2801-01594

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IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA

C91 20275JW

UNITED STATES OF AMERICA, Plaintiff, v. INTEL CORPORATION and RAYTHEON COMPANY, Defendants.	CIVIL ACTION NO.

NOTICE OF LODGING CONSENT DECREE

Plaintiff, the United States of America, hereby submits a Notice of Lodging Consent Decree between Plaintiff and

Defendants Intel Corporation and Raytheon Company. The Consent Decree provides for partial remediation of a groundwater contamination site in Mountain View, California (the "Site"), and reimbursement of past and future costs incurred by the United States in connection with the Site.

Pursuant to Section 122(d)(2) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended by the Superfund and Reauthorization Act of 1986 ("CERCLA"), 42 U.S.C. Section 6922(d)(2), and Department of Justice policy, 28 C.F.R. § 50.7, the United States must provide an opportunity for public comment on the Consent Decree prior to its entry by the Court. Accordingly, the United States will publish in the Federal Register a notice announcing that the Consent Decree has been lodged and that comments will be accepted for thirty (30) days.

At the conclusion of the thirty-day comment period, and subject to Section 122(d)(2)(B) of CERCLA, 42 U.S.C. Section 9622(d)(2)(B), the United States will file a motion requesting the Court to sign and enter the Consent Decree.

Respectfully submitted,

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By: _____

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IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA

C91 20275 JW

UNITED STATES OF AMERICA, Plaintiff, v. INTEL CORPORATION and RAYTHEON COMPANY, Defendants.	CIVIL ACTION NO.

COMPLAINT

The United States of America ("United States"), at the request of and on behalf of the Administrator of the United States Environmental Protection Agency, alleges as follows:

PRELIMINARY STATEMENT

1. This is a civil action under Sections 106 and 107 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended by the Superfund and Reauthorization Act of 1986, ("CERCLA"), 42 U.S.C. §§ 9606 and 9607, seeking injunctive relief to abate an imminent and substantial endangerment to public health or welfare or the environment and recovery of response costs incurred or to be incurred by the United States in connection with the Middlefield-Ellis-Whisman Site ("MEW Site" or "Site") in Mountain View, California.

JURISDICTION AND VENUE

2. This Court has jurisdiction over the subject matter of this action pursuant to 42 U.S.C. § 9613(b) and 28 U.S.C. §§ 1331 and 1345.

3. Venue is proper in this district pursuant to 28 U.S.C. § 1391(b) and (c) and 42 U.S.C. § 9613(b), because the releases of hazardous substances occurred and the claims arose in this district.

4. Notice of the commencement of this action has been given to the State of California in accordance with 42 U.S.C. § 6973.

PARTIES

5. The United States Environmental Protection Agency ("EPA") is an agency of the United States.

6. Raytheon Company ("Raytheon") is a Delaware corporation, authorized to do business in the State of California. Raytheon's principal place of business is in Lexington, Massachusetts.

7. Intel Corporation ("Intel") is a Delaware Corporation authorized to do business in the State of California. Intel's principal place of business is in Santa Clara, California.

GENERAL ALLEGATIONS

8. The MEW Site encompasses approximately an eight square mile area in Santa Clara County in the city of Mountain View, California. The Site encompasses an industrial park bounded by Middlefield Road, Ellis Street, and Whisman Road. The various owners or occupants of the buildings located within this industrial park are or were involved in the manufacture of semiconductors, metal finishing operations, parts cleaning, aircraft maintenance, and other activities requiring the use of a variety of chemicals.

9. The MEW Site is an area where hazardous substances, as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), have been released. The hazardous substances released at the Site include trichloroethene ("TCE"), 1, 1, 1,-trichloroethane ("TCA"), vinyl chloride, 1,1-dichloroethane, 1,1-

dichloroethene, 1,2-dichlorobenzene ("DCB"), chloroform, freon 113, tetrachloroethene, and phenol.

10. Raytheon manufactured semiconductors and other electronic products at several facilities within the MEW Site and handled a variety of hazardous substances at these facilities, including freon, DCB, phenol, TCA, TCE, as well as other organic solvents, acids, gases and inorganic substances.

11. Raytheon is and/or was the owner or operator of several specific facilities at the MEW Site during a time in which hazardous substances were disposed of or released into the environment from such facilities, including but not limited to the buildings and/or properties located at 415 East Middlefield Road, 490 East Middlefield Road, 350 Ellis Street, and a vacant lot between 365 and 415 East Middlefield Road. Raytheon is liable pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a) both to abate any danger or threat from the releases of hazardous substances at the MEW Site and at each of the facilities described in this paragraph and to reimburse the United States for response costs it incurred at the MEW Site and at each of the facilities described in this paragraph.

12. Intel manufactured semiconductors at several facilities within the MEW Site and handled a variety of chemicals at these facilities, including freon, TCE, other organic solvents, acids and gases, and inorganic substances.

13. Intel is and/or was the owner or operator of several specific facilities at the MEW Site during a time in which

hazardous substances were disposed of or released into the environment from such facilities, including but not limited to the buildings and/or properties located at 365 East Middlefield Road, 345 East Middlefield Road, and a vacant lot between 365 and 415 East Middlefield Road. Intel is liable pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a) both to abate any danger or threat from the releases of hazardous substances at the MEW Site and at each of the facilities described in this paragraph and to reimburse the United States for its response costs incurred at the MEW Site and at each of the facilities described in this paragraph.

14. Releases of hazardous substances have occurred at the Site and have contaminated subsurface soils, surface water, sediments and groundwater at the Site. Persons or wildlife going on the Site have come into contact or may come into contact with such hazardous substances. In addition, exposure to contaminants in the groundwater beneath the MEW Site constitutes an imminent and substantial endangerment to public health or welfare.

15. A Remedial Investigation and Feasibility Study relating to the MEW Site was completed in 1988. By Record of Decision ("ROD") signed on June 9, 1989, by the Regional Administrator, EPA Region IX, EPA determined that certain response actions should be taken to remedy the releases and threatened releases of hazardous substances at the MEW Site and the resulting harm

or threat of harm to the public health or welfare or the environment.

FIRST CLAIM FOR RELIEF
(CERCLA § 106, 42 U.S.C. § 9606)

16. Paragraphs 1-15 are incorporated herein by reference.

17. The MEW Site and each of the buildings and/or properties described in paragraphs 11 and 13 of this complaint are facilities within the meaning of Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

18. The President, through EPA, has determined that there may be an imminent and substantial endangerment to the public health or welfare or the environment because of the actual or threatened release(s) of hazardous substances from the MEW Site and each specific facility described in paragraphs 11 and 13 of this complaint.

19. Pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a), defendants Raytheon and Intel are liable jointly and severally for injunctive relief to abate and remedy the imminent and substantial endangerment to public health or welfare or the environment presented by the MEW Site and the effects of actual or threatened releases of hazardous substances from the Site.

20. Pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a), Raytheon is liable for injunctive relief to abate and remedy the imminent and substantial endangerment to public

health or welfare or the environment presented by the specific facilities described in paragraph 11 of this complaint and the effects of actual or threatened releases of hazardous substances from the specific facilities described in paragraph 11 of this complaint.

21. Pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a), Intel is liable for injunctive relief to abate and remedy the imminent and substantial endangerment to public health or welfare or the environment presented by the specific facilities described in paragraph 13 of this complaint and the effects of actual or threatened releases of hazardous substances from the specific facilities described in paragraph 13 of this complaint.

SECOND CLAIM FOR RELIEF
(CERCLA § 107, 42 U.S.C. § 9607)

22. Paragraphs 1-21 are incorporated herein by reference.

23. The release or threatened release of hazardous substances from the MEW Site has caused the United States to incur response costs, as defined in 42 U.S.C. § 9601(25), amounting to at least $2,405,000.00 as of December 20, 1988. The United States is incurring additional response costs because of the release or threatened release of hazardous substances at the MEW Site.

24. The response costs incurred by the United States in connection with the MEW Site are not inconsistent with the National Contingency Plan, as set forth in 40 C.F.R. Part 300.

25. Pursuant to Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), defendants Raytheon and Intel are liable jointly and severally to the United States for all response costs incurred or to be incurred by the United States in connection with the MEW Site.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays that this Court:

1. Enjoin defendants Raytheon and Intel, jointly and severally, to perform and fund all remedial work at the MEW Site required to implement the remedial action selected by EPA in the Record of Decision dated June 9, 1989, and to abate the imminent and substantial endangerment to public health or welfare or the environment presented by the MEW Site and the

effects of actual or threatened releases of hazardous substances at the Site;

2. Enjoin Raytheon to perform and fund all remedial work at the specific facilities described in paragraph 11 of this complaint required to implement the remedial action selected by EPA in the Record of Decision dated June 9, 1989, and to abate the imminent and substantial endangerment to public health or welfare or the environment presented by the specific facilities described in paragraph 11 of this complaint and the effects of actual or threatened releases of hazardous substances at those facilities;

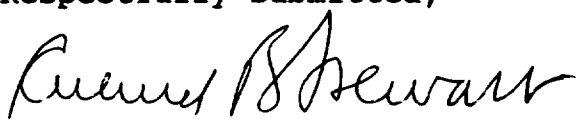
3. Enjoin Intel to perform and fund all remedial work at the specific facilities described in paragraph 13 of this complaint required to implement the remedial action selected by EPA in the Record of Decision dated June 9, 1989, and to abate the imminent and substantial endangerment to public health or welfare or the environment presented by the specific facilities described in paragraph 13 of this complaint and the effects of actual or threatened releases of hazardous substances at those facilities;

4. Enter judgment against the defendants, jointly and severally, for all response costs incurred by the United States because of the release or threatened release of hazardous substances at the MEW Site, together with prejudgment interest;

5. Enter declaratory judgment against the defendants, jointly and severally, for all response costs that the United States may incur in the future for removal and remedial actions at the MEW Site; and

6. Grant such other and further relief as the Court deems appropriate.

Respectfully submitted,



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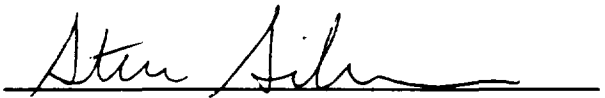

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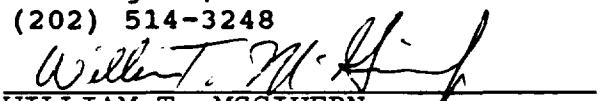

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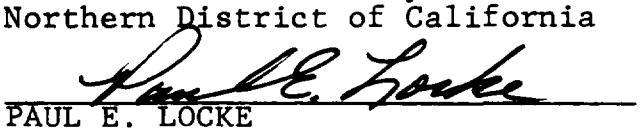

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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

CASE NO. C91 20275 JW

ORDER SETTING STATUS CONFERENCE

This action having been assigned to JUDGE JAMES WARE, IT IS HEREBY ORDERED that a STATUS CONFERENCE in accordance with Fed. R. Civ. P. 16(b) and Local Rule 235-3 be held in the above action on Friday, 08-16-91, at 10:30 a.m. in Courtroom 1, United States Courthouse, 280 So. First Street, San Jose, California.

This status conference may be continued only on order of Judge Ware; parties may not stipulate to continue a status conference without leave from the Court. Any request for a continuance of the status conference shall be by joint application of all parties, supported by a declaration stating the reasons for the request and shall include a proposed order setting a proposed new status conference date. Local Rule 235.

Counsel are directed to confer in advance of the status conference with respect to all matters covered by Local Rule 235-3. Written status statements will not be required unless ordered by the Court. The parties shall appear in person or through their counsel, and must be prepared to orally report to the Court the status of the litigation, and its future course, including each and every matter enumerated in Local Rule 235(a) - (i). Counsel should be prepared to specifically address:

(i) Conduciveness of a settlement conference;

(ii) Conduciveness of trial before a federal Magistrate Judge, particularly for jury trials, prior to the Status Conference, Counsel must consult with their clients and seek their consent to having a U.S. Magistrate Judge preside over the jury trial;

(iii) Necessity of any special master proceedings;

(iv) Future dates for motions hearings, close of factual discovery and trial.

At the conclusion of the status conference, orders will be entered setting dates, as appropriate, for a further status conference, close of factual discovery, pretrial conference and trial. Unless otherwise ordered by the Court, in cases where experts will be designated, expert discovery will close thirty (30) days after close of factual discovery. Additional orders regulating and controlling future proceedings may be entered as necessary.

Each action assigned to Judge Ware is additionally assigned to Magistrate Judge Patricia V. Trumbull or Magistrate Judge Edward A. Infante, for all discovery matters and settlement conferences. Discovery motions in this case shall be brought before the assigned United States Magistrate Judge. Before counsel may file discovery motions, counsel must meet and confer in a good faith effort to resolve any problems that arise during discovery, in conformance with Local Rule 230-4. After counsel have complied with Local Rule 230-4, counsel may contact the assigned Magistrate Judge's chambers to arrange for a briefing schedule and hearing date.

Plaintiff, defendant upon removal, or any other removing

party, shall serve copies of this Order at once upon all parties to this action and upon those subsequently joined in accordance with the provisions of Rules 4 and 5, Federal Rules of Civil Procedure, and file a certificate reflecting such service with the Clerk of the Court.

Although pleadings and briefs may be filed in the San Francisco Clerk's Office, **Judge Ware's San Jose Chambers must receive a copy of all law and motion pleadings and briefs by close of business on the day the filing is due.** Law and motion pleadings and briefs which are not filed in accordance with this order and the Local Rules of Court will not be considered. Counsel are to submit a proposed form of order with all motions and opposition papers.

The civil motion calendar is heard every Friday at 9:00 a.m. The criminal calendar is heard every Wednesday at 9:00 a.m.

Failure to comply with this Order may be deemed sufficient grounds for dismissal of this cause, entry of default judgment, or other appropriate sanctions. See Fed. R. Civ. P. 16(f).

IT IS SO ORDERED.

DATED: April 23, 1991

JAMES WARE
United States District Judge

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IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA

C91 20275 JW

UNITED STATES OF AMERICA, Plaintiff, v. INTEL CORPORATION and RAYTHEON COMPANY, Defendants.	CIVIL ACTION NO. CONSENT DECREE

TABLE OF CONTENTS

This Consent Decree is made and entered into by and between Plaintiff, the United States of America ("United States"), on behalf of the Administrator of the United States Environmental Protection Agency ("EPA") and the following Defendants: Intel Corporation and Raytheon Company (hereafter collectively referred to as the "Parties").

WHEREAS, the United States, on behalf of EPA, has filed a Complaint in this matter pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. L. No. 99-499, 100 Stat. 1613 (1986) (as so amended, "CERCLA"), seeking to compel Defendants identified in Section II (Parties) of this Consent Decree to perform remedial actions and to recover response costs that have been and will be incurred by the United States, on behalf of EPA, in response to releases and threatened releases of hazardous substances from facilities in Mountain View, California, which have contributed to soil and groundwater contamination in the Middlefield-Ellis-Whisman (MEW) area of Mountain View and areas north of U.S. Highway 101 in Moffett Field, and may have contributed to contamination in the area of the Silva Well on Sherland Avenue in Mountain View, California.

WHEREAS, EPA has determined that the past, present, and potential migration of hazardous substances from the Site constitute an actual or threatened release as defined in Section 101 (22), of CERCLA, 42 U.S.C. § 9601 (22) of a hazardous

substance, as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), and that the Defendants are potentially liable parties pursuant to Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

WHEREAS, in 1984, EPA proposed to list and subsequently did list certain areas within the Site on the National Priorities List ("NPL") for appropriate response actions pursuant to CERCLA.

WHEREAS, pursuant to an Administrative Order on Consent signed by EPA; the California Department of Health Services ("DOHS"); the Regional Water Quality Control Board, San Francisco Bay Region ("RWQCB"); Fairchild Semiconductor Corporation; Intel Corporation and Raytheon Company on August 15, 1985 (Docket No. 85-03), Fairchild, Intel and Raytheon have conducted a Remedial Investigation and a Feasibility Study with respect to the Site.

WHEREAS, during the course of conducting the Remedial Investigation, sources of the area-wide groundwater contamination were discovered at facilities in or near the Middlefield-Ellis-Whisman area and at Moffett Naval Air Station and the NASA Ames Research Center, and the Record of Decision for the Middlefield-Ellis-Whisman area has been developed to address the area-wide groundwater contamination and all sources of this contamination, including soils.

WHEREAS, EPA has determined and Defendants agree that entities other than Defendants are potentially responsible parties for all or a portion of the contamination in the MEW Area and that

if the United States enters into a separate settlement with one or more of such other potentially responsible parties, it is the policy of the United States and the EPA that any such settlement shall be fair, adequate and reasonable taking into consideration, among other factors, such other party's or parties' contribution to contamination in the MEW Area and the provisions of the United States' settlement with Defendants as expressed in this Consent Decree.

WHEREAS, the Parties recognize that within the MEW Area there are a number of separate facilities with individual sources located at or immediately adjacent to such facilities and that to achieve effective remediation of the regional groundwater plume, it may be necessary for such sources to be separately removed or controlled by the entities responsible for such sources.

WHEREAS, EPA has determined that the actions mandated by this Decree are necessary to protect the public health, welfare and the environment and are in accordance with Section 121 of CERCLA, 42 U.S.C. § 9621, and with the NCP, 40 C.F.R. Part 300, that the work to be performed under this Consent Decree is a necessary response to the conditions at the Site and that all costs incurred for such work are necessary costs of response.

WHEREAS, pursuant to Section 122 of CERCLA, 42 U.S.C. § 9622, the United States and the Defendants have each stipulated and agreed to the making and entry of this Consent Decree

(hereinafter "Decree" or "Consent Decree") prior to the taking of any testimony.

WHEREAS, the United States and the Defendants agree that settlement of this matter and entry of this Consent Decree are made in good faith, in an effort to avoid further expensive and protracted litigation, but without any admission as to any legal or factual matter except for Defendants' consent to jurisdiction for purposes of entry and enforcement of this Consent Decree as provided above, and without any admission as to liability for any purpose.

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 Sections 106, 107, 113 and 122 of CERCLA, 42 U.S.C. §§ 9606, 9607, 9613 and 9622, and 28 U.S.C. §§ 1331 and 1345. The Parties shall not challenge the Court's jurisdiction to enter and enforce this Consent Decree. Defendants waive service of summons and, for the purpose of this Consent Decree, agree to submit themselves to the jurisdiction of this Court. The Defendants further agree to accept service by regular mail. The complaint states a claim upon which relief can be granted.

II. PARTIES

A. Initial Parties. The parties to this Consent Decree are the United States, on behalf of EPA, and the following individuals and entities: Intel Corporation and Raytheon Company (the "Defendants").

B. United States. All references contained in this Consent Decree to the rights, responsibilities, covenants or actions of the United States, unless otherwise provided, are intended to refer to the United States acting on behalf of the United States Environmental Protection Agency. Unless otherwise provided, or unless the term United States Government is used, no reference contained in this Consent Decree to the rights, responsibilities, covenants or actions of the United States is intended to refer to the United States acting on behalf of either the United States Department of the Navy or the National Aeronautic and Space Administration (NASA), or to any other federal agency or department including any other federal agency or department that succeeds to the interests, rights or liabilities of the Navy or NASA with respect to any property owned or occupied by the Navy or NASA in or near the MEW Site.

C. Addition of Parties. Additional plaintiffs, individuals or entities, including parties potentially responsible for ground-water and soil contamination at the Site, may seek to join in the settlement effected by this Decree. Any such additional individual or entity shall become a Party to this Decree upon the execution of

a supplemental decree by such individual or entity and all other Parties hereto and the entry of such supplemental decree by the Court.

III. BINDING EFFECT

This Consent Decree shall apply to and be binding upon the signatories, their successors, and assigns and upon all persons, contractors, and consultants acting under or for any of the Parties. No change in ownership or corporate or partnership status will in any way alter the responsibilities of any Defendant under this Consent Decree. Following any such change, such Defendant will remain responsible for carrying out all activities required of such Defendant under this Consent Decree. Each Defendant shall provide a copy of this Consent Decree, as entered, and shall provide all relevant attachments to the Consent Decree, as appropriate, to each person, including all contractors and subcontractors, retained to perform the Work for which such Defendant is responsible under this Decree, and shall condition any contract for such Work on compliance with this Consent Decree.

