,720		Cash	Work	Gen		Strcom
Total Volume	176,720						
Gaylord Container Corporation							
Crown Zellerbach (272)	109,338		Cash	Work	Gen		Strcom
Total Volume	109,338						
GC International, Inc.							
Raytee Co. (111)	360,290					Cash	Cash 5
Total Volume	360,290						
Gemini Industries, Inc.							
Gemini Industries (189)	192,500	Recl	Recl			Cash	Cash 5
Total Volume	192,500						
General Electric							
General Electric (225)	141,900		Cash	Work	Gen		Strcom
Pacific Airmotive (1028)	15,880						DM
Total Volume	157,780						
General Latex & Chemical Corporation							
General Latex (171)	220,460	Cash		Work	Gen		Strcom
Total Volume	220,460						
General Motors Corporation							
General Motors Corporation (22)	2,225,840	Work		Work			Strcom
Lane, Richard Company (1980)	4,500						DM
Total Volume	2,230,340						
Georgia Pacific Corporation							
Georgia Pacific Corporation (218)	164,930	Work		Work	Gen		Strcom
Total Volume	164,930						
Georgia Pacific Corporation							
Fort James/Crown Zellerbach (415)	76,700		Cash	Work	Gen		Strcom
Total Volume	76,700						
Gould, Inc.							
Gould, Inc. (179)	210,160		Cash	Work	Gen		Strcom
Total Volume	210,160						
Great Lakes Properties, Inc.							
Del Amo Energy (23)	3,302,880	Recl	Recl			Recl	Recal
Great Lakes Properties (240)	139,650		Recl			Recl	Recal
Total Volume	3,442,530						
H & L Tooth Company							
Hi-Production Forge (108)	369,404	Recl	Cash	Work	Gen		Strcom
Total Volume	369,404						
Harshaw Corporation							
Filtrol (17)	3,863,210	Recl	Recl			Recl	Recal
Total Volume	3,863,210						

Exhibit F, Eighth Partial Consent Decree Volumetric List. Volumes are subject to change.

Name of Settling Party Generator Name (PRP Code)	Volume	CD1	CD2	CD3	CD4	CD5	Status
Hellman Properties LLC							
Hellman Properties (191)	189,320		Cash	Work	Gen		Strcom
Total Volume	189,320						
Herbell Oil Exploration; William P. Herder							
Herbell Oil (54)	893,256	Recl	Recl			Cash	Cash 5
Total Volume	893,256						
Honeywell International							
Bendix & Garrett (AireSearch) (49)	942,294	Work		Work	Gen		Strcom
Honeywell, Inc. (260)	125,840					Cash	Cash 5
Allied Chemical (408)	67,620						DM
Fluid Systems (1365)	10,000						DM
Roto Master (1533)	8,362						DM
Total Volume	1,154,116						
Hunt-Wesson Inc.							
Hunt Wesson-Beatrice (63)	583,170	Cash		Work	Gen		Strcom
Total Volume	583,170						
Hydril Company							
Hydril Company (141)	222,610	Cash		Cash			Cash
Total Volume	222,610						
Imacc Corporation							
Myers Drum (231)	144,862		Recl			Recl	Recal
Total Volume	144,862						
IMC Global Inc.							
Petro-Lewis Corporation (188)	194,140	Cash		Cash			Cash
Total Volume	194,140						
Ingersoll-Rand Company							
Proto-Tool Company (73)	578,898	Work		Work	Gen		Strcom
Total Volume	578,898						
Inglewood, City of							
Inglewood, City of (176)	139,680		Cash	Work	Gen		Strcom
Total Volume	139,680						
Inland Paperboard and Packaging, Inc.							
Inland Container (325)	87,630		Cash	Work	Gen		Strcom
Pacific Kraft (917)	23,100						DM
Total Volume	110,730						
International Extrusion Corp.							
International Extrusion (196)	185,220	Cash		Cash			Cash
Total Volume	185,220						
International Paper Company							
International Paper (118)	281,410	Cash		Cash			Cash
St. Regis Paper (211)	167,396	Cash		Work	Gen		Strcom
Hoerner-Waldorf Corp. (388)	71,400						DM
Federal Paper Board Corp. (704)	29,800						DM
Trend Mills (961)	17,850						DM
Karpen Plywood (1354)	8,610						DM
Champion International Fed En (3702)	630			Cash			Cash
Total Volume	577,096						
Interpace Corporation							

Exhibit F, Eighth Partial Consent Decree Volumetric List. Volumes are subject to change.