IV. DEFINITIONS

The following terms used in this Consent Decree are defined as follows:

A. "Additional Response Work" means any activities related to the Remedial Action that are contained in any modification to the Remedial Design or Remedial Implementation Plan pursuant to

Section X (Modifications to the Remedial Action) of this Consent Decree.

B. "ARARs" shall mean applicable or relevant and appropriate requirements pursuant to CERCLA Section 121(d) and as further defined in the National Contingency Plan.

C. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. L. No. 99-499, 100 Stat. 1613 (1986).

D. "Conditional Interim Work" shall consist of all tasks necessary to implement the ROD, including operation and maintenance, during the first two years of the Interim Work period.

E. "Contractor" shall mean the individual(s), company or companies retained by or on behalf of any Defendant to undertake and complete the Work. Each contractor or subcontractor shall be qualified to do those portions of the Work for which it is retained.

F. "Defendants" shall mean those parties listed as such in Section II (Parties) of this Consent Decree and any additional individuals or entities who become Defendants pursuant to the provisions of this Decree.

G. "EPA" shall mean the United States Environmental Protection Agency.

H. "Environment" shall have the meaning given to it in Section 101(8) of CERCLA, 42 U.S.C. § 9601(8).

I. "Explanation of Significant Differences" or "ESD" shall mean the document signed by the Regional Administrator of EPA Region IX in September 1990, which clarified the Record of Decision signed by the Regional Administrator on June 9, 1989, and which is attached hereto as Appendix A.

J. "Facility Coordinator" shall have the meaning given to it in Section VI.E. (Project and Facility Coordinators) below.

K. "Facility Specific Work" shall have the meaning given to it in Section VII.C.1 (Facility Specific Work) below.

L. "Future Work" shall consist of all tasks necessary to implement the ROD, including operation and maintenance, occurring after the termination of the Interim Work period, as determined by EPA pursuant to Section VII.B.5.b. (Termination).

M. "Hazardous substance" shall mean any substance included in the definition of hazardous substance set forth in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

N. "Initial Work" shall consist of all tasks necessary to design, construct and commence operation of the RGRP, as specified in Section VII.B.2.b.(1) (Initial Work).

O. "Interim Work" shall consist of all tasks necessary to implement the ROD, including operation and maintenance, occurring after the date of commencement of routine operation activities of the RGRP, as specified in Section VII.B.2.b.(2) (Interim Work) and terminating upon EPA's determination pursuant to Section VII.B.5.b. (Termination).

P. "Joint Work" shall have the meaning given to it in Section VII.B.1 (Joint Work) below.

Q. "MEW Area" shall mean the area bounded on the east by a line 500 feet east of Ellis Street, bounded on the north by a line 500 feet north of U. S. Highway 101, bounded on the west by a line 500 feet west of Whisman Road, and bounded on the south by a line 500 feet south of Middlefield Road.

R. "MEW Plume" shall mean groundwater containing detectable concentrations of the following chemicals that is beneath the surface of the MEW Site and the areas surrounding the MEW Site to the extent that the Defendants are jointly and severally liable to investigate, control, remediate or take other response actions with respect to such groundwater, as provided by applicable law, this Consent Decree or the Record of Decision:

trichloroethene	1,2 -dichlorobenzene
1,1,1, -trichloroethane	chloroform
vinyl chloride	freon 113
1,1 -dichloroethane	tetrachloroethene
1,1 -dichloroethene	phenol
1,2 -dichloroethene (cis and trans isomers)	

S. "Mountain View Parks and Recreation Well" shall mean Santa Clara Valley Water District Well Number 22J7.

T. "National Contingency Plan" or "NCP" shall refer to the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300, and shall be used as that term is referred to in Section 105 of CERCLA, 42 U.S.C. § 9605.

U. "Oversight" means EPA's monitoring and inspection of the Work, including actions necessary to review and verify the adequacy of performance of such work and reports of the Defendants that are required under the terms of this Consent Decree.

V. "Parties" shall mean all parties described in Section II (Parties).

W. "Project Coordinator" shall have the meaning given to it in Section VI.E (Project and Facility Coordinators).

X. "QA/QC" shall mean quality assurance and quality control.

Y. "Record of Decision" or "ROD" shall mean the document signed by the Regional Administrator of Region IX on June 9, 1989, which describes the remedy to be implemented at the Site, as clarified by the ESD signed by the Regional Administrator in September 1990, and which is attached hereto as Appendix B.

Z. "Release" shall have the meaning given to it in Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

AA. "Remedial Action" or "RA" shall mean the implementation of that portion of the remedy set forth in the Record of Decision that is described in Section VII hereof (Work to be Performed), as further defined in this Consent Decree and as may be modified pursuant to the provisions of this Consent Decree, and any schedules or plans required to be submitted pursuant thereto.

BB. "Remedial Implementation Plan" shall mean the plans developed and submitted by the Defendants pursuant to Section VII (Work to be Performed) of this Consent Decree.

CC. "Remedial Design" or "RD" shall mean the phases of the Work wherein engineering plans and technical and performance specifications are developed for implementation of the remedy, in accordance with the ROD and this Consent Decree.

DD. "Response Costs" shall mean any costs incurred by Plaintiff pursuant to CERCLA.

EE. "Regional Groundwater Remediation Program" or "RGRP" shall have the meaning given to it in Section VII.B.1 (Joint Work) below.

FF. "Silva Well" shall mean Santa Clara Valley Water District Well Number 22A3 on Sherland Avenue in Mountain View, California.

GG. "Site" or "MEW Site" means areas of soil and groundwater contamination in the MEW Area of Mountain View, California, and any areas to which such groundwater has migrated. These areas may include the Silva Well area near Sherland Avenue in Mountain View, are expected to include groundwater beneath NASA Ames Research Center (NASA Ames) in Moffett Field, California, and are known to include groundwater beneath Moffett Field Naval Air Station (NAS).

HH. "United States Government" shall mean the United States of America, all its departments, agencies, officers, administrators and representatives and any successors thereto.

II. "Work" means the tasks to be performed by the Defendants pursuant to this Consent Decree.

JJ. "Work Assumption Penalty" has the meaning given to it in Section IX.C (Work Assumption Penalty) of this Consent Decree.

V. PURPOSE

A. In General. The purpose of this Consent Decree is to serve the public interest by protecting the public health, welfare, and the environment from releases and threatened releases of hazardous substances at the Site through implementation of the Work.

B. Consistency with the NCP. EPA has determined that the actions mandated by this Decree and the remedy selected by EPA in the Record of Decision are in accordance with Section 121 of CERCLA, 42 U.S.C. § 9621, and with the NCP. Defendants expressly waive their right to make any challenge to the remedy selected in the ROD.

VI. GENERAL OBLIGATIONS RELATING TO THE WORK TO BE PERFORMED

A. Joint and Several Liability. The Defendants shall jointly and severally finance and perform the Joint Work to the extent required by this Consent Decree. The obligations of the Defendants to finance and perform the Facility Specific Work shall be joint and several only to the extent provided by applicable law.

B. Consistency with NCP and EPA Guidelines. The Defendants, and each Defendant in the case of Facility Specific Work, shall design, implement, and complete the Work in accordance with the NCP, and all amendments thereto that are effective and applicable to any activity undertaken pursuant to this Consent

Decree, and in accordance with the standards, specifications, and schedules of completion set forth in or approved by EPA pursuant to Section VII (Work to be Performed) of this Consent Decree. Defendants shall ensure that all designs, workplans and proposals submitted by Defendants pursuant to this Decree are consistent with the NCP and the U. S. EPA, Guidance on Remedial Design and Remedial Action, OSWER Directive 9355.04A (June 1986). All sampling plans shall be consistent with U. S. EPA, Region IX, Preparation of a U.S. EPA Region 9 Sample Plan for EPA-Lead Superfund Projects (April, 1989) 9QA-05-89 and Preparation of a U.S. EPA Region IX Field Sampling Plan for Private and State-lead Superfund Projects (April 1990) 9QA-06-89. All Worker Health and Safety Plans shall satisfy the requirements of (1) Part 1910 of Title 29 of the Code of Federal Regulations (54 Fed. Reg. 9294, March 6, 1989); (2) the U. S. Department of Health and Human Services Occupational Safety and Health Guidance for Hazardous Waste Site Activities (October 1985 DHHS (NIOSH) Publication No. 85-115); and (3) U. S. EPA, Standard Operating Safety Guides (July 1988). All QA/QC plans shall follow guidelines listed in Section XII below (Quality Assurance/Quality Control). In addition, for any report, plan, specification, schedule, appendix or attachment required to be submitted pursuant to this Consent Decree, Defendants shall use due diligence to comply with any applicable guidance document in effect 60 days prior to the due date for such submission.

C. Standards for the Work. The Work performed in the implementation of this Remedial Action shall meet the standards of

all "applicable requirements" and "relevant and appropriate requirements" as those terms are defined in 40 C.F.R. § 300.5, as generally described in CERCLA Compliance with Other Laws Manual, Part I (August 1988) EPA/540/G-89/006, Part II (August 1989) EPA/540/G-89/009, and as is required by Section 121 of CERCLA, 42 U.S.C. § 9621.

D. Waiver of Certain Claims Re Government Approvals. Notwithstanding any approvals, permits, or other permissions which may be granted by the United States Government or other governmental entities, the Defendants shall not be relieved of any and all liability, if any, which may arise from or relate 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 fully or complete the Work because of any such approvals, permits or other permissions, and agree not to argue that the United States Government or other government entities are or should be liable because of any such approvals, permits or other permissions.

E. Project and Facility Coordinators. The Defendants shall appoint a representative ("Project Coordinator") to act on their behalf to execute the Joint Work required pursuant to Section VII.B below (Joint Work). In addition, each Defendant shall appoint a representative ("Facility Coordinator") to act on its behalf to execute the Facility Specific Work to be completed by each Defendant pursuant to Section VII.C (Facility Specific Work). Each

of the Facility Coordinators shall concurrently provide to the Project Coordinator copies of all reports submitted to EPA pursuant to Section XI (Reporting and Approvals/Disapprovals) of this Decree and shall inform the Project Coordinator in writing of actions taken by such Defendant to comply with its obligations under Section VII.C of this Consent Decree (Facility Specific Work) and any problems that have been encountered or are anticipated by such Defendant in commencing or completing the Facility Specific Work.

F. Contractor and Employee Qualifications. All Work, other than cost accounting, to be performed by the Defendants pursuant to this Decree shall be performed by qualified contractors or employees under the direction and oversight of a qualified professional architect, engineer or geologist, as applicable, and in accordance with the schedules set forth in Section VII below (Work to be Performed). Prior to the initiation of Work at the Site, the Defendant(s) responsible for such Work shall notify EPA in writing, of the name, title, and qualifications of any engineer, architect or geologist and the names of principal contractors and/or subcontractors (including laboratories) proposed to be used in carrying out the Work to be performed pursuant to this Decree. Selection of any such architect, engineer, geologist, contractor and/or subcontractor shall be subject to approval by EPA. EPA retains the right to reject Defendants' selection of such architect, engineer, geologist, contractor and/or subcontractor within a reasonable time of receipt of the written notification described above. Any dispute which may arise regarding Defendants' selection under this subsection shall be subject to the Dispute

Resolution provisions of Section XXV (Dispute Resolution) of the Consent Decree.

G. Permits for Onsite Work. Pursuant to CERCLA Section 121(e), 42 U.S.C. § 9621(e), no federal, state, or local permit shall be necessary for the portion of the Work conducted entirely onsite where such Work is carried out in compliance with said Section.

H. Proposed Schedules and Quality Assurances. All designs, workplans and proposals required by this Decree shall include, where appropriate, proposals for schedules and quality assurance provisions.

I. Calculation of Time. Except where noted otherwise, all dates referred to in this Decree or any attachments to this Decree are calendar days; however, should a deadline fall on a weekend or a federal holiday, the deadline shall be construed to be the next working day. The deadline for the submission of any notice, report or information pursuant to this Consent Decree shall be deemed to have been met if such notice, report or information is delivered by hand on or before the date such notice, report or information is due or if sent by next-day delivery service on or before the day before the date due.

VII. WORK TO BE PERFORMED

A. Work Requirements.

1. General Description. The Defendants shall finance and perform all Work as defined by this Consent Decree. The Work shall be in accordance with the ROD and shall consist of two parts: that portion of the Joint Work required to be performed by Defendants pursuant to this Consent Decree and Facility Specific Work required to be performed by Defendants pursuant to this Consent Decree.

2. Requirements of the Work and Cleanup Standards.

(a) Soil Remediation. Pursuant to the ROD, the selected remedies for soils are: (1) in-situ vapor extraction with treatment by vapor phase granular activated carbon (GAC) and (2) excavation with treatment by aeration to meet federal, state and local air standards and, to the extent applicable, OSWER Directive 9355.0-28 Control of Air Emissions From Superfund Air Strippers at Superfund Groundwater Sites, June 15, 1989. For the purpose of this Consent Decree only, this Directive shall not apply to sources with actual emission rates less than three (3) pounds per hour or fifteen (15) pounds per day or calculated rate less than ten (10) tons per year of total VOCs. The soil cleanup standards are 0.5 parts per million (ppm) TCE for all soils outside of slurry walls and 1.0 ppm TCE for all soils inside of slurry walls. If, upon review of hydrogeological and any other applicable information, EPA

determines that the slurry wall systems have failed at any time to prevent or contain the release of contamination existing within the slurry walls, then soil cleanup standards for the area within that particular slurry wall shall be 0.5 ppm TCE.

(b) Groundwater Remediation. The selected remedy under the ROD for groundwater is extraction and treatment by air stripping tower or liquid phase GAC units. Defendants shall provide vapor phase GAC units for air-stripping towers if required by EPA, the Air Resources Board, or the Bay Area Air Quality Management District to meet air emission standards and, to the extent applicable, OSWER Directive 9355.0-28 Control of Air Emissions From Superfund Air Strippers at Superfund Groundwater Sites, June 15, 1989. For the purpose of this Consent Decree only, this Directive shall not apply to sources with actual emission rates less than three (3) pounds per hour or fifteen (15) pounds per day or calculated rate less than ten (10) tons per year of total VOCs. Groundwater cleanup standards are 5 parts per billion (ppb) TCE for the shallow aquifers (including ground water inside the slurry walls) and 0.8 ppb TCE for the deep aquifers.

(c) Cleanup Standards for 11 Organics of Concern. According to the ROD, it is expected that achieving the cleanup standards for TCE will result in the cleanup of the other Site chemicals listed in Section IV.R (MEW Plume) (the "11 Organics") and that the resulting concentrations of the 11 Organics will meet ARARs and will not exceed maximum cumulative risk levels. The Operation and Maintenance Plan shall provide for the continued

implementation of the remedy in the event that cleanup standards for TCE are achieved, but that concentrations of any of the 11 Organics in the MEW Plume do not achieve ARARs or cause the cumulative risk to exceed the maximum cumulative risk level.

(d) Groundwater Monitoring. Defendants shall design and implement, as applicable, groundwater monitoring programs as described in this Section. These groundwater monitoring programs may be included as part of the area-wide sampling plan required pursuant to Section VII.B.4.c.(2)(vii).

(1) Four Inorganic Chemicals of Concern. Defendants shall provide to EPA a sampling plan capable of determining the concentrations of antimony, cadmium, arsenic and lead (the "four Inorganics") in the MEW Plume south of Highway 101. This plan shall include a proposal for locations of those existing wells that are appropriate for further sampling in light of existing inorganic chemical data. This sampling plan shall be a part of the RGRP Workplan referenced in Section VII.B.4(a). After the initial sampling for the four Inorganics, if it is determined by EPA to be appropriate after a review of the sampling results, Defendants shall submit within sixty (60) days, for EPA's approval, a sampling plan that provides for the periodic monitoring of the four Inorganics at the MEW Site. If, at any time, EPA determines that any of the four Inorganics has migrated, then EPA may require the Defendants to undertake such additional sampling activities that are necessary to determine the extent of such migration.

(2) Total Detected Chemicals. As part of the area-wide sampling undertaken for both Part I and Part II of the RGRP, Defendants shall provide to EPA analytical results which are

sufficient for EPA to be able to determine the concentrations in the MEW Plume of all the chemicals listed in Tables 2-3, 2-4 and 2-5 of the MEW Site Endangerment Assessment. Such sampling to assess the concentrations of these chemicals in the MEW Plume shall be included as part of the sampling round specified in the O&M Plan to be undertaken five (5) years after the commencement of start-up activities of each of Parts I and II of the RGRP, and at specified intervals thereafter. This plan shall include a proposal for locations of the existing wells that are appropriate for further sampling in light of existing chemical data. Defendants' obligations to perform such sampling shall be limited to the Initial Work period and the Conditional Interim Work period, if there is one. Copies of Tables 2-3, 2-4 and 2-5 of the MEW Site Endangerment Assessment are attached hereto as Appendix E.

B. Joint Work.

1. General Description. The Defendants are jointly and severally liable for their portion of the Joint Work, which shall include the following: (a) the design, construction and implementation of the groundwater extraction and treatment system remediating the MEW Plume, which shall be referred to hereinafter as the "Regional Groundwater Remediation Program" or "RGRP," to the extent required by the provisions of Section VII B.2 (Implementation of the RGRP); (b) further characterization and subsequent extraction and treatment of groundwater contamination in the vicinity of the Silva Well, as set forth in Appendix C; (c) a proposal, for EPA approval, of a method to verify attainment of

groundwater and soil cleanup standards; and (d) operation and maintenance and monitoring of all systems and media (i.e., groundwater and air), to the extent required by the provisions of Section VII B.2 (Implementation of the RGRP). Obligations of the Joint Work include all reporting requirements regarding Joint Work as outlined in Section XI (Reporting and Approvals/ Disapprovals) of this Decree. In the event of the insolvency or other failure of any one or more of the Defendants to implement the requirements of the Joint Work, any remaining Defendant(s) shall complete all such requirements, subject to all limitations and provisions of this Consent Decree.

2. Implementation of the RGRP.

(a) Parts I and II. The Parties recognize that within the MEW Site there are areas of groundwater contamination beneath Moffett Field and that, to maximize effective remediation of the MEW Plume, it is expected to be necessary for the United States Navy to control specified potential sources on Moffett Field for which it may be responsible before Defendants are required to extend operation of the hydraulic remediation and treatment system provided for in this Decree to those portions of the Site that lie beneath Moffett Field. The specific mechanism for the United States Navy's control of such sources beneath Moffett Naval Air Station (NAS) is provided for in Attachments 4 and 5 to the Federal Facility Agreement, attached hereto as Appendix D. Attachments 4 and 5 of the Federal Facility Agreement are attached hereto as Appendix D solely for the purpose of providing reference and

nothing in this Decree shall be deemed to create any right by Defendants to enforce or otherwise interpret the provisions of Attachments 4 and 5 or any other part of the Federal Facility Agreement.

The RGRP shall be divided into two parts. Part I will consist of all design and construction necessary to implement hydraulic remediation on that part of the MEW Plume that is south of Highway 101 and to implement hydraulic control of that part of the MEW Plume that is north of Highway 101. Part II of the RGRP will consist of all design and construction necessary to implement hydraulic remediation of that part of the MEW Plume that is north of Highway 101.

For the purposes of this section, "hydraulic control" is the prevention of further migration of the MEW Plume.

(b) Four Phases. The Joint Work shall be divided into four phases for each of Parts I and II of the RGRP: Initial Work, Interim Work, Conditional Interim Work and Future Work.

(1) Initial Work. The first phase shall consist of all the Initial Work and shall be 100% jointly and severally financed and performed by the Defendants. Defendants shall keep an accurate accounting of all expenses incurred by them in connection with implementing the Initial Work.