Name of Settling Party Generator Name (PRP Code)	Volume	CD1	CD2	CD3	CD4	CD5	Status
Interpace (39)	1,341,226	Cash		Recl		Recl	Recal 3
Total Volume	1,341,226						
Interstate Brands Corporation							
Interstate Brands Corporation (186)	157,370		Cash	Work	Gen		Strcom
Four S Bakery (286)	108,150					DD4	DD4
Millbrook Bakery (2235)	4,000						DM
Total Volume	269,520						
IT Corporation							
IT Corporation (31)	1,880,232	Recl	Recl			Cash	Cash 5
Routh Transportation (32)	1,873,830	Recl	Recl			Cash	Cash 5
Hutchison, Wm. H. & Sons (106)	389,970	Recl	Recl			Cash	Cash 5
Industrial Trucking, Inc. (610)	38,010					Cash	Cash 5
Cal Salvage (634)	34,650					Cash	Cash 5
Fix & Brain (816)	23,100					Cash	Cash 5
Southern Calif. Services (897)	20,380					Cash	Cash 5
Chemical Carriers (1887)	5,040					Cash	Cash 5
Logamita Storage (2134)	4,200					Cash	Cash 5
Total Volume	4,269,412						
J & Q Produce Co., Inc.							
J & Q Produce (220)	159,820					Recl	Recal
Total Volume	159,820						
Jefferson Smurfit Corporation (U.S.) and Stone Container Corporation							
Container Corp. of America (97)	400,542	Recl	Cash	Cash			Cash
Southwest Forest Industries (269)	120,120		Cash	Work	Gen		Strcom
Continental Forest (300)	100,632						DM28
Sierra Pacific (1002)	10,500						DM
Total Volume	631,794						
Jura Services Inc							
Rentex (259)	126,630		Recl			Cash	Cash 5
Total Volume	126,630						
Kern Foods Shareholders Liquidating							
Kerns Foods, Inc. (61)	887,196	Recl	Cash	Work	Gen		Strcom
Total Volume	887,196						
Kerr McGee Corporation							
Sun Oil (9)	6,013,980	Work		Work	Gen		Strcom
Sun Product Company (1003)	16,800						DM
Total Volume	6,030,780						
Keysor-Century Corporation							
Keysor Century (50)	987,945		Cash	Work	Gen		Strcom
Total Volume	987,945						
KF Dairies Inc.							
Knudsen Dairy (251)	131,100		Recl			Recl	Recal
Total Volume	131,100						

Exhibit F, Eighth Partial Consent Decree Volumetric List. Volumes are subject to change.

Name of Settling Party Generator Name (PRP Code)	Volume	CD1	CD2	CD3	CD4	CD5	Status
Kinder Morgan Energy Partners LLP							
GATX Terminals Corporation (167)	215,880	Work		Work	Gen		Strcom
Caty Tank Storage Corp. (1485)	8,400						DM
Total Volume	224,280						
Ladish Co., Inc.							
Ladish Pacific Division (86)	505,982	Recl	Cash	Recl		Recl	Recal 3
Total Volume	505,982						
Leach Oil Company Inc.							
Leach Oil (43)	1,191,540	Recl	Recl			Recl	Recal
Total Volume	1,191,540						
Liberty Vegetable Oil Company							
Liberty Vegetable Oil (103)	392,726	Work		Work	Gen		Strcom
Total Volume	392,726						
Lockheed Martin Corporation							
Martin Marietta Aluminum (10)	5,228,966	Work		Work	Gen		Strcom
Lockheed Corporation (24)	3,171,809	Cash		Work	Gen		Strcom
Singer Librascope (1966)	4,600						DM
Total Volume	8,405,375						
Long Beach Oil Development							
Long Beach Oil Development (28)	2,754,643	Work		Work	Gen		Strcom
Total Volume	2,754,643						
Longview Fibre Company							
Longview Fibre (181)	195,930	Cash		Cash			Cash
Total Volume	195,930						
Los Angeles County Metropolitan Transportation Authority							
So Cal RTD (45)	1,149,190	Work		Work	Gen		Strcom
Total Volume	1,149,190						
Lunday-Thagard Company							
Lunday Thagard Oil Co. (222)	159,180		Recl			Cash	Cash 5
Total Volume	159,180						
MacMillan Ringfree Oil Co., Inc./ Weyerhaeuser Distribution, Inc.							
MacMillan Ringfree Oil (93)	441,576	Recl	Recl			Recl	Recal
Total Volume	441,576						
Martin Marietta Carbon							
Martin Marietta Carbon (115)	338,260	Work		Recl		Recl	Recal 3
Total Volume	338,260						
Martin Oil Service, Inc.							
Martin Oil (83)	531,300	Recl	Recl			Recl	Recal
Total Volume	531,300						

Exhibit F, Eighth Partial Consent Decree Volumetric List. Volumes are subject to change.

Name of Settling Party Generator Name (PRP Code)	Volume	CD1	CD2	CD3	CD4	CD5	Status
Masco Corporation							
Price-Pfister (351)	74,340						DM
Waste King Universal (584)	41,902						DM
American Metal Prod (1216)	8,060						DM
Cal-Style Furniture (1229)	12,140						DM
Thermador Waste King (1283)	10,290						DM
Brass Kraft (2003)	4,300						DM
Total Volume	151,032						
Maytag Corporation							
Gaffers & Sattler (117)	305,886	Cash		Work	Gen		Strcom
Magic Chef West (1994)	4,410						DM
Total Volume	310,296						
McAuley LCX Corporation							
McAuley Oil Company (155)	245,280	Cash		Cash			Cash
Total Volume	245,280						
McKesson Corporation							
Sparkletts (200)	182,357	Work		Work			Strcom
Total Volume	182,357						
Mechanical Metal Finishing Co.							
Mechanical Metal Finishing (121)	320,870	Recl	Recl			Recl	Recal
Woods Metal (1315)	10,500						DM
Total Volume	331,370						
Merck & Co., Inc.							
Calgon Corporation (70)	570,780	Work		Work	Gen		Strcom
Total Volume	570,780						
Metaldyne							
NI Industries & Weiser Lock & Norris (21)	3,356,481	Work		Work	Gen		Strcom
Grant Oil Tool Company (261)	124,770		Cash	Work	Gen		Strcom
Total Volume	3,481,251						
Michelin North America, Inc.							
Uniroyal Goodrich Tire Company (48)	716,250	Work		Work	Gen		Strcom
U.S. Rubber (1162)	4,200						DM
Total Volume	720,450						
Mitchell Energy Company L.P.							
Mitchell Energy Corporation (46)	1,051,630	Cash		Work	Gen		Strcom
Total Volume	1,051,630						
MRC Holdings, Inc.							
American Can Company (109)	293,730	Cash		Work			Strcom
Total Volume	293,730						
Mydrin Inc.							
R & D Latex (214)	162,960		Cash	Work	Gen		Strcom
Total Volume	162,960						
Nestle USA, Inc.							
Carnation Company (143)	267,020	Work		Work	Gen		Strcom
Total Volume	267,020						

Exhibit F, Eighth Partial Consent Decree Volumetric List. Volumes are subject to change.