(2) Interim Work. The second phase of the Joint Work shall consist of the Interim Work and shall be 100% jointly and severally financed and performed by entities other than the Defendants (the "non-Defendants"), except as provided in Section VII.B.2.b.(3) (Conditional Interim Work). The Interim Work shall begin in accordance with the provisions of Section VII.B.5.a (Commencement) and shall terminate when EPA determines that the amount of the expenses incurred by the non-Defendants, converted to 1990 dollars, based on acceptable accounting practices, in performing Joint Work equals 1.857 times the amount incurred by Defendants, converted to 1990 dollars, based on acceptable accounting practices, both (i) in performing the Initial Work and, if applicable, the Conditional Interim Work and (ii) in paying any response and oversight costs pursuant to this Decree. Any sums paid by non-Defendants to the United States Government as reimbursement of the United States Government's response and oversight costs shall not be considered part of the calculation (for this Section only) of the expenses incurred by non-Defendants.

(3) Conditional Interim Work. The third phase of the Joint Work, if required, shall consist of the Conditional Interim Work and shall be 100% jointly and severally financed and performed by the Defendants. Defendants shall perform the Conditional Interim Work if at any time during the first two years of the Interim Work period: 1) the work required to implement the remedy, including O&M, under an administrative order issued pursuant to Section 106 of CERCLA, 42 U.S.C. § 9606,

is not substantially performed; and 2) EPA notifies Defendants of their obligation to perform such Conditional Interim Work.

Defendants agree that, at the termination of the Conditional Interim Work period, if there is one, Defendants shall: 1) submit to EPA a written report, such report to be submitted within 60 days of the end of such period and to be in the form and substance of (and in lieu of) any quarterly or annual report(s) that would have been due following such period, describing the tasks performed by Defendants occurring within the period; and 2) leave the Site in such condition that will not result in increased risk of harm to human health or the environment caused by leaving a particular task unfinished. (For example, if there is a well that Defendants are in the process of installing at the end of the Conditional Interim Work period, Defendants shall finish the installation of that well if there is a heightened risk of cross-aquifer contamination caused by leaving the well partially installed. Similarly, if Defendants are in the process of installation of a treatment system at the end of this period, all construction in progress shall be left in a secure state.) Within a reasonable time prior to expiration of this period, Defendants shall submit to EPA a proposal outlining the tasks to be performed prior to expiration and a procedure for transition, if any, to occur following expiration.

(4) Future Work. The fourth phase of the Joint Work shall consist of all Future Work. Non-Defendants shall perform 100% of the Future Work; however, Defendants shall finance 35% of the Future Work as provided in Section VIII (Payment for

Future Work).

3. Summary of Defendants' Joint Work Obligations. The Defendants shall perform 100% of the Initial Work necessary to implement the Remedial Action, as defined pursuant to this Consent Decree and consistent with the ROD, up to and until the date that Interim Work commences. In addition, Defendants shall perform 100% of the Conditional Interim Work if required pursuant to Section VII.B.2.b.(3). Finally, Defendants shall finance 35% of the Future Work in accordance with Section VIII (Payment for Future Work).

4. Deliverables and Schedules for the Initial Work.

(a) RGRP Remedial Design Workplans. Defendants shall submit to EPA two RD Workplans ("A" and "B") for EPA's approval in accordance with the schedule set forth below. RD Workplan A shall be for the design, construction and implementation of the hydraulic remediation of the MEW Plume. RD Workplan A shall include a Sampling Plan for existing monitoring wells on the Site and shall include any proposed modifications to the schedules established in this Section VII.B (Joint Work). RD Workplan A shall be submitted within 60 days of lodging of this Consent Decree. Defendants shall be allotted an additional 30 days if their RD contractor is not one of the contractors that performed the Remedial Investigation or the Feasibility Study for the MEW Site.

Defendants shall also submit for EPA's approval RD Workplan B, which shall be for the design of an investigation of the area

that is north of Highway 101, such investigation to be sufficient both to define the leading edge (believed to be the northern boundary) of that part of the MEW Plume and to design, if necessary and appropriate, a hydraulic control system for that part of the MEW Plume. Workplan B shall be submitted within 60 days of lodging of this Consent Decree.

If RD Workplan B is submitted prior to the allotted 60 days, then the number of days not used (i.e., the number of allotted days minus the number of days actually used) will be added to the number of days allotted for the submission of RD Workplan A, thereby extending the submission date for Workplan A.

(b) Remedial Designs for the RGRP. Defendants shall submit for EPA approval a separate Remedial Design (RD) for each of Parts I and II of the RGRP containing final construction plans and specifications for the RGRP described in the ROD and this Section VII (Work to be Performed). Each RD shall provide for installation of a "network" of remediation and monitoring wells, the adequacy of such "network" to be evaluated based upon the data available and best engineering practices. It is expected that each "network" of wells will need to be augmented with additional wells to fully implement the ROD and that each RD will provide for such augmentation. Nothing in this paragraph is intended either to require Defendants or to restrict the rights of Defendants, consistent with the data available and best engineering practices, to submit RDs for each of Parts I and II of the RGRP in phases. Likewise, nothing in this paragraph is

intended to require EPA to approve any RD submitted by Defendants calling for installation of either Part I or II of the RGRP in phases. The RDs shall contain (1) the locations of all the wells specified in the RDs to be installed during the Initial Work period and, (2) the estimated locations of additional wells, to be installed during the Conditional Interim Work period, if there is one, the Interim Work period or Future Work period as required, based on available data. The locations and numbers of such additional wells may be changed based on data generated after operation and maintenance activities commence for each part of the RGRP. A schedule providing for evaluation of the need for augmentation of the "network" or for installation of later phases, if any, shall be included as part of the Operation and Maintenance Plan for each of Parts I and II of the RGRP. The submission of supplements to the RDs (containing the applicable elements listed in this subsection B.4 with respect to augmentation of the RGRP) and the installation of any additional wells shall be performed by Defendants only if required by EPA during the Initial Work period, or the Conditional Interim Work period, if there is one.

(1) Preliminary Design of the RGRP.

Defendants shall submit a proposed preliminary design addressing no less than 30% of the total design of the RGRP for the entire MEW Plume and for hydraulic control of that part of the MEW Plume that is north of Highway 101 within 90 days of EPA's approval of the RGRP Remedial Design Workplan or within 90 days of entry of this Consent Decree, whichever is later. The preliminary design shall include, but not be limited to, the following:

(i) Design analysis, including analysis necessary to satisfy state or local permitting requirements;

(ii) Major equipment list for the treatment units;

(iii) Location and screen intervals for monitoring wells;

(iv) Approximate extraction rates, screen intervals and location for all extraction wells;

(v) Site plan (piping/layout);

(vi) Piping and flow diagrams for treatment units;

(vii) Ancillary equipment;

(viii) Preliminary description of how cleanup standards and ARARs will be attained;

(ix) Proposed schedule for sampling of specified monitoring wells.

(2) Proposed Final Design for Part I of the RGRP. Defendants shall submit the proposed Final Design of the RGRP for hydraulic remediation of that part of the MEW Plume that is south of Highway 101 and for hydraulic control of that part of the MEW Plume that is north of Highway 101 (hereinafter referred to as the "proposed Final Design for Part I of the RGRP"), with specifications, within 90 days of EPA's approval of the Preliminary Design. The proposed Final Design for Part I of the RGRP shall include but not be limited to:

(i) Design analysis;

(ii) Complete plans and specifications;

(iii) All revisions of and additions to the

Preliminary Design;

(iv) Piping and instrument diagram for treatment units;

(v) QA/QC Plan;

(vi) Schedules;

(vii) Cost estimates;

(viii) Specifications for provisions for gaining access to and obtaining samples from adjacent properties;

(ix) Detailed description of compliance with cleanup standards and ARARs.

(3) Proposed Final Design for Part II of the RGRP. The Defendants shall submit the proposed Final Design for the RGRP for hydraulic remediation of that part of the MEW Plume that is north of Highway 101 (hereinafter referred to as "proposed Final Design for Part II of the RGRP") within 90 days of receipt of notice from EPA that EPA has approved the last Final Design Removal Work Plan required to be submitted pursuant to Attachment 5 of the Federal Facility Agreement and receipt of all Final Design Removal Work Plans. For the sole purpose of determining when Defendants' obligations to submit the proposed RD for Part II of the RGRP commence under this Decree, Defendants may dispute EPA's decision to approve any Final Design Removal Work Plan required to be submitted pursuant to Attachment 5 of the Federal Facility Agreement by invoking the dispute resolution provisions of Section XXV (Dispute Resolution) of this Decree. Failure to invoke dispute resolution within 10 days of receipt of notice from EPA that it has approved any Final Design Removal Work Plan and receipt of such Final Design Removal Work Plans shall constitute a waiver of any

right to dispute EPA's approval of such Final Design Removal Work Plan. A Defendant's election not to dispute EPA's approval of a Final Design Removal Work Plan shall not be construed as a waiver of that Defendant's rights, if any, against any other party except Plaintiff. In the event that a dispute regarding EPA's approval of a Final Design Removal Work Plan becomes subject to judicial review, the court's jurisdiction shall be limited to determining Defendants' obligations under this Decree. Nothing in this Section or in this Decree shall be deemed as the United States' consent to judicial review or interpretation of any portion of the Federal Facility Agreement itself. In the event that the Court in dispute resolution rules that Defendants are not obligated to submit to EPA this proposed RD for Part II of the RGRP pursuant to this Section, then Defendants agree to continue to maintain hydraulic control of the MEW Plume north of highway 101 pending EPA's resolution of the inconsistency between the approved Final Design Removal Work Plan and this Court's decision regarding Defendants' obligations.

The proposed Final Design for Part II of the RGRP shall include, but not be limited to:

(i) Design analysis;

(ii) Complete plans and specifications;

(iii) All revisions of and additions to the Preliminary Design;

(iv) Piping and instrument diagram for treatment units;

(v) QA/QC Plan;

(vi) Schedules;

(vii) Cost estimates;

(viii) Specifications for provisions for gaining access to and obtaining samples from adjacent properties;

(ix) Detailed description of compliance with cleanup standards and ARARs.

(c) Remedial Implementation Plan (RIP). Defendants shall submit a Remedial Implementation Plan outlining proposals for the implementation of the RGRP. The RIP shall be submitted in the following phases:

(1) Construction Operation and Maintenance Plans ("COMP"). A separate COMP shall be submitted each for Part I of the RGRP and Part II of the RGRP. The COMP for Part I of the RGRP shall be submitted within 60 days of EPA's approval of the proposed Final Design for Part I of the RGRP. The COMP for Part II of the RGRP shall be submitted within 60 days of EPA's approval of the proposed Final Design for Part II of the RGRP. Both COMPs shall contain detailed plans for construction and start-up activities and shall include the following:

(i) Construction schedules;

(ii) Project organization and responsibilities;

(iii) QA/QC plans;

(iv) Sampling plans;

(v) Schedules associated with start-up activities;

(vi) Health and safety plan;

(vii) Equipment and decontamination procedures;

(viii) Plans for the disposal of contaminated or potentially contaminated material.

Within 60 days of EPA's approval of the COMP for Part I of the RGRP, Defendants shall begin construction of Part I of the RGRP in accordance with the approved COMP. Within 240 days of the commencement of construction of Part I of the RGRP or within 30 days of approval of the O&M Plan, whichever is later, Defendants shall begin start-up activities of Part I of the RGRP. Within 60 days of either EPA's approval of the COMP for Part II of the RGRP or start-up of all Removals provided for pursuant to Attachments 4 and 5 of the Federal Facility Agreement, whichever occurs later, Defendants shall begin construction of Part II of the RGRP in accordance with the approved COMP. Within 240 days of the commencement of construction of Part II of the RGRP or within 30 days of approval of the O&M Plan, whichever is later, Defendants shall begin start-up activities of Part II of the RGRP. For each of Parts I and II of the RGRP, Defendants shall provide written notice to EPA of the commencement of construction activities and start-up activities, within five (5) days of the actual date of commencement of such activities.

(2) Operation and Maintenance Plan (O&M Plan). Within 180 days of the initiation of construction of either Part I or Part II of the RGRP, Defendants shall submit a proposed plan for operating and maintaining RGRP equipment and

treatment units and ensuring the effectiveness of the RGRP through continued monitoring. Each O&M Plan shall conform in all cases to the plans, specifications, design conditions and other stipulations set forth in the final RD's and this Decree. Each proposed O&M Plan shall include the following:

(i) Proposed method for determining location and necessity of wells to be installed in later phases of the RGRP;

(ii) Recommended frequency of water level measurements and water quality testing for extraction and monitoring wells;

(iii) Proposed decision-making process and criteria for shutting down specific extraction wells;

(iv) Recommended frequency and methodologies for testing and monitoring groundwater, groundwater gradients, and air and water emissions from treatment units;

(v) Recommended wells and sampling frequency for monitoring the "C" and "deep" aquifers;

(vi) Recommended wells and sampling frequency for monitoring the "A" and "B" aquifers;

(vii) A plan for area-wide sampling to evaluate movement of the MEW Plume and the effectiveness of the RGRP;

(viii) Project organization and responsibility;

(ix) Health and safety plans;

(x) Equipment decontamination procedures;

(xi) Plans for the disposal of contaminated or potentially contaminated material;

(xii) Operation and maintenance schedule;

(xiii) QA/QC plan, including elements necessary for the implementation of trial test(s) of the pumping and treatment system and a description of the mechanism used to verify that the extraction and treatment process is operating within acceptable limits.

(d) Progress Reports. Defendants shall submit progress reports as required in Section XI.A (Progress Reports).

(e) Silva Well Workplan. Defendants have submitted and Plaintiffs have approved the Silva Well Workplan, for work that is intended to characterize and remediate groundwater in the Silva Well area. Such Silva Well Workplan has been attached as Appendix C to this Consent Decree.

(f) Silva Well Remediation Report. Defendants shall implement the Silva Well Workplan and submit the results in a Silva Well Remediation Report pursuant to the schedule to be submitted in accordance with the requirements of the Silva Well Workplan.

(g) Data Management Plan. Defendants shall submit a Data Management Plan as outlined in Section XVII (Submission of Documents, Sampling and Analysis) of this Consent Decree.

(h) Quality Assurance Report. Defendants shall submit a Quality Assurance Report as outlined in Section XII (QA/QC) of this Decree.

(i) Remediation Effectiveness Report. Defendants shall propose methodologies to assess the effectiveness of the RGRP and soil treatment technologies pursuant to the ROD and attainment of soil and groundwater cleanup standards. Such proposal shall be submitted within 360 days of EPA's approval of the Final Design for Part I of the RGRP.

5. Interim Work and Future Work.

(a) Commencement. As part of its approval of each of the O&M Plans for Part I and Part II of the RGRP, EPA shall select the dates upon which non-Defendants shall begin and thereafter maintain routine operation and maintenance activities, in accordance with the applicable approved O&M Plan. Each date shall mark commencement of the Interim Work period for that Part of the RGRP. For both Parts I and II of the RGRP, the dates set by EPA for the commencement of Interim Work shall provide for a reasonable time for the Defendants to complete start-up testing of all components and units necessary for routine operation. The dates set by EPA shall not be less than 120 days and not more than 360 days after completion of construction activities for each of Part I and Part II.

(b) Termination. The Interim Work period shall terminate and the Future Work period shall begin when EPA determines that the amount of the expenses incurred by the non-Defendants, converted to 1990 dollars, based on acceptable

accounting practices, in performing Joint Work equals 1.857 times the amount incurred by Defendants, converted to 1990 dollars, based on acceptable accounting practices, both (i) in performing the Initial Work and, if applicable, the Interim Conditional Work and (ii) in paying any response and oversight costs pursuant to this Decree. Any sums paid by non-Defendants to the United States Government as reimbursement of the United States Government's response and oversight costs shall not be considered part of the calculation (for this Section only) of the expenses incurred by non-Defendants. The Future Work period shall terminate in accordance with the provisions of Section XXXVIII.D (Termination of the Consent Decree).

C. Facility Specific Work.

1. General Description. Raytheon shall perform Facility Specific Work for 350 Ellis Street, 415 East Middlefield Road, and 490 East Middlefield Road, and Intel shall perform Facility Specific Work for 365 East Middlefield Road. Raytheon and Intel shall be jointly and severally liable for the performance of Facility Specific Work for the vacant lot between 415 East Middlefield Road and 365 East Middlefield Road. With respect to the facility at 345 East Middlefield Road, Intel shall perform Facility Specific Work at this facility if EPA notifies Intel that it must do so. If Intel disputes such requirement, then Intel must invoke dispute resolution within sixty (60) days of receiving such notice. Each Defendant shall be liable for any additional Facility Specific Work at the MEW Site to the extent that such Defendant is liable for such work pursuant to Section 107(a) of

CERCLA. Facility Specific Work shall consist of the following tasks which are related to sources or potential sources of soil and groundwater contamination at specific facilities or properties. These tasks include, as appropriate: (a) design, construction and implementation of source remediation systems; (b) operation, maintenance and monitoring of source remediation systems; and (c) maintenance of slurry wall systems including inward and upward hydraulic gradients of groundwater within slurry walls. Obligations for Facility Specific Work include all reporting requirements regarding Facility Specific Work as outlined in Section XI of this Decree (Reporting and Approvals/Disapprovals).

2. Deliverables and Schedules for Facility Specific Work. Each Defendant shall submit the deliverables and schedules specified in this subsection 2 simultaneously to EPA, to the other Defendants, and to any non-defendant recipient of an enforcement order issued pursuant to Section 106 of CERCLA. The obligation to make such submissions to the non-defendant recipients of a Section 106 order, as set forth in the previous sentence, shall be conditioned upon the inclusion of a reciprocal obligation for such recipients to submit the comparable deliverables and schedules to Defendants under comparable terms.

(a) Source Control Workplan. Each Defendant shall submit a Source Control Workplan to EPA for EPA's approval within sixty (60) days after the lodging of this Consent Decree or supplement thereto adding such Defendant as a Party. Defendants shall be allotted an additional thirty (30) days if their Facility

Specific Work RD contractor is not one of the contractors that performed the facility specific portion of the Remedial Investigation or the Feasibility Study for that facility. The Workplan shall include any proposed modifications to the schedules established in this Section VII.C (Facility Specific Work). The Workplan shall outline the activities to be undertaken to remove, remediate or otherwise control adequately all sources originating from properties owned or operated (or formerly owned or operated) by that Defendant. The Workplan shall include provisions to investigate the presence, location and extent of sources; provided, however, that in lieu of further investigation of a particular source, any Defendant may submit evidence showing either (i) that such source is controlled adequately or would be controlled adequately under a specific source control system proposed by such Defendant or (ii) that no source exists at that facility.

(b) Source Control Remedial Design. Each Defendant shall submit for EPA approval a Source Control Remedial Design ("SCRD") that shall contain proposed final construction plans and specifications for source control. The SCRD shall be submitted in the following phases:

(1) Preliminary Design. The Defendant shall submit a preliminary design addressing no less than 30% of the total design and plans within ninety (90) days of EPA's approval of the Source Control Workplan or within ninety (90) days of entry of this Consent Decree, whichever is later. The preliminary design

shall include, but not be limited to, the applicable guidelines outlined in Section VII.B.4.b.(1) (Preliminary Design of the RGRP).

(2) Proposed Final Design. The Defendant shall submit the proposed final design with specifications within ninety (90) days of EPA's approval of the Preliminary Design. The final design shall include, but not be limited to, the applicable guidelines outlined in Section VII.B.4.b.(2) (Proposed Final Design for Part I of the RGRP).

(c) Source Control Remedial Implementation Plan. Each Defendant shall submit a Source Control Remedial Implementation Plan ("SCRIP") outlining proposals for the execution of the SCRD and other actions necessary to control adequately any source. The SCRIP should be submitted in the following phases:

(1) Construction Operation and Maintenance Plan ("COMP"). This plan shall be submitted within sixty (60) days of EPA's approval of the proposed final SCRD. It shall address construction and start-up activities and include the applicable provisions of Section VII.B.4.c.(1) (Construction, Operation and Maintenance Plans). Within sixty (60) days of EPA's approval of the COMP, the Defendant shall begin the construction phase of the soil remediation or any other contamination source removal or remedial action. Within 240 days of the approval of the COMP, the Defendant shall begin facility specific start-up activities.