Name of Settling Party Generator Name (PRP Code)	Volume	CD1	CD2	CD3	CD4	CD5	Status
NL Industries, Inc.							
NL Industries, Inc. (82)	416,430	Work		Work	Gen		Strcom
Total Volume	416,430						
Northrop Grumman Corporation							
Northrop Corporation (277)	113,480					Cash	Cash 5
Total Volume	113,480						
Norton & Son of CA dba Olympic Paint & Chemical Co.							
Olympic Paint (252)	130,700		Cash	Recl		Recl	Recal 3
Total Volume	130,700						
Occidental Petroleum Co.							
Occidental Petroleum Co (15)	4,760,380	Work		Work	Gen		Strcom
Crestmont Oil Co. (542)	46,200						DM
Total Volume	4,806,580						
Owens Corning							
Fibreboard Corporation (219)	153,990		Cash	Work	Gen		Strcom
Trumbull Asphalt (265)	123,144					Cash	Cash 5
Total Volume	277,134						
Owens-Illinois, Inc.							
Owens-Illinois, Inc. (163)	187,580	Cash		Work	Gen		Strcom
Total Volume	187,580						
Pabst Brewing Company							
Pabst Brewing (215)	161,540		Recl			Recl	Recal
Total Volume	161,540						
Pacific Telesis Group							
Pacific Telephone (Pac Bell) (274)	115,050					Cash	Cash 5
Total Volume	115,050						
Pacific Tube Co.							
Pacific Tube Co. (217)	148,220		Cash	Work	Gen		Strcom
Total Volume	148,220						
PakTank Corporation							
Wilmington Liquid Bulk (131)	267,330		Cash	Cash			Cash
Total Volume	267,330						
Parker-Hannifin Corporation							
Bertea & Parker Seal (88)	483,157	Work		Work	Gen		Strcom
Total Volume	483,157						
Paul F. McKenzie, Inc.							
McKenzie Oro Negro (247)	134,200		Recl			Recl	Recal
Total Volume	134,200						
Pervo Paint Company							
Pervo Paint Co. (256)	126,420		Cash	Work	Gen		Strcom
Total Volume	126,420						
Petrominerals Corporation							
Century Oil Management (232)	144,570		Recl			Recl	Recal
Redondo Oil Co. (382)	72,870						DM
Total Volume	217,440						

Exhibit F, Eighth Partial Consent Decree Volumetric List. Volumes are subject to change.

Name of Settling Party Generator Name (PRP Code)	Volume	CD1	CD2	CD3	CD4	CD5	Status
Plywood Panels, Inc.							
Davidson Panel (144)	207,060	Cash		Cash			Cash
Total Volume	207,060						
Powerine Oil Company							
Powerine (14)	4,805,748	Recl	Recl			Cash	Cash 5
Pirene (1519)	8,400						DM
Total Volume	4,814,148						
PPG Industries, Inc.							
PPG Industries Inc. (77)	444,725	Work		Work	Gen		Strcom
Bowers Printing (1781)	5,880						DM
Total Volume	450,605						
Princess Cruise Lines							
Pacific Princess (258)	126,630		Recl			Recl	Recal
Total Volume	126,630						
Pro Mark Group West							
Major Paint and Varnish Company (67)	630,970	Work		Work	Gen		Strcom
Total Volume	630,970						
Prudential Overall Supply							
Prudential Overall Supply (207)	166,192		Cash	Work	Gen		Strcom
Total Volume	166,192						
Purex Industries, Inc.							
Baron & Blakeslee, Inc. (Gardena Facility) (257)	119,070					Recl	Recal
Total Volume	119,070						
Quebecor Printing, Inc.							
California Rotogravure (254)	128,080					Cash	Cash 5
Total Volume	128,080						
R and R Industrial Waste Haulers, Inc.							
R & R Industrial Waste Haulers (263)	124,735	Recl	Recl			Recl	Recal
Total Volume	124,735						
Rachelle Labs							
Rachelle Labs (33)	1,827,730	Recl	Recl			Recl	Recal
Total Volume	1,827,730						
Raytheon Company							
Hughes Aircraft (84)	440,885	Work		Work	Gen		Strcom
Total Volume	440,885						
Reichhold, Inc.							
Reichhold Chemicals, Inc. (96)	426,750	Cash		Cash			Cash
Total Volume	426,750						
Reliance Upholstery Supply Company							
Reliance Upholstery Supply Company (281)	111,140					Cash	Cash 5
Total Volume	111,140						
Rent-A-Uniform							
Rent-A-Uniform (227)	150,490		Cash	Work	Gen		Strcom
Total Volume	150,490						