(2) Operation and Maintenance Plan (O&M Plan). Within 180 days of the initiation of construction, the Defendant shall submit a proposed plan for operating and maintaining source related equipment and treatment units and ensuring the effectiveness of the remedy through continued monitoring. The plan shall conform in all cases to the plans, specifications, design conditions and other stipulations set forth in the Final Remedial Design and this Decree. Such proposed O&M Plan must include the applicable provisions of Section VII.B.4.c.(2) (Operation and Maintenance Plan). By a date to be established by EPA, the Defendant shall begin and thereafter maintain routine operation and maintenance activities in accordance with the approved O&M Plan. The date set by EPA shall permit a reasonable time for Defendant to complete start-up testing of all components and units necessary for the routine operation of the remedy. The date shall not be more than 360 days after completion of construction activities.

(d) Progress Reports. The Defendant shall submit Progress Reports as required in Section XI.A (Progress Reports), detailing the Facility Specific Work and the results of the implementation of Facility Specific Work in this Section.

(e) Data Management Plan. The Defendant shall submit a Data Management Plan as outlined in Section XVII (Submission of Documents, Sampling and Analysis) of this Decree.

(f) Confirmatory Sampling Report. The Defendant

shall submit a Confirmatory Sampling Report for EPA approval at the conclusion of source remediation activities. The report shall be based on work conducted pursuant to the Remediation Effectiveness Report in Section VII.B.4.i. This report shall be attached to the Proposal of Completion in Section XXXVIII.C.2 (Facility Specific Work).

3. Failure to Perform Facility Specific Work. If any Defendant fails to perform the Facility Specific Work it is required to perform pursuant to this Subsection VII.C (Facility Specific Work), any other Defendant or Defendants may perform such Facility Specific Work, subject to EPA approval, or EPA may either (i) finance and perform such Work pursuant to Section IX (Work Assumption) or (ii) require such Work to be performed by the other Defendants in accordance with Subsection X.C (Procedure For and Effect of Modification of the RD and/or RIP) to the extent the other Defendants are liable to finance and perform such Work in accordance with applicable law.

VIII. PAYMENT FOR FUTURE WORK

A. Payment Obligations. Defendants' obligations to finance 35% of the Future Work (which includes both (1) the costs of Future Work that is performed by non-defendant recipients of an enforcement order issued pursuant to Section 106 of CERCLA, and (2) the United States' future response costs, as provided in Section XXI (Reimbursement of Response and Oversight Costs)), shall be satisfied by the payment directly to the non-Defendants actually

performing the Future Work (the "Performing Parties") of such amounts as are due and owing in accordance with the following paragraph and by payments to the United States for future oversight costs in accordance with Section XXI (Reimbursement of Response and Oversight Costs).

B. Payments to Performing Parties Other than the United States Government. Payments ("A") to the Performing Parties for Future Work shall be in accordance with the following formula:

$$A = .35 (X + Y) - Y$$

where "X" is the sum of all Qualified Costs, as defined below, presented by the Performing Parties to Defendants during the given calendar year, and "Y" is the amount of the payment made by the Defendants to the United States pursuant to Section XXI (Reimbursement of Response and Oversight Costs) during the given calendar year.

A Qualified Cost is a cost for performance of Future Work that is presented by a Performing Party (other than the United States Government) to Defendants for payment with a copy of the relevant invoice(s) and supporting documentation and a reasonably detailed description of the work that was performed. For purposes of this section, Qualified Costs do not include (1) any response cost incurred by or on behalf of the United States Government as a Performing Party for Future Work, (2) any oversight costs incurred by the United States Government as a result of overseeing the

performance of any Future Work, or (3) any penalties, fines, interest or other costs incurred by any Performing Party.

All Qualified Costs that are not disputed in accordance with Section VIII.C (Dispute of Qualified Costs) below shall be paid within forty-five (45) days of receipt by Defendants of a demand for payment of such Qualified Costs. Any Qualified Cost that is not paid within forty-five (45) days shall bear interest at the rate of 1% per month, unless the amount is disputed pursuant to this subsection. In the event that Defendants dispute that any cost submitted for payment is a Qualified Cost, Defendants shall provide to the Performing Parties within forty-five (45) days of receipt by Defendants of the demand for payment (along with supporting documentation) both notice of the dispute and a statement of the grounds for the dispute. In the event that Defendants do not provide such notice within forty-five (45) days, or in the event that Defendants actually pay a cost submitted for payment and later decide that such cost was not a Qualified Cost, Defendants will not be deemed to have waived their rights to challenge the payment of such cost or to be reimbursed for the payment of the cost, unless there is significant prejudice to the Performing Parties caused by the delay, or unless Defendants are otherwise barred by the applicable statute(s) of limitation.

C. Dispute of Qualified Costs. Defendants may dispute that a cost submitted for payment is a Qualified Cost based on grounds recognized by applicable law and any such disputed cost shall be deemed a Disputed Qualified Cost until such time as it is agreed by

all parties to the dispute or ordered by the Court pursuant to the dispute resolution provisions of this subsection that such Disputed Qualified Cost is a Qualified Cost. In the event that Defendants dispute their obligations to make payments to the Performing Parties in accordance with this subsection, such dispute shall be resolved in accordance with the dispute resolution provisions set forth in this subsection. For purposes of this subsection only, Defendants agree that the Performing Parties shall have the right to petition the federal district court having jurisdiction over this case to enforce Defendants' obligations to make any payments required to be made by Defendants pursuant to this subsection, whether or not disputed by Defendants. Likewise, if the Performing Party or Parties consent to the jurisdiction of the court, Defendants may also petition the Court to resolve a dispute that any cost submitted to Defendants for payment, whether or not such cost has already been paid, is a Qualified Cost. In the event that such a petition is filed by either party, the responding party shall have forty-five (45) days from the date of receipt in which to respond to the petition. The petitioning party shall, in turn, have twenty-one (21) days in which to reply to the responding party's response. Nothing in this Decree is intended to restrict the rights of Defendants to bring an appropriate action under applicable law against any party not a signatory to this Decree.

In the event that a Petition is served and filed against Defendants with respect to any unpaid cost, Defendants shall be obligated to make payment within forty-five (45) days of receipt of the Petition of the disputed amounts into an escrow fund to be

distributed, with appropriate interest, to the party or parties in whose favor such dispute is resolved. The court costs and the costs of creating and maintaining the escrow fund shall be assessed against the non-prevailing party or parties or shall be allocated in such other manner as is deemed fair and equitable by the Court.

D. Payments to EPA. In the event that EPA chooses to act as a Performing Party and performs Future Work, Defendants shall be obligated to pay directly to EPA as response and oversight costs 35% of the total response and oversight costs incurred by EPA for such Future Work. The Defendants' obligations to make such payments to EPA shall not exceed the obligations that would be applicable according to the formula set forth above if a party other than EPA were the Performing Party, and such obligations to make payments to EPA shall be subject to the requirements and procedures of Section XXI (Reimbursement of Response and Oversight Costs). In the event that Defendants dispute their obligations to make payments of oversight costs to EPA that are sought by EPA pursuant to Section XXI (Reimbursement of Response and Oversight Costs) or payments of costs for Future Work that are sought by EPA pursuant to this subsection D, such dispute shall be resolved in accordance with the procedures set forth in Section XXI (Reimbursement of Response and Oversight Costs). Nothing in this Section VIII.D (Payments to EPA) shall be interpreted to preclude Defendants from arguing that their obligations to make payments to EPA pursuant to this Section shall be subject to the requirements and procedures of Section X (Modifications to the Remedial Action).

E. Judicial Review. Nothing in this Section VIII provides for judicial review of any EPA action or decision or confers jurisdiction of a court over EPA, except as specifically provided for in Section 113(h) of CERCLA or in a dispute between Defendants and EPA pursuant to Section XXV (Dispute Resolution).

IX. WORK ASSUMPTION

A. Circumstances Under Which EPA May Assume Work. In the event EPA determines that the Defendants (or a Defendant in the case of Facility Specific Work) have failed to implement any portion of the Work in a timely manner, EPA may perform any and all portions of the Work as EPA determines to be necessary. For purposes of this Section IX (Work Assumption), a performance shall be deemed to be untimely if Defendants (or the applicable Defendant in the case of Facility Specific Work) fail to meet the schedule established pursuant to this Consent Decree or any attachment hereto, or where EPA determines that a performance by Defendants (or the applicable Defendant) does not constitute a substantial performance. A performance of a portion of Work shall be deemed a substantial performance within the meaning of this section where it involves no omission in essential points from the terms of this Consent Decree or any attachments hereto and the Work has been honestly and faithfully performed in its material and substantial particulars and the only variance from the strict and literal obligations of this Decree or any attachments hereto consists of unimportant omissions or defects. Prior to such performance, EPA will provide Defendants' Project Coordinator (or a Defendant's Facility Coordinator) with ten (10) days advance notice

(the "advance notice period") of EPA's intention to perform a portion of or all of the Work. In the event that EPA issues a notice of its intention to perform a portion of or all of the Work pursuant to this section, it shall refrain from actually performing such Work if the Defendants (or a Defendant in the case of Facility Specific Work) agree within the advance notice period to cure their failure to perform and to perform such cure within a reasonable time. Stipulated penalties shall accrue during any period of non-performance in accordance with Section XXIII (Stipulated Penalties).

B. Effect on Stipulated Penalties. In the event that EPA assumes the performance of a portion or all of the Work, any liability of Defendants (or a Defendant in the case of Facility Specific Work) for stipulated penalties pursuant to Section XXIII (Stipulated Penalties) arising from the acts or omissions that prompted EPA's assumption of all or portions of the Work shall be waived.

C. Work Assumption Penalty. In lieu of stipulated penalties, EPA may, in its discretion, require Defendants (or a Defendant in the case of Facility Specific Work) to pay a Work Assumption Penalty if EPA assumes performance of a portion of or all of the Work. Such Work Assumption Penalty shall be equal to the lesser of (1) double the amount of response costs incurred by EPA in assuming such Work or (2) one million dollars ($1,000,000.00). Such Work Assumption Penalty shall be paid thirty (30) days after EPA provides written demand therefore unless

Defendants (or a Defendant in the case of Facility Specific Work) invoke Dispute Resolution. If Defendants (or a Defendant) invoke Dispute Resolution, and unless the result of such Dispute Resolution is a determination that EPA acted in an arbitrary and capricious manner or failed to act in accordance with law and the terms of this Consent Decree by determining to perform a portion or all of the Work, Defendants (or a Defendant) shall pay the Work Assumption Penalty, plus interest at the rate specified in 28 U.S.C. § 1961, running from 30 days after the date of EPA's demand, at the conclusion of Dispute Resolution. Such Work Assumption Penalty shall be in addition to reimbursement to EPA for the response costs incurred as a result of EPA's assumption of a portion or all of the Work, and such Work Assumption Penalty shall not be recoverable by Defendants in whole or in part by a claim against the United States, as set forth in Section XIX (Claims Against the Fund).

D. Reimbursement of EPA. If EPA performs portions or all of the Work after determining that Defendants (or a Defendant in the case of Facility Specific Work) failed to comply with their obligations under this Consent Decree, Defendants shall reimburse EPA for the costs of doing such Work within sixty (60) calendar days of receipt of demand for payment of such costs, except that the Defendants need not reimburse EPA for those costs which Defendants can show were incurred in an arbitrary and capricious manner or in a manner not in accordance with law or the terms of this Consent Decree (including all deliverables approved by EPA hereunder). Any demand for payment made by EPA pursuant to this

Section shall include cost documentation as described in Section XXI.A (Reimbursement for All Response and Oversight Costs). EPA may demand payment for costs under this Section at any time after costs are incurred pursuant to EPA performance of the Work or partial performance of the Work.

X. MODIFICATIONS TO THE REMEDIAL ACTION

A. Effect of EPA Approval. The Parties acknowledge and agree that EPA's approval of any Remedial Design or any other workplan or proposal does not constitute a warranty or representation of any kind by Plaintiff or Defendants that the RD or RA achieves the cleanup standards set forth in the ROD and in Section VII (Work to be Performed) of this Decree and shall not foreclose Plaintiff or Defendants from seeking performance of all terms and conditions of this Consent Decree, including applicable cleanup standards.

B. Changes to the Remedy. EPA will consider new information generated during implementation of the remedy in accordance with the procedures set forth in the NCP to determine whether it is necessary to make any changes to the remedy, including changes to the cleanup standards. In making such changes, EPA may find that a waiver of one or more of the applicable or relevant and appropriate requirements (ARARs) should be invoked in accordance with the provisions of CERCLA Section 121(d)(4), 42 U.S.C. § 9621(d)(4). If any changes are made

to the remedy that was selected in the ROD, including changes to the cleanup standards, whether accomplished by an administrative order, a judicial order of a court with authority to change the remedy or to mandate that EPA change the remedy that was selected in the ROD, or otherwise, including an action or proceeding involving EPA and any Defendant or third-party non-Defendant, the Defendants' obligations under this Decree, to the extent they are affected by or related to such changes, shall be modified to reflect such changes. Any such modifications shall be made subject to the requirements of Section X.C (Procedure for and Effect of Modification of the RD and/or RIP). In the event any such modifications are made as a result of a judicial order of a lower court, the United States may choose to appeal such order to an appellate court. Should an appellate court then reverse that part of the judicial order that changed the remedy or mandated that EPA change the remedy, Defendants' original obligations to perform the Work under this Decree, if any remain, shall be reactivated automatically within ninety (90) days of the appellate court's order and any payments that would have been required to be made under Section IX (Work Assumption) and XXI (Reimbursement of Response and Oversight Costs) during the pendency of the appeal shall be paid in full, with interest, within thirty (30) days of the appellate court's order.

C. Procedure for and Effect of Modification of the RD and/or RIP

1. Decision to Modify. If, during the Initial Work period, or Conditional Interim Work period, if there is any, EPA

determines that the RD and/or RIP do not fully implement the ROD, the NCP or CERCLA, and Defendants concur, or if the Parties otherwise agree that the RD and/or RIP should be modified in a manner consistent with the ROD, the Parties shall modify the RD and/or RIP accordingly. If, during the Initial Work period or Conditional Interim Work period, if there is any, EPA determines that the RD and/or RIP do not fully implement the ROD (except as required to be performed by non-Defendants pursuant to an obligation outside of this Decree) and the Defendants disagree, EPA may issue a revised RD and/or RIP containing the modifications, including requirements involving the performance of Additional Response Work, that EPA determines are necessary to implement the ROD. Defendants may dispute EPA's determination(s) regarding the modifications necessary to implement the ROD; however, failure to comply with the requirements of the revised RD and/or RIP shall constitute noncompliance with this Consent Decree and shall be subject to stipulated penalties pursuant to Section XXIII (Stipulated Penalties) of this Consent Decree.

2. Procedure for Modification. If, during the Initial Work period or Conditional Interim Work period, if there is any, the Parties agree to modify the RD and/or RIP, or it is determined through Dispute Resolution that the RD and/or RIP should be modified, and EPA has not already issued a modified RD and/or RIP, then EPA shall allow the Defendants an initial opportunity to prepare and submit a revised RD and/or RIP, within a reasonable time period specified by EPA, for EPA's review and approval. If EPA disapproves such a revised RD and/or RIP, EPA shall decide in

its discretion whether it will issue a revised RD and/or RIP or allow the Defendants to cure the disapproved RD and/or RIP within a reasonable time period specified by EPA for EPA's approval. Any Additional Response Work required by such a revised RD and/or RIP shall be completed by the Defendants at their own expense in accordance with the standards, specifications and schedules approved by EPA.

If, following the Initial Work period, or the Conditional Interim Work period, if there is one, EPA seeks to require Defendants to perform any further response work not already included as an obligation under this Consent Decree, EPA may do so only subject to the procedures and provisions set forth in Section XXXI (Covenant Not to Sue).

XI. REPORTING AND APPROVALS/DISAPPROVALS

A. Progress Reports.

1. Nature of Progress Reports. Progress Reports shall describe all actions taken to comply with this Consent Decree, including (a) a general description of the Work activities commenced or completed during the reporting period; (b) Work activities projected to be commenced or completed during the next reporting period; (c) any problems that have been encountered or are anticipated by the Defendants in commencing or completing the Work activities; and (d) a summary assessment of the data, if appropriate. Work activities include, but are not limited to,

construction activities, sampling events, data collection and lab results related to the Work.

2. Work Activities Monthly Report. For the Joint Work, Defendants shall provide written progress reports to EPA on a monthly basis, starting from the entry of this Decree and ending with the beginning of the Interim Work period unless Conditional Interim Work is required, in which case ending two years from the beginning of the Interim Work period. In addition, for Facility Specific Work, each Defendant shall provide written progress reports to EPA and Defendants' Project Coordinator on a monthly basis, starting from the entry of this Decree and ending with the beginning of routine operation and maintenance of the source related remedial action by such Defendant. These reports shall be submitted to EPA by the 10th day of each month and shall describe the Work completed the preceding month and planned for the current month.

3. Operation and Maintenance Quarterly Reports. For Joint Work required pursuant to this Decree, Defendants shall provide written progress reports to EPA on a quarterly basis, commencing at the beginning of routine operation and maintenance of the Remedial Action up until such time that EPA certifies that Defendants have completed the Initial Work pursuant to Section XXXVIII.C (EPA Certification) or at the termination of the Conditional Interim Work period, if required. In addition, for Facility Specific Work, each Defendant shall provide written progress reports to EPA and the Defendants' Project Coordinator on

a quarterly basis, commencing at the beginning of routine operation and maintenance of such Defendant's source control remedial action up until such time that EPA certifies pursuant to Section XXXVIII.C.2 (EPA Certification) that such Defendant has completed all Facility Specific Work. These reports shall be submitted to EPA by the last day of the months of January, April, July and October and shall describe the Work completed during the preceding quarter and planned for the current quarter.

4. Annual Progress Reports. Defendants shall submit annual progress reports which summarize and evaluate all Joint Work activities required pursuant to this Decree and conducted during the previous year and outline planned activities for the upcoming year commencing with the entry of this Decree up and until EPA certifies that Defendants have completed the Initial Work pursuant to Section XXXVIII.C. (EPA Certification) or at the termination of the Conditional Interim Work period, if required. In addition, each Defendant shall submit to EPA and the Defendants' Project Coordinator annual reports which summarize and evaluate all Facility Specific Work activities conducted during the previous year and outline planned activities for the upcoming year. Such Annual Reports must include an evaluation of the results of any required monitoring or, for Facility Specific Work, an evaluation of the results of that Work. Annual Reports shall be submitted by March 1 for the preceding calendar year.

5. Failure to Submit. If the Defendants fail to submit any progress report for the Joint Work, or if any Defendant

fails to submit any progress report for Facility Specific Work, in accordance with the schedule set forth above, then the Defendants (or the applicable Defendant) shall be subject to stipulated penalties pursuant to Section XXIII.B (Stipulated Penalties).

B. All Deliverables and Schedules.

1. Any report, plan, specification (including discharge or emission limits), schedule, appendix, or attachment required or established by this Consent Decree is, upon approval by EPA, incorporated into this Consent Decree. Any noncompliance with any such EPA approved report, plan, specification (including discharge or emission limits), schedule, appendix, or attachment shall be considered a failure to comply with this Consent Decree and subject to stipulated penalties in accordance with Section XXIII (Stipulated Penalties) of this Consent Decree. A determination of noncompliance with such submittal with which the Defendants disagree shall be deemed a dispute and subject to the provisions of Section XXV (Dispute Resolution), if Defendants invoke Dispute Resolution.

2. At any time, EPA may, in its discretion, grant a request by any Defendant for an extension of any deadline for any submittal or Work. In addition, EPA may, in its discretion, waive any required submittal or report or any requirement regarding specific contents of any submittal or report.

3. If EPA disapproves any plan, report or other item

required to be submitted to EPA for approval pursuant to Section VII (Work to be Performed) or Section XII (Quality Assurance/Quality Control), EPA shall provide the Defendants with written notice of the disapproval.

4. The notice of disapproval shall be in writing, shall include an explanation by EPA of why the plan, report, or item is being disapproved and shall state a reasonable time period of not less than 10 working days (the "Cure Period") within which Defendants may correct any deficiencies and resubmit the plan, report or item for EPA approval.