Exhibit F, Eighth Partial Consent Decree Volumetric List. Volumes are subject to change.

Name of Settling Party Generator Name (PRP Code)	Volume	CD1	CD2	CD3	CD4	CD5	Status
Revlon Consumer Products Corporation							
Max Factor Co. (216)	153,583	Work		Work	Gen		Strcom
Total Volume	153,583						
Roadway Express, Inc.							
Roadway Express & Viking Freight (271)	119,400					Cash	Cash 5
Western Gillette (556)	39,900						DM
Cantlay and Tanzola (2625)	2,460						DM
Viking Freight (3928)	200					Cash	Cash 5
Total Volume	161,960						
Royal Aluminum Company, Inc.							
Royal Aluminum Co. (224)	142,876		Cash	Cash			Cash
Total Volume	142,876						
Royal Industries International							
Royal Industries (223)	158,700	Cash		Cash			Cash
Total Volume	158,700						
Safeway Inc.							
Safeway (123)	265,034	Work		Work	Gen		Strcom
Total Volume	265,034						
Sara Lee Corporation							
Shasta Beverages (250)	131,670		Cash	Work	Gen		Strcom
Larrys Food Products Inc. (1188)	12,600						DM
Total Volume	144,270						
SBC Holdings, Inc.							
Joseph Schlitz Brewing (51)	1,020,065	Cash		Work	Gen		Strcom
Total Volume	1,020,065						
Shell Oil Company							
Shell Oil (8)	6,490,772	Work		Work	Gen		Strcom
Total Volume	6,490,772						
Soule Liquidating Agency							
Soule Steel (12)	3,714,743	Cash		Work	Gen		Strcom
Total Volume	3,714,743						
Southern California Chemical Company							
Southern California Chemical Company (40)	767,100	Recl	Cash	Work	Gen		Strcom
Total Volume	767,100						
Southern California Edison Company							
Southern California Edison Company (41)	961,118	Work		Work	Gen		Strcom
Total Volume	961,118						
Southern California Gas Co.							
Southern California Gas Company (16)	4,052,732	Work		Work	Gen		Strcom
Pacific Gas and Lighting (663)	32,760						DM
Pacific Lighting & Service Co. (1192)	12,600						DM
Total Volume	4,098,092						

Exhibit F, Eighth Partial Consent Decree Volumetric List. Volumes are subject to change.

Name of Settling Party Generator Name (PRP Code)	Volume	CD1	CD2	CD3	CD4	CD5	Status
Southwest Processors, Inc.							
Southwest Processors & Ameroil (64)	679,980	Cash		Recl		Cash	Cash 5
Total Volume	679,980						
Standun, Inc.							
Standun Machine (245)	136,332		Recl			Recl	Recal
Total Volume	136,332						
Star-Kist Foods, Inc.							
Star-Kist Foods, Inc. (229)	147,000		Cash	Work	Gen		Strcom
Total Volume	147,000						
Steelscape, Inc.							
Supracote, Inc. (177)	196,945	Cash		Work	Gen		Strcom
Total Volume	196,945						
Superior Industries International, Inc,							
Superior Industries International, Inc, (133)	284,824	Work		Work	Gen		Strcom
Total Volume	284,824						
Surface Protection Industries, Inc.							
Zolatone Process (213)	164,976		Cash	Work	Gen		Strcom
Total Volume	164,976						
TDY Industries, Inc.							
TDY Industries, Inc. (253)	83,760		Cash	Cash			Cash
Total Volume	83,760						
Ted A. Hammett Vacuum Truck Service							
Ted A. Hammett Vacuum Truck Service (192)	187,740					Recl	Recal
Total Volume	187,740						
Teledyne Technologies, Inc.							
Teledyne Technologies, Inc. (3974)	38,670		Cash	Cash			Cash
Total Volume	38,670						
Texaco, Inc.							
Texaco & Getty Oil (3)	12,188,038	Work		Work	Gen		Strcom
Santa Fe Resources (13)	4,949,513	Work		Work	Gen		Strcom
Seaboard Oil and Gas (92)	451,710	Recl	Recl			Recl	Recal
McFarland Energy (193)	186,900		Recl			Recl	Recal
Bawden Drilling (305)	100,800					dd	DD4
Total Volume	17,876,961						
Textile Rubber & Chemical Co.							
Textile Rubber & Chemical (62)	741,380	Recl	Recl			Cash	Cash 5
Total Volume	741,380						
The Boeing Company							
McDonnell Douglas (7)	6,903,139	Work		Work	Gen		Strcom
Rockwell International (130)	85,968		Cash	Cash			Cash
RocketDyne Division (404)	63,380						DM
Energy System Group Rockwell (1117)	13,700						DM
Atomics International (1373)	9,700						DM
Total Volume	7,075,887						

Exhibit F, Eighth Partial Consent Decree Volumetric List. Volumes are subject to change.

Name of Settling Party Generator Name (PRP Code)	Volume	CD1	CD2	CD3	CD4	CD5	Status
The Flintkote Company							
Flintkote Company (264)	120,120		Cash	Work	Gen		Strcom
Genstar Building Materials (1535)	8,317						DM
Total Volume	128,437						
The Glidden Company							
Ameritone/Trewax (79)	501,548	Recl	Cash	Work	Gen		Strcom
Total Volume	501,548						
The Hertz Corporation							
Hertz Corporation (140)	183,070		Cash	Work	Gen		Strcom
Total Volume	183,070						
The Langlois Company							
Langlois Flour (266)	121,890	Recl	Recl			Recl	Recal
Total Volume	121,890						
The Marquardt Company							
Marquardt Co. (208)	168,640		Recl			Cash	Cash 5
Total Volume	168,640						
The Pillsbury Company							
Pillsbury Company & Speas Vinegar (280)	112,174					Cash	Cash 5
Total Volume	112,174						
The Procter & Gamble Manufacturing Company							
Procter & Gamble Company (122)	307,860	Work		Work	Gen		Strcom
Total Volume	307,860						
Thermal Engineering International USA, Inc.							
Thermal Engineering International (120)	312,540	Work		Work	Gen		Strcom
Total Volume	312,540						
Thompson Drilling Company							
Thompson Drilling (137)	280,560		Recl			Recl	Recal
Total Volume	280,560						
Thums Long Beach Company							
Thums Long Beach (72)	595,560	Work		Work	Gen		Strcom
Total Volume	595,560						
Todd Pacific Shipyards Corporation							
Todd Shipyards Corporation (134)	284,048	Recl	Recl			Cash	Cash 5
Total Volume	284,048						
Trace International Holdings, Inc.							
General Felt (139)	259,358	Work		Work	Gen		Strcom
National Sponge Cushion (398)	70,140						DM
Total Volume	329,498						
Tree Island Steel							
Tree Island Steel (170)	198,660	Cash		Cash			Cash
Total Volume	198,660						

Exhibit F, Eighth Partial Consent Decree Volumetric List. Volumes are subject to change.