5. In attempting to correct any deficiency, the Defendants shall address each of EPA's comments and resubmit to EPA the previously disapproved plan, report, or item with the required changes within the Cure Period specified by EPA pursuant to subsection D.4 of this Section.

6. If EPA determines that any plan, report or item is substantively deficient after resubmission under subsection D.5 of this Section, EPA shall notify the Defendants in writing that the resubmission is deficient. Such notice shall include an explanation of why the resubmission is deficient and shall state whether EPA deems the Defendants to be in violation of the Consent Decree and subject to stipulated penalties as governed by Section XXIII (Stipulated Penalties) of this Consent Decree. If EPA determines the Defendants to be in violation of the Consent Decree, stipulated penalties shall begin to accrue on the date of

receipt by the Defendants of EPA's notice that the resubmission is deficient. If the Defendants do not attempt to correct a deficient plan, report or item during the Cure Period, stipulated penalties shall begin to accrue no earlier than the day after the last day of the Cure Period. Any such determination by EPA of non-compliance with which the Defendants disagree shall be deemed a dispute and subject to the provisions of Section XXV (Dispute Resolution).

XII. QUALITY ASSURANCE/QUALITY CONTROL

A. QA/QC Procedures. The Defendants shall use sample chain of custody, chemical analysis and data validation procedures described in (i) Quality Assurance/Quality Control Plan: Remedial Investigation, Feasibility Study, and Operable Unit Feasibility Study, Middlefield-Ellis-Whisman Study Area, Mountain View, California -- April 7, 1986, Harding Lawson Associates, as approved by EPA, and (ii) Quality Assurance/Quality control Plan Addendum, Soil Sampling and Analysis, Remedial Investigation, Feasibility Study, Middlefield-Ellis-Whisman Study Area, Mountain View, California -- August 1986, Canonie Engineers, as approved by EPA. The applicable procedures described in these documents shall be used for field work, sample collection and analysis activities except that the QA/QC procedures must be modified to conform with the EPA Method 500 Series approved for safe drinking water analysis, and the procedures described in Section XII.B below. Defendants may, however, substitute the EPA Method 600 Series in any sampling plan except when the sampling results are to be used

to verify that cleanup standards have been attained either for a portion or all of the MEW Plume.

B. In order to provide quality assurance and maintain quality control regarding all samples collected pursuant to this Consent Decree, the Defendants shall:

1. Ensure that all contracts with laboratories used by the Defendants for analysis of samples taken pursuant to this Consent Decree provide for access of EPA personnel and EPA authorized representatives to verify the accuracy of laboratory results related to the Work.

2. Specify, as part of the QA/QC program and upon request of EPA, that all laboratories used by Defendants for analysis of samples taken pursuant to this Consent Decree shall perform, upon reasonable advance notice to such laboratories and to Defendants and not at EPA's expense, analyses of samples provided by EPA to demonstrate the quality of each laboratory's data. If a laboratory used by Defendants is certified for drinking water analyses by the California Department of Health Services, (although no such certification is required by this Consent Decree), Defendants will request that the laboratory include a notation of the valid certification on the title page of the analyses results reports.

3. Specify that laboratories used must maintain and

provide, upon request, the records outlined in The Laboratory Documentation Requirements for Data Validation. (January 1990) 9QA-07-90.

4. Include a quality assurance report as part of their monthly reports for the months of December, March, June and September each year, or as part of their quarterly reports, whichever is applicable pursuant to Section XI.A. Such reports shall contain information that demonstrates that Defendants are complying with this Section and the QA/QC Plan submitted pursuant to this Decree. In addition, each Defendant shall submit quality assurance reports as part of such Defendants' Progress Reports with respect to Facility Specific Work undertaken by such Defendant.

5. Agree not to contest EPA's authority to conduct field or laboratory audits to verify compliance by any Defendant with the QA/QC requirements contained in this Consent Decree.

XIII. PROJECT COORDINATOR

A. Designation; Authority of EPA Project Coordinator. By the effective date of this Decree, EPA and the Defendants shall each designate and notify each other in writing of the name address and telephone number of their respective Project Coordinators and, in the case of each Defendant, such Defendant's Facility Coordinator, to monitor the progress of the Work and to coordinate communication between EPA and the Defendants. The EPA

Project Coordinator shall have the authority vested in the Remedial Project Manager and the On-Scene Coordinator by the NCP, as well as the authority to ensure that the Work is performed in accordance with all applicable statutes, regulations, and provisions of this Consent Decree.

B. Suspension of Work. The EPA Project Coordinator shall also have the authority, in accordance with applicable law, to suspend the Work or any other activity at the Site that, in the opinion of the EPA Project Coordinator, may present or contribute to an endangerment to public health, welfare, or the environment or cause or threaten to cause the release of hazardous substances from the Site.

C. Extension of Compliance Schedule. In the event that the EPA Project Coordinator suspends the Work or any other activity at the Site, EPA may, upon request of the Defendant(s) affected by such suspension, extend the compliance schedule of this Consent Decree as appropriate for the minimum period of time necessary and appropriate to perform the Work. Should the affected Defendant(s) propose an extension of the compliance schedule pursuant to this Section, EPA shall determine the length of any extension. A disagreement regarding such an extension shall be resolved through Section XXV (Dispute Resolution). If the EPA Project Coordinator suspends the Work or any other activity for any of the reasons set forth in this Section and determines that those reasons are due entirely to Defendant's acts or omissions of acts required by this Consent Decree (such suspension and determination to be subject to

the dispute resolution provisions of Section XXV), unless the suspension or determination is overturned, any extension of the compliance schedule shall be decided at EPA's discretion, without resort to the Dispute Resolution provisions of Section XXV of this Consent Decree. If the suspension or determination is overturned, then EPA's decision regarding the extension of the compliance schedule is subject to dispute resolution.

D. General Provisions Relating to Project Coordinators. The Project Coordinators do not have the authority to modify in any way the terms of this Consent Decree, including the terms of any Appendices or any design or construction plans. The absence of the EPA Project Coordinator from the Site shall not be cause for stoppage of the Work. EPA and the Defendants may change their respective Project Coordinators by notifying the other parties in writing at least seven (7) calendar days, where practicable, prior to the change. In addition, any Defendant may change its Facility Coordinator by notifying EPA and the other Defendants in writing at least seven (7) calendar days, where practicable, prior to the change.

E. Assignment of Other Site Representatives. The Defendants' Project Coordinator may assign other representatives, including other contractors, to serve as a Site Representative solely for purposes of oversight of performance of daily operations during remedial activities. The EPA Project Coordinator may assign other representatives, including other EPA employees, State employees or contractors, to serve as a Site

Representative solely for purposes of oversight of performance of daily operations during remedial activities.

F. Referral of Disputes. Prior to invoking dispute resolution procedures, any unresolved disputes arising between the EPA Site Representative and the Defendants' Site Representative shall be referred to the EPA Project Coordinator.

XIV. ACCESS

A. Access to Other Properties. To the extent that access to or easements over property on the Site but not owned or controlled by the Defendants or access or easements over property other than the Site is required for the proper and complete performance by Defendants (or any Defendant) of their obligations under this Consent Decree, the Defendant(s) shall use its (their) best efforts to obtain access agreements from the present owner or those persons who have control within thirty (30) calendar days of EPA's approval of the applicable proposed Final Design. EPA may, upon request, agree to extend the time for obtaining such access agreements. Access agreements shall provide reasonable access to the Defendants, the United States, and its authorized representatives, including EPA and its contractors. In the event that access agreements are not obtained within the thirty (30) day period (or such period as extended by EPA), the Defendant(s) requiring access shall notify EPA within five (5) calendar days thereafter regarding both the lack of, and efforts to obtain, such agreements. If EPA determines that it is necessary, EPA agrees,

consistent with its legal authority, to assist the Defendant(s) requiring access in obtaining such access. In the event EPA exercises its legal authorities, including its powers under Section 104(e) of CERCLA, to obtain access related to the performance of Work under this Consent Decree, the Defendant(s) requiring such access shall reimburse EPA for any costs incurred in the exercise of such powers, as provided in Section XXI.B (Amount, Timing and Method of Payment).

B. Access to Defendants' Properties. After the effective date of this Decree, the Defendants shall assure that the United States, and its authorized representatives, including EPA and its contractors, shall have access, subject to federal security restrictions, at all reasonable times, to the Site and any contiguous property owned or controlled by any Defendant. Access shall be for purposes of conducting any activity required by this Consent Decree, including, but not limited to:

1. Monitoring the progress of activities taking place;

2. Verifying any data or information submitted to EPA;

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

4. Obtaining samples at or near the Site; and

5. Inspecting and copying records, operating logs,

contracts, or other documents in order to assess the Defendants' compliance with this Consent Decree.

In the event any Defendant transfers some or all of its property located within the boundaries of the Site to a third party after the effective date of this Decree, such Defendant shall: (a) assure that the instrument effecting the conveyance or transfer of title contains a copy of this Consent Decree, the ROD and the listing or assessments for listing the property on the NPL; and (b) use its best efforts to assure access to the property from the third party.

C. Notice Prior to Access. If the United States, or its authorized representatives including EPA and its contractors, desires to obtain access pursuant to Section XIV (Access), it shall notify the Facility Coordinator of the applicable Defendant at least twenty-four (24) hours in advance of such access. Such Defendant's Facility Coordinator shall furnish a mutually acceptable time and date to Plaintiff. Such Plaintiff, or its representative(s), shall comply with all applicable provisions of the Worker Health and Safety Plan submitted as part of the workplans required by this Consent Decree and approved by EPA. In case of an urgent situation, EPA may determine that less notice to such Defendant's Facility Coordinator to obtain access is necessary. EPA recognizes that Plaintiff or its representatives will be accompanied by a representative of Defendant, where appropriate.

XV. ASSURANCE OF ABILITY TO COMPLETE WORK

A. The Defendants (and each Defendant in the case of Facility Specific Work) shall demonstrate their ability to complete the Work and to pay all claims that arise from the performance of the Work by obtaining, and presenting to EPA for approval within thirty (30) calendar days after the effective date of this Consent Decree, one of the following items: (1) performance bond; (2) letter of credit; or (3) guarantee by a third party. In lieu of any of the three items listed above, the Defendant(s) may present to EPA, within twenty (20) calendar days after the effective date, financial information sufficient to satisfy EPA that the Defendant(s) have sufficient assets (such as evidence of net worth in excess of $1 billion) to make it unnecessary to require additional assurances.

B. If the Defendants (or any individual Defendant) rely on financial information for financial assurance, the Defendants (or Defendant) shall annually submit such financial information. If EPA determines the financial assurances to be inadequate, EPA shall notify the Defendants (or applicable Defendant) in writing of the basis of its determination and the Defendants (or applicable Defendant) shall obtain one of the three other financial instruments listed above within thirty (30) calendar days of such determination.

XVI. COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS

All actions required to be taken pursuant to this Consent Decree shall be undertaken in accordance with the requirements of all applicable federal, state and local laws, regulations, appendices to this Consent Decree and permitting provisions required by CERCLA and the NCP.

XVII. SUBMISSION OF DOCUMENTS, SAMPLING AND ANALYSIS

A. Sampling Results. The Defendants shall make the results of all sampling and/or tests or other data generated by the Defendants, or on the Defendants' behalf, required to be generated pursuant to this Consent Decree, available to EPA in accordance with the provisions of this Consent Decree. EPA will make available to the Defendants the results of sampling and/or tests or other data generated by EPA.

B. Observation of Work; Split Samples. Under the provisions of Section 104(e) of CERCLA, 42 U.S.C. § 9604(e), EPA explicitly reserves the right to observe the Work of the Defendants as it is performed. In addition, at the request of EPA, any Defendant shall allow EPA and/or its authorized representatives to take split or replicate samples of any samples collected by the Defendants or anyone acting on the Defendants' behalf pursuant to the implementation of this Consent Decree.

C. Notice of Sampling Activities. The applicable Defendant(s) shall notify EPA at least seven (7) days in advance of any sampling activity under an approved sampling plan. The Defendant(s) shall also notify EPA at least 48 hours prior to any modifications or proposed changes to the date of any sampling activity. The Project Coordinators may agree upon a shorter notice period for any such modifications or changes.

D. Technical Data. Defendants agree to provide EPA with all technical data and information required to be generated pursuant to this Consent Decree relating to the environmental problems, public health threats, Site conditions, Site use and history, contaminant incidence and migration, and regional environmental conditions relating to the MEW Site as such data and information becomes available, including but not limited to:

1. Raw analytical, monitoring, sampling, geographical, hydrogeological, geologic, meteorological, surface water, seismic, landfill gas, subsurface gas, or ambient air data, resulting from any environmental testing relating to the Site;

2. Technical working drafts and final reports, letter reports, workplans, documents, records, files, memoranda, status reports, and written material developed using any source, including EPA, relating to the Site;

3. Technical maps, computer generated graphics, charts, tables, data sheets, geologic cross-sections, lithologic logs,

graphs, photographs, slides, or other such material developed relating to the Site; and

4. Computerized technical data and information relating to the Site, including any creation, sorting, display and organization of a data base, the form and format of such data to be determined in the Data Management Plan (DMP).

E. Notice of Future Projects. Defendants (or any applicable Defendant in the case of Facility Specific Work) shall notify EPA no less than twenty-one (21) days in advance of commencement of any project which is likely to affect implementation of the remedy or to produce data or information that would significantly affect an evaluation of the remedy required to be submitted pursuant to this Consent Decree, including but not limited to, projects involving removal of underground tanks, construction or removal of facilities, pilot studies and well sealings. Defendants' notification of such activities shall not, in any manner, constitute a waiver of any applicable privilege with respect to such activities, data or information.

F. Confidentiality and Privileges. Defendants (or any individual Defendant in the case of Facility Specific Work) may assert business confidentiality claims covering part or all of the information provided in connection with this Consent Decree in accordance with CERCLA Section 104(e)(7), 42 U.S.C. § 9604(e)(7), and pursuant to 40 C.F.R. §2.203(b) or applicable state law. Any such claim shall be subject to EPA's confidentiality determination

procedures and, if determined to be confidential, afforded the protection by EPA provided in 40 C.F.R. Part 2, Subpart B.

Defendants agree that the data and reports generated pursuant to 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 agree that the provisions of CERCLA Section 104(e)(7)(F), 42 U.S.C. § 9604(e)(7)(F), apply to such data and information generated by the Defendants. Neither the Defendants nor any individual Defendant shall assert a claim of business confidentiality regarding any hydrogeological or chemical data or any data submitted in support of the Work. Notwithstanding the foregoing, nothing in this Consent Decree shall be construed as a waiver by Defendants or any Defendant of any applicable attorney work product or attorney-client privilege.

G. Public Inspection. Subject to any applicable limitations of Section XVII.F (Confidentiality and Privileges), all data, factual information, and documents submitted by the Defendants to EPA pursuant to this Consent Decree shall be subject to public inspection.

H. Data Management Plan. Within 60 days of the effective date of this Decree, the Defendants shall propose to EPA a Data Management Plan, in accordance with Section VII of this Decree, to manage and organize data collected pursuant to this Decree. Upon approval by EPA, the Defendants shall immediately implement the Data Management Plan.

XVIII. RETENTION OF RECORDS

A. Preservation by Defendants. The Defendants (and each individual Defendant) shall preserve and retain all records required to be generated pursuant to the provisions of the Administrative Order on Consent dated August 15, 1985, and the terms of this Consent Decree. Such documents shall be preserved and retained regardless of any document retention policy to the contrary, for a period of no less than six years after the termination of this Consent Decree, except as provided in Subsection B of this section. Until completion of the Work and termination of this Consent Decree, except as provided in Subsection B of this section, the Defendants (and each individual Defendant) shall preserve, and instruct all of its contractors, its contractors' subcontractors and anyone else acting on the Defendants' behalf at the Site to preserve (in the form of originals, or if allowed pursuant to the Records Destruction Plan below, exact copies or microfiche of all originals), all such records and documents. Such records and documents shall be made available to the EPA Project Coordinator at any reasonable time upon reasonable notice.

B. Procedure for Destruction. After the expiration of the six (6) year period described in subsection A above, any Defendant who desires to destroy any documents covered by subsection A above shall notify the EPA no later than sixty (60) days prior to the destruction of such documents. Upon any request by EPA made within

thirty (30) days of such notice, the Defendant(s) proposing to destroy records shall make available to the EPA originals or microfiche of any such records which are not confidential or privileged under the provisions of Section XVII.F (Confidentiality and Privileges) prior to their destruction.

C. Records Destruction Plan. Within ninety (90) days of the effective date of this Decree, the Defendants shall propose to EPA a Records Destruction Plan to address the destruction of any documents relating to performance of the remedy or covered by CERCLA Section 104(e). Upon approval by EPA, Defendants shall implement the Records Destruction Plan.

XIX. CLAIMS AGAINST THE FUND

This Consent Decree shall not be deemed to constitute a preauthorization of a CERCLA claim within the meaning of CERCLA Sections 111 or 112, or 40 C.F.R. § 700(d)(3). In consideration of the entry of this Consent Decree, Defendants (and each individual Defendant) agree not to make any claims pursuant to Section 112 or Section 106(b)(2) of CERCLA, 42 U.S.C. §§ 9612 and 9606(b)(2), or any other provision of law directly or indirectly, against the Hazardous Substances Superfund, for any response costs incurred in connection with this Consent Decree, even if a Defendant is later determined, based upon its assertion of defenses in a subsequent proceeding, to be liable for response costs less than those paid, or expended, pursuant to this Decree.

XX. RESERVATION OF RIGHTS

A. Reservation of Enforcement Actions. Notwithstanding compliance with the terms of this Consent Decree, including the completion of the Remedial Action, the United States does not release the Defendants from liability for any matters beyond the terms of this Consent Decree. Notwithstanding any other provision in this Decree, the Covenant Not to Sue, as provided in Section XXXI (Covenant Not to Sue), shall not relieve any Defendant of its obligation to meet and maintain compliance with the requirements set forth in this Decree. Except as provided in Section XXXI (Covenant Not to Sue), the United States, on behalf of EPA, and EPA reserve all rights to take enforcement actions for violations of this Decree, of CERCLA and/or of any other authority, including the right to seek response costs, injunctive relief, monetary penalties, and punitive damages for any civil or criminal violation of law or this Consent Decree.

B. Reservation of Response Authority. Except as provided in Section XXXI (Covenant Not to Sue), nothing in this Consent Decree shall be deemed to limit the response authority of the United States on behalf of EPA, including the right to undertake response actions at any time, under Section 104 of CERCLA, 42 U.S.C. § 9604, or under Section 106 of CERCLA, 42 U.S.C. § 9606, or under any other federal response authority.

C. Right to Disapprove Work. The United States, on behalf of EPA, expressly reserves all rights and defenses that it may have, including the right both to disapprove of Work performed by the Defendants (or an individual Defendant) and to require that the Defendants (or any individual Defendant in the case of Facility Specific Work) perform Additional Response Work as specified in Section X (Modifications to the Remedial Action).

D. Non-Parties. The United States expressly reserves all rights to bring any appropriate action(s) against persons and entities not signatories hereto.

XXI. REIMBURSEMENT OF RESPONSE AND OVERSIGHT COSTS

A. Reimbursement for All Response and Oversight Costs. The Defendants shall reimburse EPA for response costs, including oversight costs, expended by EPA with regard to the MEW Site--including costs associated with the sealing of the Silva Well, the sealing of the Mountain View Parks and Recreation Well and all EPA funds expended by the State of California (including the State, DOHS and the RWQCB) related to the Site pursuant to Cooperative Agreements that EPA has signed with the State of California (the "Cooperative Agreements Costs")--that are not inconsistent with the NCP. EPA and the Department of Justice shall make available to Defendants an accounting of their costs in support of any claim for reimbursement of response costs, including oversight costs, made pursuant to this Section. EPA's accounting shall consist of: a Cost Documentation Monitoring System narrative summary. EPA and

the Department of Justice reserve their rights to seek response costs, including oversight costs, incurred by EPA or the Department of Justice in connection with the MEW Site that are not reimbursed by Defendants pursuant to this Section.