Name of Settling Party Generator Name (PRP Code)	Volume	CD1	CD2	CD3	CD4	CD5	Status
Tribune Company and Los Angeles Times Communications LLC							
Los Angeles Times (275)	101,320	Cash		Work	Gen		Strcom
Total Volume	101,320						
Trico Industries							
Kobe, Inc. (205)	171,200					Cash	Cash 5
Total Volume	171,200						
TRW Inc.							
TRW Inc. (81)	488,141	Cash		Work	Gen		Strcom
Total Volume	488,141						
U.S. Borax, Inc.							
U.S. Borax & Chemical (145)	272,820					Cash	Cash 5
Total Volume	272,820						
Unified Western Grocers, Inc.							
Certified Grocers (184)	198,310					Cash	Cash 5
Total Volume	198,310						
Union Carbide Corporation							
Union Carbide (101)	404,864	Cash		Recl		Recl	Recal 3
Total Volume	404,864						
Union Pacific Railroad Company							
Southern Pacific Transportation (44)	1,274,205	Work		Work	Gen		Strcom
Union Pacific Railroad (56)	858,060	Recl	Recl			Cash	Cash 5
Pacific Motor Trucking (755)	26,192						DM
Total Volume	2,158,457						
United Airlines							
United Airlines (168)	219,462	Cash		Cash			Cash
Total Volume	219,462						
United Parcel Service, Inc.							
United Parcel Service, Inc. (204)	167,240	Cash		Work	Gen		Strcom
Total Volume	167,240						
United States Navy							
Long Beach Naval Shipyard (58)	796,420			Cash			Cash
Total Volume	796,420						
Unocal Corporation							
Union Oil of California (6)	7,912,987	Work		Work	Gen		Strcom
Collier Carbon & Chemical (244)	136,500					Recl	Recal
Sansenina (686)	30,935						DM
Devine Salvage (964)	17,640						DM
Union Collier (2207)	4,200						DM
Total Volume	8,102,262						
USG Corporation							
Hollytex Carpet Mills & US Gypsum (71)	586,908	Work		Work	Gen		Strcom
Total Volume	586,908						
Vest, Inc.							
Bernard Epps (173)	234,780	Recl	Cash	Work	Gen		Strcom
Total Volume	234,780						

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Name of Settling Party Generator Name (PRP Code)	Volume	CD1	CD2	CD3	CD4	CD5	Status
Viacom, Inc.							
Seven-Up / Royal Crown Bottling Corporation (153)	202,070	Cash		Work	Gen		Strcom
Westinghouse (799)	24,252			Cash			Cash
Fortin Laminating Corporation (1046)	900						DM
Total Volume	227,222						
Viad Corp.							
Greyhound Lines & Transportation Leasing (125)	280,560	Work		Work	Gen		Strcom
Aircraft Service (2511)	2,770						DM
Total Volume	283,330						
Vopak USA Inc.							
Van Waters & Rogers (116)	241,500	Cash		Work	Gen		Strcom
Total Volume	241,500						
W.R. Grace & Co.							
Emerson & Cuming, Inc. (126)	299,040	Cash		Work	Gen		Strcom
W.R. Grace & Co. (270)	120,000					Recl	Recal
Total Volume	419,040						
Waste Management, Inc.							
Oil & Solvent Process Company (91)	415,100		Cash	Work	Gen		Strcom
Universal Refuse Removal (425)	62,500						DM
G.I. Ecology Waste Assn. (1236)	11,500						DM
Fleet Disposal (1629)	7,350						DM
Total Volume	496,450						
Water Pik Technologies, Inc.							
Water Pik Technologies, Inc. (3973)	4,500		Cash	Cash			Cash
Total Volume	4,500						
Waterford Wedgewood USA, Inc.							
Franciscan (113)	323,506	Cash		Work	Gen		Strcom
Total Volume	323,506						
Willamette Industries, Inc.							
Western Kraft (146)	270,930	Work		Work	Gen		Strcom
Total Volume	270,930						
Witco Corporation							
Witco Chemical (151)	265,000	Recl	Recl			Cash	Cash 5
Southwest Grease & Oil (665)	22,596						DM
Golden Bear (775)	25,200						DM
Total Volume	312,796						
Wyman-Gordon Company							
Reisner Metals (190)	191,520	Cash		Cash			Cash
Total Volume	191,520						
Xerox Corporation							
Xerox Corporation (66)	577,360	Work		Work	Gen		Strcom
Total Volume	577,360						
Xtra Energy Corporation							
Xtra Energy (99)	419,040	Recl	Recl			Recl	Recal
Total Volume	419,040						

Exhibit F, Eighth Partial Consent Decree Volumetric List. Volumes are subject to change.