B. Amount, Timing and Method of Payment.

1. Defendants shall pay to the Hazardous Substances Superfund a total of Two Million, Four Hundred Five Thousand Dollars ($2,405,000.00), one half of such amount to be paid within thirty (30) days of entry of this Decree and the remainder to be paid within one year of such date, as reimbursement of and resolution of all their liability under Section 107 (a) of CERCLA for response costs, including oversight costs, (except for those costs related to the sealing of the Silva Well, the sealing of the Mountain View Parks and Recreation Well and the Cooperative Agreements) incurred by EPA in connection with the MEW Site up to December 20, 1988, including all interest that has accrued or will accrue thereon.

2. Within ninety (90) days of the provision by EPA to Defendants of the cost documentation described in Section XXI.A, Defendants shall pay to the Hazardous Substance Superfund an amount equal to the sum of all response costs, including oversight costs, incurred by EPA in connection with the MEW Site for the following categories of cost: 1) costs not related to the categories listed below that are incurred during the period December 21, 1988, until the effective date of this Decree; 2) costs related to the sealing

of the Silva Well; 3) costs related to the sealing of the Mountain View Parks and Recreation Well; and 4) Cooperative Agreements Costs. Defendants shall pay to the Hazardous Substances Superfund a total of Forty-Five Thousand Dollars ($45,000) as reimbursement of and resolution of all their liability under Section 107(a) of CERCLA to the Department of Justice for all response costs, including oversight costs, incurred by the Department of Justice in connection with the MEW Site prior to the effective date of this Decree (including all response costs relating to the negotiation and entry of this Decree), including all interest that has accrued or will accrue thereon.

3. Defendants shall reimburse the Hazardous Substances Superfund at the end of each calendar year for all response costs, including oversight costs, incurred by EPA with regard to this Site or in the exercise of its powers under Section 104(a) of CERCLA as provided in Section XIV.A (Access to Other Properties). Defendants shall also reimburse the Department of Justice for all response costs, including oversight costs, incurred by the Department of Justice for the enforcement, oversight or implementation of the provisions of this Decree. Defendants shall, within 90 calendar days of receipt of the annual demand for payment and cost documentation as described in Section XXI.A, remit a check for the amount of those costs made payable to the Hazardous Substances Superfund. EPA's failure to issue a demand for payment for a particular year does not prevent EPA from recovering those costs in a subsequent year.

4. All checks remitted to the United States pursuant to this Decree should reference the MEW Site (09K 6A4), and be addressed to:

U.S. Environmental Protection
Agency Region 9
Attention: Superfund Accounting
Post Office Box 360863M
Pittsburgh, PA 15251

A copy of the transmittal letter and a copy of the check shall be sent to the EPA Project Coordinator.

C. Method for Disputing Response and Oversight Costs.

1. Defendants reserve the right to contest through the Dispute Resolution process set forth in Section XXV (Dispute Resolution), whether EPA's demand for payment under Sections IX.D. (Reimbursement of EPA), XXI.B.2 and XXI.B.3 (Amount, Timing and Method of Payment) includes claims for costs not actually incurred in connection with the MEW site or incurred in a manner inconsistent with the NCP. If Defendants choose to raise any such objection, they must notify, in writing, EPA's Project Coordinator within 90 days of the date of receipt of the demand for payment. If Defendants choose to raise such an objection, Defendants may, at their discretion, either withhold payment of the disputed amount due, subject to the provisions of Section XXV (Dispute Resolution), and Section XXIII (Stipulated Penalties), or pay the disputed amount subject to and in accordance with the provisions of this Section XXI.C.1. Any objection raised pursuant to this Section shall specifically identify each cost contested and the basis for

the objection. Should it be determined in Dispute Resolution that the Defendants have overpaid EPA's response costs or oversight costs the Defendants shall receive the amount overpaid as a credit toward payment of response costs or oversight costs in a subsequent demand for payment. Plaintiff reserves the right to argue that any judicial review of Plaintiff's demand for payment pursuant to Section XXI (Reimbursement of Response and Oversight Costs) shall be limited to the cost documentation provided to Defendants pursuant to Section XXI.A (Reimbursement for All Response and Oversight Costs), and Defendants reserve their rights to argue to the contrary.

2. Within 120 days of EPA's issuance of a written certification pursuant to Section XXXVIII (Termination and Satisfaction) of this Decree, EPA shall provide Defendants a final demand for payment of all unreimbursed response costs and oversight costs. Within 90 days of receipt of EPA's final demand for payment, the Defendants shall either pay to the United States all demanded costs reduced by the amount of any credits due pursuant to subsection C.1, or invoke Dispute Resolution, pursuant to Section XXV of this Consent Decree. If the Defendants invoke Dispute Resolution, the Defendants shall identify each cost contested and the basis for the objection. Defendants shall deposit an amount of money equal to the contested costs into an interest-bearing escrow account within thirty (30) days of invoking Dispute Resolution. Should it be determined in Dispute Resolution that Defendants are required to pay less than the full amount of EPA's final demand for payment, the difference between the amount

paid into the escrow account by Defendants and the amount determined to be owed by Defendants in the Dispute Resolution shall be released to Defendants, including interest earned on the difference, minus escrow account fees. The remaining balance in the escrow account, if any, shall be released to the United States. Should it be determined in Dispute Resolution that Defendants are required to pay the full amount of EPA's final demanded payment, all money in the escrow account, including any interest earned thereon, minus escrow account fees, shall be released to the United States.

Nothing in this Consent Decree, except the waiver provisions set forth in Section XIX (Claims Against the Fund), is intended to waive Defendants' rights, if any, to make a claim (following EPA's final demand for payment) against the United States Government for any overpayment of money to the United States that cannot be recovered either as a credit or from an escrow account pursuant to this subsection.

XXII. PRIORITY OF CLAIMS

The Defendants' claims against any other responsible 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 against such other responsible party relating to the MEW Site as to any unreimbursed costs for the response actions taken or other costs incurred by the United States related to the Site, as provided for by Section 113(f)(3)(C) of CERCLA, 42 U.S.C. § 113(f)(3)(C), and shall also be subordinate to any claim by the

United States Navy or NASA for costs incurred by either of them related to the Site in the exercise of its enforcement authority against a third party pursuant to Section 104 of CERCLA. The United States shall have priority over the Defendants in the collection of any judgment obtained against any non-settling responsible party for such costs.

XXIII. STIPULATED PENALTIES

A. General Provisions.

1. Accrual. Stipulated penalties, if sought by EPA, shall apply for failure to comply with any provision of this Consent Decree, including but not limited to untimely or inadequate submittals or Work required under the terms of this Decree. Except as provided in paragraph XI.B.6 (All Deliverables and Schedules), penalties shall begin to accrue from the first day after the deadline for performance of a requirement of this Decree and shall continue to accrue until the requirement is satisfied.

2. Payment. Stipulated penalties under this Section shall be paid by check made payable to the Hazardous Substance Fund, and addressed as indicated in Section XXI, (Reimbursement of Response and Oversight Costs), and shall be paid within thirty (30) days of receipt of the demand for payment of stipulated penalties. Failure to pay a stipulated penalty on time also constitutes a violation of this Decree and is an event subject to

stipulated penalties. A copy of the check and the letter forwarding the check, including a brief description of the triggering event, shall be submitted to the United States in accordance with Section XXVI (Form of Notice), herein.

3. Election of Remedies. Notwithstanding the stipulated penalties provisions of this Section, EPA may elect to assess civil penalties or bring an action in District Court to enforce the provisions of this Consent Decree, pursuant to CERCLA Sections 107 and 122, 42 U.S.C. §§ 9607 and 9622. Payment of stipulated penalties shall not preclude EPA from electing to pursue any other remedy or sanction to enforce this Consent Decree, and nothing shall preclude EPA from seeking statutory penalties against the Defendants for violations of statutory or regulatory requirements relating to the performance of the Work under this Decree, provided that if Plaintiff collects statutory penalties the total of all penalties shall not exceed $25,000 per day per violation.

4. Liability for Stipulated Penalties. The Defendants are jointly and severally liable for any stipulated penalties pursuant to the provisions of this Section with respect to the Joint Work; provided, that the total amount due and payable for each day of each violation shall not exceed those limits specified in this Section. Each Defendant shall be solely responsible for stipulated penalties assessed with respect to Facility Specific Work at a property owned or operated (or formerly owned or operated) by such Defendant.

B. Stipulated Penalties for Progress Reports. Defendants shall pay stipulated penalties of $1,250 per day for the submission of late Progress Reports as required in Section XI.A. (Progress Reports) and $2,500 per day for the submission of inadequate Progress Reports as specified in Section XI.A. (Progress Reports), subject to the procedures set out in Section XI.B (All Deliverables and Schedules).

C. Stipulated Penalties for All Other Requirements or Deliverables. Except for the stipulated penalties specified in Subsection B, above, the Defendants shall pay, (subject to the procedures in Section XI.B (All Deliverables and Schedules), if applicable), the following stipulated penalties for each failure to comply with the following requirements of this Decree for each class of violations:

1. Class I

(a) Submittal of the following:

(1) RGRP Remedial Design Workplan (Subsection VII.B.4.a.)

(2) Preliminary Design of the RGRP (Subsection VII.B.4.b.(1))

(3) Proposed Final Design for Part I of the RGRP (Subsection VII.B.4.b.(2))

(4) Proposed Final Design for Part II of the RGRP (Subsection VII.B.4.b.(3))

(5) Construction Operation and Maintenance Plan (COMP) for Part I of the RGRP (Subsection VII.B.4.c.(1))

(6) Construction Operation and Maintenance Plan (COMP) for Part II of the RGRP (Subsection VII.B.4.c.(1))

(7) Operation and Maintenance Plan (O&M Plan) for Part I of RGRP (Subsection VII.B.4.c.(2))

(8) Operation and Maintenance Plan (O&M Plan) for Part II of RGRP (Subsection VII.B.4.c.(2))

(9) Silva Well Workplan and Silva Well Remediation Report (Subsections VII.B.4.e. and f.)

(10) Source Control Workplan (Subsection VII.C.2.a.)

(11) Source Control Preliminary Design (Subsection VII.C.2.b.(1))

(12) Source Control Proposed Final Design (Subsection VII.C.2.b.(2))

(13) Source Control Construction Operation and Maintenance Plan (Subsection VII.C.2.c.(1))

(14) Source Control Operation and Maintenance Plan (Subsection VII.C.2.c.(2))

(b) Penalties

Period of Noncompliance	Penalty Per Day Per Violation
Days 1-7	$ 5,000

Days 8-30	$10,000
After 30 days	$15,000

2. Class II

(a) Submittal of the following:

(1) Data Management Plan (Subsection VII.B.4.(g).)

(2) Quality Assurance Report (Subsection VII.B.4.(h).)

(3) Remediation Effectiveness Report (Subsection VII.B.4.(i).)

(4) Facility Specific Progress Reports (Subsection VII.C.2.(d).)

(5) Facility Specific Data Management Plan (Subsection VII.C.2.(e).)

(6) Facility Specific Confirmatory Sampling Report (Subsection VII.C.2.(f).)

(b) All other submittals or requirements required by this Consent Decree, excluding those specified as Class I above or in Section XI.A (Progress Reports) above.

(c) Penalties.

Period of Noncompliance	Penalty Per Day Per Violation
Days 1-7	$ 2,000
Days 8-30	$ 5,000
After 30 days	$12,000

XXIV. FORCE MAJEURE

A. Definition. For purposes of this Consent Decree, force majeure is defined as any event arising from causes beyond the control of the Defendants, or their contractors, subcontractors or consultants, that delays or prevents the performance of any obligation under this Consent Decree and could not have been overcome or prevented by Defendants' exercise of due diligence. Force majeure shall not include increased costs or expenses of the remedy to be implemented pursuant to the ROD and this Consent Decree, nor include the financial inability of the Defendants to perform the Work, nor the failure of Defendants to make timely application for any required permits or approvals or to provide all information required for such applications in a timely manner.

B. Procedure for Determining Force Majeure. When a force majeure event occurs that will delay or may delay the completion of any portion of the Work, the Defendants shall notify EPA's Project Coordinator orally within two (2) working days of the day when Defendants knew or should have known that such delay would result from such event, and shall, within seven (7) days of oral notification to EPA, notify the EPA Project Coordinator in writing of: the anticipated length and cause of the delay; the tasks directly affected by the delay; the measures taken and/or to be taken to prevent or minimize the delay; and the timetable by which the Defendants propose to implement these measures.

The Defendants shall have the burden of proving that the

delay was caused by circumstances beyond the control of the Defendants. The EPA shall determine whether the event constitutes force majeure. If EPA determines that the event did not constitute force majeure, and the delay was not beyond the control of the Defendants, this delay shall constitute non-compliance with the Consent Decree and any stipulated penalties shall accrue from the time of noncompliance. If the EPA determines the event does constitute force majeure, it shall determine the appropriate modification to the schedules for the work to be performed. No deadline shall be extended beyond that period of time which is necessary to complete the activities with the least amount of delay possible through the exercise of due diligence. The Defendants shall exercise due diligence to avoid or minimize delay.

If the EPA and the Defendants cannot agree as to whether the reason for the delay was a force majeure event, the determination of the EPA shall control. If the Defendants dispute this determination, the dispute shall be resolved by the procedures outlined in Section XXV (Dispute Resolution) of this Consent Decree.

C. Waiver of Claim. Failure of the Defendants (or any individual Defendant) to comply with the notice requirements of this Section shall constitute a waiver of that claim.

XXV. DISPUTE RESOLUTION

A. General. As required by CERCLA Section 121(e)(2), 42

U.S.C. § 9621(e)(2), the parties to this Consent Decree shall attempt to resolve expeditiously and informally any disagreements concerning implementation of this Consent Decree or any Work required hereunder.

If a dispute arises with respect to the meaning or application of this Consent Decree, it shall in the first instance be the subject of informal negotiations between EPA and Defendants, pursuant to Section XXV.C (Informal Resolution Mechanism). In the event that the parties cannot resolve any dispute arising under this Consent Decree, then the interpretation advanced by EPA shall be considered binding unless Defendants invoke the dispute resolution provisions of this Section. Defendants' decision to invoke dispute resolution shall not constitute a force majeure under Section XXIV (Force Majeure), herein.

B. Notice. If any Defendant raises a good faith objection to any EPA notice of disapproval, determination of inadequacy, or other decision made pursuant to this Consent Decree, or if EPA and any Defendant otherwise reach an impasse with regard to the requirements of this Consent Decree, the Defendant(s) affected by such decision or impasse shall orally notify EPA of all objections within five (5) working days after receiving EPA's notice of decision or after EPA and the Defendants have reached an impasse. Such Defendants shall subsequently provide written notice to the EPA Project Coordinator within seven (7) calendar days of oral notification.

C. Informal Resolution Mechanism. EPA and the Defendants shall then have fourteen (14) additional days from the receipt of written notification as provided in Section XXV.B (Notice) to reach agreement. If possible, such disputes shall be resolved by informal telephone conferences. Either Party may also request that the Parties confer to resolve the dispute through an informal in-person conference, to be held within this fourteen (14) day period. At the end of this fourteen (14) day period, or within seven (7) days after an informal conference is held, whichever is later, EPA shall provide a written statement of its decision to the Defendants and Defendants shall implement the directives contained in such decision, subject to the provisions of Paragraph D of this Section. If Defendants refuse to implement such directives, EPA may elect to perform such Work, pursuant to Section XX (Reservation of Rights) and subject to the provisions of Section IX (Work Assumption). If Paragraph D of this Section is invoked, EPA may also elect to perform the Work required by the disputed directive, as provided in Sections IX (Work Assumption) and XX (Reservation of Rights).

D. Judicial Resolution.

1. Filing of Petition. In the event that the dispute cannot be resolved by the informal negotiation procedures outlined in Paragraphs A, B and C of this Section and should any Defendant(s) choose not to follow EPA's position, such Defendant(s) may file with the Court a petition, which shall describe the nature of the dispute and include a proposal for its

resolution. No Defendant may file such a petition either (a) until informal negotiations pursuant to Paragraph C of this Section are completed, or (b) more than thirty (30) days after the completion of informal negotiations. The filing of a petition asking the Court to resolve a dispute shall not extend or postpone any Defendant(s)' obligations under this Consent Decree with respect to the disputed issue, or stay the provisions of Section XXIII (Stipulated Penalties) except that the United States will not demand payment of penalties accrued until completion of the Dispute Resolution process. If the United States does not respond to the petition within thirty (30) days, then any stipulated penalties that would have accrued because of the dispute during the period of time from the end of the thirty day response period until EPA responds to the petition are waived.

2. Standard for Review. In any judicial dispute resolution proceeding involving matters covered by CERCLA Section 113 (j)(2), 42 U.S.C. § 9613 (j)(2), the Court shall apply the standards and provisions of that statutory subsection. In any other dispute, the Court shall determine the appropriate standard of judicial review based on general principles of administrative law. In any dispute, the Defendant(s) shall bear the burden of coming forward with evidence and of persuasion on factual issues. Nothing herein shall prevent the United States from arguing that the Court should apply the arbitrary and capricious standard of review to any dispute under this Consent Decree. If the Court finds that Defendant(s) have not satisfied their burdens, Defendant(s) shall transmit payment of all penalties which EPA

determines, in its discretion, shall be imposed, plus interest, at the rate specified in Section 107(a) of CERCLA, 42 U.S.C. § 9607, to the Hazardous Substance Superfund within fifteen (15) working days of resolution of the dispute, and perform the work which was the subject of the dispute.

E. Dispute Resolution Among Defendants.

1. Procedure. Any Defendant may, within sixty (60) days of EPA's approval, and receipt by that Defendant of knowledge of such approval, or within one (1) year of EPA's approval, whichever is earlier, of any submittal made by another Defendant pursuant to Section VII.C (Facility Specific Work), dispute such approval. Any such dispute shall be resolved pursuant to the applicable procedures specified in this Section XXV (Dispute Resolution). A Defendant's election not to dispute EPA's approval of any such submittal shall not be construed as a waiver of that Defendant's rights, if any, against any other party except Plaintiff.

2. Effect of Determination. If, as a result of dispute resolution under this Subsection E, it is determined that a source exists or is not effectively controlled, the applicable Defendant shall prepare and submit to EPA a remedial design workplan with respect to the control of such source within 60 days after the determination and shall thereafter make the submittals specified in Section VII.C.2 (Deliverables and Schedules for Facility Specific Work) above with respect to such source by the

deadlines specified in said Section.

XXVI. FORM OF NOTICE

All notices, correspondence and communications under this Consent Decree shall be in writing, postage prepaid, and addressed as follows:

As to EPA:

Patti Collins (H-6-3)
EPA Project Coordinator
MEW Site
Superfund Programs
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

Thomas P. Mintz, Esq.
United States EPA Region IX
75 Hawthorne Street
San Francisco, CA 94105

As to the Defendants:

Gordon C. Atkinson, Esq.
Cooley Godward Castro Huddleson & Tatum
5 Palo Alto Square, 4th Floor
Palo Alto, CA 94306

George A. Gullage
Raytheon Company
350 Ellis Street
P.O. Box 7016
Mountain View, CA 94039-7016

Edward L. Strohbehn, Esq.
McCutchen, Doyle, Brown & Enersen
3 Embarcadero Center
San Francisco, CA 94111

John R. Masterman
Intel Corporation
1900 Prairie City Road, FM1-86
Folsom, CA 95630

Any submission to EPA for approval pursuant to this Consent Decree shall be made to the address shown above. These names and addresses may be changed by EPA or the Defendants, respectively, by notifying the other parties in writing at least seven (7) calendar days, where practicable, prior to the change.

XXVII. MODIFICATION

Except as provided for in this Consent Decree, there shall be no modification of this Consent Decree without written approval of all parties to this Consent Decree and entry by the Court.

XXVIII. ADMISSIBILITY OF DATA

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

B. The Parties also waive any objections to the introduction of such data based on hearsay for the purpose of this action only.

XXIX. EFFECTIVE DATE

Except as provided in Paragraphs VII.B.4.(a) (RGRP Remedial Design Workplans) and VII.C.2.(a) (Source Control Workplan), this Consent Decree is effective upon the date of its entry by the Court.

XXX. CONTRIBUTION PROTECTION

Pursuant to CERCLA Sections 113(f)(2) and 122(h)(4), 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), and other applicable federal and state law, Defendants shall not be liable to other persons or entities not parties to this Consent Decree for contribution claims regarding matters covered by this Consent Decree. Nothing in this Section shall constitute or be construed as providing any Covenant Not to Sue or Contribution Protection with respect to the matters covered by this Consent Decree to any person not a signatory to this Decree or to any Defendant who defaults on its obligations under this Decree.

XXXI. COVENANT NOT TO SUE

A. Except as specifically provided in Sections XXXI.D and E, the United States covenants not to sue the Defendants for matters covered by this Consent Decree, including any and all civil liability to the United States for causes of action arising under CERCLA Section 106 and RCRA Section 7003 relating to the Site, and any and all claims available to EPA under CERCLA Section 107(a)

relating to the Site. This Covenant Not to Sue does not apply to any removal or remedial actions taken at the MEW Site beyond those actions specified in the ROD or any amendments thereto and does not apply to any claims for the Site that may be available to federal entities other than EPA under CERCLA Section 107(a), 42 U.S.C. § 9607(a).

B. This Covenant Not to Sue shall take effect upon entry of the Consent Decree and shall remain in effect so long as Defendants continue to perform, completely and satisfactorily, their obligations under this Consent Decree. With respect to future liability, this Covenant Not to Sue shall take effect upon certification by EPA of the completion of the Initial Work, Facility Specific Work and Future Work as provided in Section XXXVIII (Termination and Satisfaction).

C. Defendants hereby covenant not to sue the United States Government, except the Navy and NASA, for any claim, counter-claim or cross-claim asserted, or that could have been asserted, arising out of or relating to the MEW Site, up and until the effective date of this Consent Decree, except if such claim, counter-claim or cross-claim arises from or relates to one or more claims expressly reserved by EPA under subparagraph D below and only if EPA asserts that specific claim or claims.

D. Defendants are expressly not released from, and Plaintiff expressly does not covenant not to sue for, the following claims:

1. Claims based on a failure by the Defendants to meet the obligations of this Decree or any amendments thereto, including claims for costs incurred by the United States as a result of such failure;

2. Any other claims of the United States for any other costs or actions necessary at the MEW Site which are not undertaken pursuant to the ROD;

3. Claims based on the Defendants' liability arising from the past, present, or future disposal of hazardous substances at any location other than the MEW Site;

4. Any claim or demand for damage to federal property located any place that the Remedial Actions are being performed;

5. Claims based on criminal liability;

6. Claims based on liability for damage to natural resources, as defined in CERCLA;

7. Claims based on liability for hazardous substances removed from the Site; or

8. Liability for any violations of federal or state law which occur during implementation of the remedy.

E. Notwithstanding any other provision of this Consent Decree, the United States reserves the right to institute proceedings in this action or in a new action (1) seeking to compel Defendants to perform further response work at the Site or (2) seeking reimbursement of the United States' response costs if:

1. for proceedings prior to EPA certification (pursuant to Section XXXVIII.C (EPA Certification)) of completion of Initial Work, and termination of Conditional Interim Work, if required, pursuant to Section VII.B.2.(b).(3) (Conditional Interim Work), conditions at the Site, previously unknown to the United States, are discovered after the entry of this Consent Decree, or information is received, in whole or in part, after the entry of this Consent Decree, and these previously unknown conditions or this information indicates that the remedy set forth in the ROD is not protective of human health and the environment;

2. for proceedings subsequent to EPA certification (pursuant to Section XXXVIII.C (EPA Certification)) of completion of Initial Work,

(i) conditions at the Site, previously unknown to the United States, are discovered after the certification of completion by EPA, or information is received, in whole or in part, after the certification of completion by EPA, and these previously unknown conditions or this information indicates that the remedy set forth in the ROD is not protective of human health and the environment, or

(ii) performance of all or any portion of that part of the remedy set forth in the ROD which is not assigned to

Defendants as Work to be performed under this Consent Decree (the "Non-Assigned Work") is not being performed by any non-signatory, as defined below, and a voluntary or involuntary proceeding under Title XI of the United States Code, Section 301 or Section 303 is commenced by or against the non-signatory that had been performing such work. The United States' right to institute proceedings against Defendants pursuant to this subsection (ii) shall be limited to an action to (1) direct Defendants under CERCLA Section 106 and/or RCRA Section 7003 to perform that portion of the Non-Assigned Work that is not being performed by the non-signatory, or (2) seek reimbursement under CERCLA Section 107(a) for costs incurred by the United States in connection with its performance of such work. For the purposes of this subsection (ii) and the following subsection (iii), a non-signatory is Fairchild Semiconductor Corporation, Schlumberger Ltd., Schlumberger Technology Corporation, National Semiconductor Corporation, NEC Electronics, Inc., Siltec Corporation, Sobrato Development Companies, or General Instrument Corporation, or any successors to these entities, or any purchaser of assets belonging to any of these entities that are related to the Remedial Action, or

(iii) performance of all or any portion of that part of the remedy set forth in the ROD which is not assigned to the Defendants as Work to be performed under this Consent Decree (the "Non-Assigned Work) is not being performed by any non-signatory, as defined below, and a judicial decision is issued in a United States District Court in an action

involving the United States finding that the non-signatory that had been performing the work is not liable under CERCLA or RCRA for performing such work. The United States' right to institute proceedings against Defendants pursuant to this subsection (iii) shall be limited to an action to (1) direct Defendants under CERCLA Section 106 and/or RCRA Section 7003 to perform that portion of the Non-Assigned Work that is not being performed by a non-signatory, or (2) seek reimbursement under CERCLA Section 107(a) for response costs incurred by the United States in connection with its performance of such work.

3. for proceedings subsequent to termination of the Consent Decree pursuant to Section XXXVIII.D (Termination of the Consent Decree) conditions at the Site, previously unknown to the United States, are discovered after the certification of completion by EPA, or information is received, in whole or in part, after the certification of completion by EPA, and these previously unknown conditions or this information indicates that the remedy set forth in the ROD is not protective of human health and the environment.

F. Except as may be provided by subsection XXV (Dispute Resolution), the United States' right to institute proceedings in this action or in a new action seeking to compel Defendants to perform further response work at the Site or seeking reimbursement of the United States for response costs, including oversight costs, at the Site, may only be exercised where the conditions in Section XXXI.E are met.

G. Nothing in this Consent Decree shall constitute or be construed as a release or covenant not to sue regarding any claim or cause of action against any person, as defined in CERCLA Section 101(21), or other entity not a signatory to this Consent Decree for any liability it may have arising out of or relating to the Site.

H. Except as may otherwise be required by law, and without waiving any rights to assert or contest the applicability of any such provisions of law, the parties to this Consent Decree agree that the United States shall be under no obligation to assist the Defendants in any way in defending against suits for contribution brought against the Defendants which allege liability for matters covered by this Covenant Not to Sue by persons or entities that have not entered into this settlement.

XXXII. INDEMNIFICATION AND INSURANCE

A. The Defendants shall indemnify the United States Government and save and hold the United States Government, its agencies, departments, agents and employees harmless for any and all claims or causes of action arising from any acts or omissions of the Defendants, their officers, employees, agents, receivers, trustees, successors, assigns, contractors, subcontractors, or any other person acting on their behalf in carrying out any Joint Work activities pursuant to the terms of this Consent Decree, or any Facility Specific Work Activities for which Defendants are jointly

and severally liable, unless the act or omission giving rise to such claim or cause of action was proximately caused by the United States Navy or NASA, its officers, employees, agents, receivers, trustees, successors, assigns, contractors or subcontractors. For those Facility Specific Work Activities for which Defendants are not jointly and severally liable, each individual Defendant is liable for such work. Each Defendant shall indemnify the United States and save and hold the United States Government, its agencies, departments, agents and employees harmless for any and all claims or causes of action arising from any acts or omissions or such Defendant, its officers, employees, agents, receivers, trustees, successors, assigns, contractors, subcontractors, or any other person acting on its behalf in carrying out any Facility Specific Work Activities pursuant to the terms of this Consent Decree. EPA is not a party to any contract entered into by or on behalf of any Defendant in carrying out activities pursuant to this Decree. The indemnity set forth in this Section XXXII (Indemnification and Insurance) shall be for the benefit of the United States Government only and shall not inure to the benefit of any other individual or entity.

B. Prior to commencing any of the Work, Defendants shall secure, and shall maintain for the duration of this Consent Decree, commercial general liability and automobile insurance with limits of ten million dollars, combined single limit. Any Defendant may satisfy a portion or all of these requirements by (a) one or more self-insurance programs deemed satisfactory by EPA, (b) one or more policies of excess liability insurance

coverage, or (c) appropriate financial information demonstrating that such insurance is not necessary (such as evidence of net worth in excess of $1 billion). In addition, for the duration of this Decree, Defendants shall satisfy, or ensure that their contractors satisfy, all applicable laws and regulations regarding the provision of workers' compensation insurance for all persons performing Work on behalf of the Defendants in furtherance of this Decree. Prior to commencement of Work under this Decree, Defendants shall provide to EPA certificates of such insurance and, if requested by EPA after review of such certificates, a copy of each insurance policy, or, in the case of self-insurance, Defendants shall provide to EPA appropriate financial documentation. If 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, Defendants need provide only that portion of the insurance described above which is not maintained by the contractor or subcontractor.

XXXIII. COMMUNITY RELATIONS

Defendants shall cooperate with EPA in providing information to the public. As requested by EPA or otherwise allowed by applicable law, Defendants shall participate in the preparation of all appropriate information disseminated to the public and in public meeting(s) which may be held or sponsored by EPA to explain

activities at or concerning the Site.

XXXIV. LODGING AND PUBLIC PARTICIPATION

Pursuant to CERCLA Section 122(d), 42 U.S.C. § 9622(d), this Consent Decree will be lodged with the Court for thirty (30) days and the United States shall publish a Notice of Availability of review to allow public comment prior to entry by the Court. The United States will file with the Court a copy of any comments received and the responses of the United States to such comments.

XXXV. OTHER CLAIMS

With respect to any person, firm, partnership, or corporation not a signatory to this Consent Decree, nothing in this Consent Decree shall constitute or be construed as a covenant not to sue by any signatory with respect to, or as a release from any claim, cause of action, or demand in law or equity.

XXXVI. 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 and subject to the terms of this Consent Decree for the purposes of issuing such further orders or

directions as may be necessary or appropriate (i) to construe, implement, modify, enforce, terminate, or reinstate the terms of this Consent Decree or (ii) for any further relief as the interest of justice may require.

XXXVII. REPRESENTATIVE AUTHORITY

Each undersigned representative of the Parties 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 to this Consent Decree.

XXXVIII. TERMINATION AND SATISFACTION

A. Initial Work. Upon completion of the Initial Work required pursuant to Section VII of this Consent Decree for both Part I and Part II of the RGRP, Defendants shall submit to EPA for EPA approval, a written Proposal of Completion stating that the Initial Work has been completed in accordance and in full compliance, or that they have otherwise satisfied their obligations to perform the Initial Work in accordance and in full compliance, with this Consent Decree. Unless Defendants are required to perform Conditional Interim Work, Defendants' obligations under Section VII (Work to be Performed), IX (Work Assumption Penalty), X (Modifications to the Remedial Action), and

XI (Reporting and Approvals/Disapprovals) shall be deemed satisfied upon Defendants' receipt of written certification from EPA pursuant to Section XXXVIII.C below. If Defendants are required to perform Conditional Interim Work, Defendants' obligations under Sections VII (Work to be Performed), IX (Work Assumption Penalty), X (Additional Work), and XI (Reporting and Approvals/Disapprovals) shall be deemed fully satisfied at the end of the first two years of the Interim Work period, or if such obligations are otherwise performed.

B. Facility Specific Work. Upon completion of all Facility Specific Work at a facility, the applicable Defendant may submit to EPA a Proposal of Completion and Work Completion Report for such Facility Specific Work.

C. EPA Certification.

1. Initial Work. The Initial Work and plans for all Initial Work tasks shall be deemed to have been finally completed when EPA certifies in writing and in conformity with CERCLA Section 122(f)(3), 42 U.S.C. § 9622(f)(3), that all of the elements related to Initial Work set forth in the ROD, this Decree and the RD and any changes to the remedy pursuant to Section X.B (Changes to the Remedy) have been satisfactorily completed in accordance with the requirements of CERCLA, 42 U.S.C. § 9601 et seq. Upon receipt of the Proposal for Completion, EPA shall undertake a review of the Initial Work performed under Section VII (Work to be Performed) of this Decree and shall respond to Defendants within

sixty (60) days of receipt. EPA shall issue a Certificate of Completion upon its determination that (1) Defendants have satisfactorily completed the Initial Work; and (2) all stipulated penalties and other monies required to be paid under this Decree prior to the beginning of the Interim Work period have been paid in full by Defendants. If EPA believes that the Initial Work has not been completed in accordance with the standards and specifications set out in plans required under Section VII (Work to be Performed) of this Decree and under CERCLA, it shall notify Defendants in writing of what it believes should be done to complete the Initial Work, referencing the specific portion(s) of the Initial Work and proposing a schedule for completion.

2. Facility Specific Work. The Facility Specific Work and plans for all Facility Specific Work tasks shall be deemed to have been finally completed when EPA certifies in writing and in conformity with CERCLA Section 122(f)(3), 42 U.S.C. § 9622(f)(3), that all of the elements related to Facility Specific Work set forth in the ROD, and this Consent Decree and any changes to the remedy pursuant to Section X.B (Changes to the Remedy) have been satisfactorily completed in accordance with the requirements of CERCLA, 42 U.S.C. § 9601 et seq. Upon receipt of the Proposal of Completion for Facility Specific Work from a Defendant, EPA shall undertake a review of the Facility Specific Work performed by such Defendant under Section VII (Work to be Performed) of this Decree and shall respond to Defendants within sixty (60) days of receipt. EPA shall issue a Certificate of Completion upon its determination that (1) the Defendant has satisfactorily completed the Facility

Specific Work for which such Defendant is responsible; and (2) all stipulated penalties and other monies related to Facility Specific Work required to be paid by such Defendant under this Decree have been paid in full by such Defendant. If EPA believes that the Facility Specific Work has not been completed in accordance with the standards and specifications set out in plans related to Facility Specific Work required under Section VII (Work to be Performed) of this Decree and under CERCLA, it shall notify such Defendant in writing of what it believes should be done to complete the Facility Specific Work, referencing the specific portion(s) of the Facility Specific Work and proposing a schedule for completion.

D. Termination of Consent Decree. The remaining provisions of this Consent Decree including Defendants' obligations under Sections XXI (Reimbursement of Response and Oversight Costs) and XXIII (Stipulated Penalties) shall terminate upon determination and issuance of written certification by EPA that (i) all Future Work has been satisfactorily completed and cleanup standards specified in the ROD, or cleanup standards specified in a change to the remedy pursuant to Section X.B (Changes to the Remedy) have been achieved, (ii) no other corrective action is necessary at the Site, and (iii) all monies required to be paid under this Decree have been paid in full by Defendants. At any time during the Future Work or Interim Work periods Defendants may submit to EPA a written Proposal for Termination setting forth Defendants' analysis that each of points i, ii and iii above have been satisfied and asking EPA to terminate the Decree, and EPA shall respond to Defendants

within sixty (60) days of receipt. If EPA does not agree with Defendants' analysis and believes that remediation of the Site is not complete, it shall notify Defendants in writing of the actions it believes are necessary before the Decree can be terminated.

E. Surviving Rights and Obligations. Termination of this Consent Decree shall not alter the provisions of Section XX (Reservation of Rights), Section XXX (Contribution Protection), Section XXXI (Covenant Not to Sue), Section XXI (Reimbursement of Response and Oversight Costs) and other such continuing rights and obligations of Defendants under this Consent Decree.

XXXIX. SECTION HEADINGS

The section headings set forth in this Consent Decree and its Table of Contents are included for convenience of reference only and shall be disregarded in the construction and interpretation of any of the provisions of this Consent Decree.

XL. NOTICE TO THE STATE

EPA has noticed the State of California pursuant to the requirements of CERCLA Section 106(a), 42 U.S.C. § 9606(a).

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SIGNED AND ENTERED THIS __ day of _____, 1991.

_____
UNITED STATES DISTRICT JUDGE

CONSENTED TO:

UNITED STATES OF AMERICA

By: _____
Richard B. Stewart
Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice

Date: 4.18.91

By: _____
Daniel W. McGovern
Regional Administrator
U.S. Environmental Protection Agency
Region IX

Date: 3.25.91

By: _____
Steven C. Silverman
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice

Date: 4/13/91

By: _____
Raymond D. Ludwiszewski
Acting Assistant Administrator
Office of Enforcement
U.S. Environmental Protection Agency
Washington, D.C.

Date: _____

INTEL CORPORATION

By: _____
Richard D. Boucher
Vice President

Date: 3/8/91

LEGAL OK
JM 3/8/91

By: _____
William T. McGivern
United States Attorney
Northern District of Calif.
450 Golden Gate Avenue
San Francisco, CA 94103

Date: 5/9/91

RAYTHEON COMPANY

BY: _____
David A. Deardorf
Vice President

Date: 3/8/91

By: _____
Paul E. Locke
Assistant U.S. Attorney
Northern District of Calif.
450 Golden Gate Avenue
San Francisco, CA 94103

Date: 5-9-91

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030891

APPENDIX A

FAIRCHILD, INTEL, AND RAYTHEON SITES
MIDDLEFIELD/ELLIS/WHISMAN (MEW) STUDY AREA
MOUNTAIN VIEW, CALIFORNIA

EXPLANATION OF SIGNIFICANT DIFFERENCES

United States Environmental Protection Agency

Region IX -- San Francisco, California

September 1990

Fairchild, Intel, and Raytheon Sites
Middlefield/Ellis/Whisman Study Area
Mountain View, California

EXPLANATION OF SIGNIFICANT DIFFERENCES

I. INTRODUCTION

The purpose of this document is to explain the significant differences between the Record of Decision (ROD) signed by the U.S. Environmental Protection Agency (EPA) on June 9, 1989 and the remedy that will be implemented at the Middlefield/Ellis/Whisman Study Area (MEW Site). Under Section 117 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendment and Reauthorization Act of 1986 (CERCLA), 42 U.S.C. § 9617, EPA is required to publish an Explanation of Significant Differences (ESD) whenever a significant change is made to a final remedial action plan. This document provides a brief background on the MEW Site, describes the change to the ROD that EPA is now making and explains the ways in which this change affects implementation of the remedy selected by EPA in June of 1989.

Based on the technical data in the administrative record, EPA is changing the ROD to provide that the numerical standards characterized as "goals" in the original ROD are final cleanup "standards". This change is made to clarify and ensure that EPA is selecting in the ROD a specific remedial action rather than

deferring to a later date to set these standards. EPA is issuing this ESD to effectuate this change in lieu of amending the ROD because the change does not result in a fundamental change to the overall remedy selected in the June 9, 1989 ROD.

II. BACKGROUND

A. Site Name and Location. The MEW Site is located in Santa Clara County in the City of Mountain View, California. The MEW Site is divided into a Local Study Area (LSA) and a Regional Study Area (RSA). Figure 1-1 identifies the LSA and RSA, along with local roads and landmarks. The LSA consists of (i) two National Priority List (NPL) sites: Intel Corporation (Intel) and Raytheon Company (Raytheon); (ii) one proposed NPL site: Fairchild Semiconductor Corporation (Fairchild); and (iii) several non-NPL sites. The LSA encompasses about 1/2 square mile of the RSA and contains primarily light industrial and commercial areas, with some residential areas west of Whisman Road. The RSA encompasses approximately 8 square miles and includes Moffett Naval Air Station (another NPL site) and NASA Ames Research Center, along with light industrial, commercial, agricultural, residential, recreational, and municipal land uses.