Name of Settling Party							
Generator Name (PRP Code)	Volume	CD1	CD2	CD3	CD4	CD5	Status
Zacky Foods Company							
Zacky Foods (195)	185,290	Recl	Recl			Recl	Recal
Total Volume	185,290						
Zeno Table Company							
B. P. John Furniture Company (268)	120,400		Recl			Recl	Recal
Total Volume	120,400						

Exhibit F, Eighth Partial Consent Decree Volumetric List. Volumes are subject to change.

EIGHTH PARTIAL CONSENT DECREE
EXHIBIT G

CONTAMINANTS LIST

Chemical Name
Organic Constituents
1,1,1,2-Tetrachloroethane
1,1,1-Trichloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethylene
1,2,4-Trichlorobenzene
1,2-Dibromoethane
1,2-Dichlorobenzene
1,2-Dichloroethane
1,2-Dichloroethylene (Total)
1,2-Dichloroethylene, trans-
1,2-Dichloropropane
1,3-Dichlorobenzene
1,3-Dichloropropene, trans-
1,4-Chlorotoluene
1,4-Dichlorobenzene
1,4-Dioxane
2,4-Dimethylphenol
2-Butanone
2-Hexanone
2-Methylnaphthalene
2-Methylphenol
3,3'-Dichlorobenzidine
4,4'-DDD
4,4'-DDE
4,4'-DDT
4-Methyl-2-pentanone
4-Methylphenol
4-Nitroaniline
Acenaphthene
Acetone
Aldrin
Anthracene
Benzene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Benzoic acid
Benzyl alcohol
Benzyl chloride

Beta-BHC
BHC, alpha-
BHC, delta-
BHC, gamma- (Lindane)
bis(2-Ethylhexyl)phthalate
Butylbenzylphthalate
Carbazole
Carbon disulfide
Carbon tetrachloride
Chlordane
Chlordane, gamma-
Chlorobenzene
Chloroethane
Chloroform
Chloromethane
Chrysene
cis-1,2-Dichloroethylene
cis-1,3-Dichloropropene
Di-n-butylphthalate
Di-n-octylphthalate
Dibenzofuran
Dibromochloromethane
Dichlorodifluoromethane
Dieldrin
Diethylphthalate
Dimethylphthalate
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde
Ethylbenzene
Fluoranthene
Fluorene
Heptachlor
Heptachlor epoxide
Hexachlorobutadiene
Isophorone
Methoxychlor
Methylene chloride
N-Nitrosodimethylamine
N-Nitrosodiphenylamine
Naphthalene

Pentachlorophenol
Phenanthrene
Phenol
Purgeable organic halogens
Pyrene
Styrene
Tetrachloroethylene
Toluene
Total Organic halogens
Trichloroethylene
Trichlorofluoromethane (Freon 11)
Vinyl actetate
Vinyl chloride
Xylene, m,p,-
Xylene, m-
Xylene, o-
Xylenes, p-
Xylenes, total-

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Inorganic Constituents
Aluminum
Ammonia nitrogen (as N)
Antimony
Arsenic
Barium
Beryllium
Cadmium
Calcium
Chloride
Chromium (Total)
Cobalt
Copper
Cyanide
Iron
Lead
Magnesium
Manganese
Mercury
Nickel
Nitrate
Nitrite (as N)
Potassium
Selenium
Silver
Sodium
Sulfate
Sulfide
Thallium
Tin
Vanadium
Zinc

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