Various owners or occupants in the area around the intersection of Middlefield Road, Ellis Street, Whisman Road, and the Bayshore Freeway (U.S. Highway 101), are or were involved in the manufacture of semiconductors, metal finishing operation, parts cleaning, aircraft maintenance, and other activities requiring the use of a variety of chemicals. Local facilities with current occupants are presented in Figure 1-2. Site investigations at several of these facilities have revealed the presence of toxic chemicals in the subsurface soils and in the groundwater.

B. Identification of Lead and Support Agencies. Since May 1985, EPA has been the lead agency at the MEW Site. The California Regional Water Quality Control Board - San Francisco Bay Region (RWQCB) and the California State Department of Health Services (DHS) are the support agencies for the MEW Site.

C. Circumstances. During negotiations with Potentially Responsible Parties (PRPs) to implement the remedy selected by EPA in the June 9, 1989 ROD, EPA determined that the language contained in the ROD and in the administrative record concerning the selected remedial action was ambiguous. EPA is issuing this ESD to clarify that it has selected a remedial action with final cleanup standards for the MEW Site.

D. Statement Regarding the Administrative Record. This ESD will become part of the Administrative Record file located at:

U.S. Environmental Protection Agency, Region IX
Superfund Records Center
75 Hawthorne Street
San Francisco, CA 94105
Hours: M-F 8:00 a.m. - 4:30 p.m., and

Mountain View Public Library
585 Franklin Street
Mountain View, CA 94041
Hours: M-TH 10:00 a.m. - 9:00 p.m.
F, Sat., and Sun. 10:00 a.m. - 6:00 p.m.

E. Site History. During 1981 and 1982, preliminary investigations of facilities within the LSA found significant concentrations of contaminants in the soil and the groundwater. By 1984, the Fairchild, Intel, and Raytheon Sites were proposed for inclusion on the federal National Priorities List (NPL). Intel and Raytheon were listed on the NPL in June 1986. In 1985, under the direction of the RWQCB, five companies within the LSA [Fairchild; Intel; Raytheon; NEC Electronics, Inc. (NEC); and Siltec Corporation (Siltec)] initiated a joint investigation to document and characterize the distribution of chemicals emanating from their facilities. In April 1985, the RWQCB adopted Waste Discharge Requirements for each of the five companies.

On August 15, 1985, Fairchild, Intel, and Raytheon entered into an Administrative Consent Order with EPA, the RWQCB, and the DHS. Under the terms of the Consent Order, the three companies

conducted a Remedial Investigation and Feasibility Study (RI/FS) of the contamination emanating from the LSA. Prior to and during site investigations, the companies conducted interim cleanup activities at the MEW Site. These interim remedial actions included tank removals, soil removal and treatment, well sealing, construction of slurry walls, and treatment of groundwater from several extraction wells. NEC and Siltec declined to enter into the Administrative Consent Order.

The RI was concluded in July 1988. A draft Feasibility Study and EPA's Proposed Plan were presented to the community for a 60-day review and public comment period beginning in November 1988. In May 1989, Special Notice Letters for the Remedial Design/Remedial Action (RD/RA) Consent Decree were sent out to Fairchild, Intel, Raytheon, NEC, Siltec, and twelve (12) other PRPs. EPA signed the ROD on June 9, 1989.

F. Nature and Extent of Contamination. Industrial activities conducted within the MEW Site required the storage, handling, and use of a large number of chemicals, particularly solvents and other chemicals used in a variety of manufacturing processes. Significant quantities of volatile organic chemicals were used for degreasing, process operating, and general maintenance. Product and waste solvents and other chemicals were piped and stored in underground tanks, pipelines, and sumps. Chemical releases occurred, for the most part, below the ground

surface and migrated downward into the aquifer system. The presence of these chemicals in the subsurface soils and groundwater is primarily the result of leaks from the subsurface tanks and lines, sumps, chemical handling and storage areas, and utility corridors.

Investigations at the MEW Site have revealed the presence of over 70 chemical compounds in the groundwater, surface water, sediments, and subsurface soils. Three major classes of chemicals were investigated during the RI: (i) volatile organic compounds, (ii) semi-volatile acid and base/neutral extractable organic compounds, and (iii) priority pollutant metals. Of these three classes, volatile organics were found to be the most prevalent.[1]

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[1] Since over 70 chemicals were detected at the MEW Site, a subset of 15 key chemicals of primary concern was selected in order to focus on those contaminants that were most likely to pose risks to human health, welfare, and the environment. The chemicals of primary concern consist of 11 organics of concern and 4 inorganics of concern. Of these 15 chemicals of primary concern, trichloroethene (TCE) is the predominant chemical found at the MEW Site. EPA's decision to designate only 15 chemicals as "chemicals of primary concern" was based in part on the assumption that the sampling provided a complete picture of the actual contamination in the groundwater (generally, chemicals detected in less than 5% of the samples extracted are not considered to be "chemicals of primary concern"). Once implementation of the remedy has begun, the groundwater beneath the MEW Site will be monitored periodically for the chemicals that have not been designated as chemicals of primary concern to ensure that no areas of high chemical concentration have gone undetected, that the calculations of health-based risks remain valid, and that the remediation is effective.

An extensive area of groundwater contamination has been defined in the RI and is presented in Figure 2. Current MEW Site data indicate that chemicals are present primarily in the A, B1, and B2 aquifer zones. Chemicals have also been detected in localized areas of the B3, C, and deeper aquifer zones.

Subsurface soil contamination has been found at the Fairchild, Intel, and Raytheon facilities, along with the facilities of other PRPs within the RSA.

G. Description of the June 9, 1989 ROD.

1. Soil Remediation. In the June 9, 1989 ROD, EPA's selected soil remedy is in-situ vapor extraction with treatment by vapor phase granular activated carbon, and excavation with treatment by aeration. In the ROD, EPA established a cleanup goal for soils of 1 part per million (ppm) trichloroethene (TCE) for soils inside of existing slurry walls and 0.5 ppm TCE for soils outside of the slurry walls. Chemicals found in the subsurface soils were generally similar to those found in adjacent groundwater samples. As part of the RD/RA, some additional soil investigation may be necessary in certain areas to ensure the effectiveness of the remedy.[2]

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[2] Since TCE was the predominant chemical at the MEW Site, it was selected as the indicator chemical to monitor the extent of soil contamination and the progress of soil remediation for all chemicals at the MEW Site. Because other chemicals present in the subsurface soils may not be commingled with TCE and may act as a continuing source of contamination to the groundwater, it will be necessary to closely monitor the remediation of the

2. Groundwater Remediation. In the June 9, 1989 ROD, EPA's selected groundwater remedy is extraction and treatment. Extracted groundwater will be treated using air stripping towers. Airborne emissions will meet all Bay Area Air Quality Management District emissions standards. It is anticipated that emission controls utilizing granular activated carbon will be required once the full remedy is implemented. The extracted groundwater will be reused to the maximum extent feasible, with a goal of 100% reuse. Extracted water which cannot be reused will be discharged to local streams. Allowable discharges to local streams will be regulated by the National Pollutant Discharge Elimination System (NPDES) of the Clean Water Act.

In the June 9, 1989 ROD, EPA set groundwater cleanup goals of 5 parts per billion (ppb) TCE for the shallow aquifers (which are not currently used for drinking water) and 0.8 ppb TCE for the deep aquifers (which are used for drinking water). The shallow aquifer cleanup goals also applied to the aquifers inside the slurry walls.

Although over seventy chemicals have been detected in the soil and groundwater at the MEW Site, TCE is the predominant chemical. Therefore, TCE is used as a broad indicator of the

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soils to ensure that all chemicals are remediated so that their respective concentration levels are at or below applicable or relevant and appropriate requirements (ARARs) and do not exceed maximum cumulative risk levels.

size and extent of contamination. The ratio of TCE to other chemicals found at the MEW Site is high enough such that when TCE is reduced to the cleanup level of 5 ppb in the shallow aquifers and 0.8 ppb in the deep aquifers, it is assumed that the other chemicals found at the MEW Site will be reduced to concentrations that meet applicable or relevant and appropriate requirements (ARARs) and do not exceed maximum cumulative risk levels.[3]

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[3] With respect to the organic chemicals found in the groundwater, EPA selected a health-based cleanup strategy that provided (i) for carcinogens, a cumulative excess lifetime cancer risk no greater than 10^{-5} for the shallow aquifers and 10^{-6} for the deep aquifers, and (ii) for non-carcinogens, levels protective of human health, welfare, and the environment based on ARARs and reference doses. Selecting 5 ppb and 0.8 ppb as the cleanup levels for TCE in the shallow and deep aquifers, respectively, was based on the assumption that by reducing the concentrations of TCE to these levels the concentrations of the other chemicals at the MEW Site would be proportionately and correspondingly reduced to: (i) levels with risks low enough to meet a cumulative excess lifetime cancer risk no greater than 10^{-5} for the shallow aquifers and 10^{-6} for the deep aquifers, and (ii) levels at or below ARARs or levels based on reference doses for non-carcinogens in the shallow and deep aquifers. If the levels of the various chemicals are not reduced at the same rate as TCE or if some of the existing chemical compounds begin to transform into more toxic compounds at a rate faster than anticipated, then EPA's assumption that TCE accurately acts as an indicator chemical may need to be re-assessed. Thus, chemical concentrations will be monitored throughout the RD/RA process to assess the validity of EPA's underlying assumptions and to determine whether TCE remains an appropriate indicator chemical for reducing concentrations of the other chemicals.

Because data gathered to date on the inorganics found at the MEW Site are somewhat limited, EPA decided that it would be premature to exclude the inorganics from the list of chemicals of primary concern. Four inorganics were selected as chemicals of primary concern, but were analyzed as a group rather than individually. The four inorganics of concern will be monitored throughout the RD/RA process to ensure that no isolated concentrations of these chemicals remain undetected and that adequate data are available for any future evaluation of the risks posed by the presence of these chemicals.

Should this assumption be proven to be false, the other chemicals of primary concern found in the soil or groundwater at the MEW Site are to be remediated so that their respective concentration levels are at or below ARARs and do not exceed maximum cumulative risk levels.

3. Sealing of Potential Conduit Wells. The remedy includes the identification and sealing of any potential conduit wells. Several abandoned agriculture wells that acted as conduits for contamination to migrate from the shallow aquifers to the deep aquifers have already been sealed. Additional wells have been identified for sealing and others may be identified which will also require sealing.

4. Maintenance of Slurry Walls. The remedy also includes maintaining inward and upward hydraulic gradients inside of the slurry walls and monitoring the integrity of each slurry wall system. Maintaining inward and upward hydraulic gradients by pumping inside of the slurry walls will prevent contaminants from escaping in the event the slurry walls fail. Selected wells will be monitored for chemical concentrations and water levels.

III. EXPLANATION OF SIGNIFICANT DIFFERENCES

This ESD supersedes and clarifies certain points set forth in EPA's ROD dated June 9, 1989. Briefly, and as explained in greater detail below, this ESD addresses the following issues:

1. The cleanup "goals" established for both groundwater and soil contamination at the MEW Site are hereby set as final cleanup standards.

2. In determining whether future changes should be made to the ROD, EPA will consider all legally applicable and appropriate criteria.

3. If EPA determines that an amendment to the ROD is necessary, EPA will follow all required procedures, including the public notice and comment procedures required by Section 117 of CERCLA, 42 U.S.C. § 9617.

A. Cleanup Standards. As discussed in detail in the ROD, EPA selected remedial actions for both soil and groundwater contamination. The remedy selected for soil contamination is in-situ vapor extraction with treatment by vapor phase granular activated carbon, and excavation with treatment by aeration. EPA specified two cleanup goals for soils: 1 ppm TCE for soil inside of slurry walls located on the Raytheon and Fairchild facilities,

and 0.5 ppm TCE for all other soils located on the MEW Site.

In addition, EPA selected groundwater extraction and treatment to address the groundwater contamination. EPA specified two cleanup goals for groundwater: 5 ppb TCE for the shallow aquifers and 0.8 ppb TCE for the deep aquifers.

EPA expressed these cleanup levels as goals because it recognized that there is an uncertainty as to what actual cleanup levels will be achieved during the implementation of the remedial action. However, this uncertainty inherently exists at many Superfund sites that are implementing groundwater extraction treatment remedies or innovative treatment technologies. Accordingly, upon re-evaluation of the administrative record, EPA has now determined that there is a sufficient basis for changing the "cleanup goals" established in the ROD to "final cleanup standards." A basis for making this change is EPA's determination that there is insufficient information at this time to invoke a waiver of statutorily required cleanup standards, pursuant to Section 121(d)(4) of CERCLA, 42 U.S.C. § 9621(d)(4).

Under Section 121 of CERCLA, 42 U.S.C. § 9621, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R Part 300, EPA is required to select a remedy that is protective of human health and the environment and that meets all ARARs. EPA can only select a remedy that does not meet an

ARAR if it formally invokes a waiver based on at least one of the six factors set forth in Section 121(d)(4) of CERCLA, 42 U.S.C. § 9621(d)(4). One of these six factors allows a waiver when the remedy selected is "technically impracticable from an engineering perspective" [See Section 121(d)(4)(c) of CERCLA, 42 U.S.C. § 9621(d)(4)(c)].

The authority of EPA to invoke an ARAR waiver based on "technical impracticability" is limited under CERCLA. The use of the term "impracticable" implies that remedies that are not demonstrated but that are thought to be feasible cannot be eliminated because of this waiver. This waiver should be used in cases where: (i) neither existing nor innovative technologies can reliably attain the ARAR in question, or (ii) attainment of the ARAR in question would be illogical or infeasible from an engineering perspective [53 Federal Register 51439 (December 21, 1988)]. Accordingly, based on its re-evaluation of the administrative record, EPA has determined that there is insufficient information to invoke a waiver to ARARs at the MEW Site at this time.

Although EPA's original ROD did not formally invoke a waiver, the Feasibility Study, which is included as part of the administrative record, provides that final cleanup standards will depend upon the "technical practicability" of achieving those goals. EPA, through this ESD, is clarifying that it will

consider technical practicability or impracticability as a factor in evaluating whether in the future it should formally invoke a waiver of an ARAR. EPA will make such an evaluation, if appropriate, on the basis of information generated during the Remedial Action phase of the remedy.

In summary, this ESD supersedes the June 9, 1989 ROD by setting final cleanup standards that represent the technical parameters of its chosen remedy and therefore are present enforceable obligations for the MEW Site.

B. Future Changes to the Selected Remedy. When EPA selects a remedy for a Superfund site, at a minimum, it must ensure that the remedy is protective of human health and the environment, complies with all ARARs (or the record supports a waiver), utilizes permanent solutions and alternative technology to the maximum extent practicable, and satisfies the statutory preference for treatment as a principal element (See Section 121 of CERCLA, 42 U.S.C. § 9621). EPA selects this remedy based on the information in the administrative record.

The administrative record for the MEW ROD and for many Superfund sites contains data that indicate that there is some degree of uncertainty as to whether the chosen technologies will be able to achieve the cleanup standards specified. EPA acknowledged in the Proposed Plan for the June 9, 1989 ROD that

"[c]leanup goals do not necessarily represent the actual 'cleanup levels' that are eventually achieved, because the effectiveness of the remedy can only be determined during implementation [Remedial Action Phase] of the remedy." (See, Proposed Plan page 7).

As discussed above, EPA is now changing the June 9, 1989 ROD by now specifying final cleanup standards rather than just goals. EPA is making this change because it has determined that there is insufficient information at this time to invoke a waiver to ARARs. However, EPA continues to recognize that it is always possible that the chosen remedy will be demonstrated to be unattainable. Therefore, EPA recognizes that if data are generated that demonstrate that the selected remedy cannot be achieved, EPA may need to reconsider its decision embodied in the ROD.

In addition, there are other reasons that could lead EPA to determine that the ROD should be changed. Under Section 121(c) of CERCLA, 42 U.S.C. § 9621(c), EPA is required to review every five years all Superfund sites where hazardous substances remain on the site to ensure that human health and the environment are protected. Therefore, it is possible that EPA may determine that a remedy selected in the ROD should be changed to provide for even greater protection to human health and the environment.

EPA recognizes that new information may be generated during the RD/RA process that could affect the remedy selected in the ROD. This information, which may be developed by the PRPs, support agencies, public, or EPA, may form the basis for a proposed amendment to the ROD or an ESD. In determining whether a change to the ROD is appropriate, EPA will consider all legally applicable requirements.

C. Process for Future Amendments to the ROD. If new information is submitted by the public, PRPs, the support agencies, or developed by EPA during the implementation of the remedial action, EPA may reconsider the hazardous waste management approach selected in the ROD. If EPA determines that the ROD should be changed it will follow all applicable requirements, including those of Section 117 of CERCLA, 42 U.S.C. § 9617.

Daniel W. McGovern
Regional Administrator

APPENDIX B

FAIRCHILD, INTEL, AND RAYTHEON SITES
MIDDLEFIELD/ELLIS/WHISMAN (MEW) STUDY AREA
MOUNTAIN VIEW, CALIFORNIA

R E C O R D O F D E C I S I O N

United States Environmental Protection Agency

Region IX -- San Francisco, California

May 1989

RECORD OF DECISION

TABLE OF CONTENTS

RECORD OF DECISION

TABLE OF CONTENTS

-- Figures --

-- Tables --

RECORD OF DECISION

DECLARATION

Site Name and Location

Fairchild, Intel and Raytheon Sites, Middlefield/Ellis/Whisman (MEW) Study Area, Mountain View, California

Statement of Basis and Purpose

This decision document presents the selected soil and groundwater remedial actions for the Fairchild, Intel, and Raytheon National Priority List (NPL) Sites in the Middlefield/Ellis/Whisman (MEW) Study Area of Mountain View, California. The selected remedial actions will also apply to the area-wide groundwater contamination and to other areas of soil contamination in the MEW Study Area, as appropriate. The remedial actions have been developed in accordance with the Comprehensive Environmental Response, Liability, and Compensation Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and, to the maximum extent practicable, the National Contingency Plan (NCP). This decision is based upon the administrative record for this site. The attached index identifies the items which comprise the administrative record upon which the selection of the remedial actions are based.

Description of the Remedies

The selected soil remedy is in-situ vapor extraction with treatment by vapor phase granular activated carbon, and excavation with treatment by aeration. Most of the vapor extraction will take place within the existing Fairchild and Raytheon slurry walls which contain the bulk of the site soil contamination. Several smaller areas outside of the slurry walls will also be remediated by in-situ vapor extraction. The cleanup goals for soils are 1 part per million (ppm) trichloroethene (TCE) inside the slurry walls and 0.5 ppm TCE outside of the slurry walls. The soil cleanup goal is based on the amount of contamination that can remain in the soil and still maintain the groundwater cleanup goal in the shallow aquifers (outside the slurry walls). Further explanation of the different cleanup goals is provided on page 22 of this document, in Section 13 on The Selected Remedies.

The groundwater remedy is extraction and treatment. Extracted groundwater will be treated by air stripping towers. Airborne emissions will meet all Bay Area Air Quality Management District emission standards. It is anticipated that emission controls by granular activated carbon will be required once the full remedy is implemented. The extracted groundwater will be reused to the

maximum extent feasible, with a goal of 100% reuse. Extracted water which cannot be reused will be discharged to local streams. Allowable discharges to local streams will be regulated by the National Pollutant Discharge Elimination System (NPDES) of the Clean Water Act.

The groundwater cleanup goals are 5 parts per billion (ppb) TCE for the shallow aquifers (which are not currently used for drinking water) and 0.8 ppb TCE for the deep aquifers which are used for drinking water. Attainment of these levels will also assure cleanup of the other volatile organic compounds to at least their respective Maximum Contaminant Levels (MCLs). The shallow aquifer cleanup goals also apply to the aquifers inside the slurry walls.

The remedy includes the identification and sealing of any potential conduit wells. Several abandoned agriculture wells which acted as conduits for contamination to migrate from the shallow aquifers to the deep aquifers have already been sealed. Additional wells have been identified for sealing and others may be identified which will also require sealing.

The remedy also includes maintaining inward and upward hydraulic gradients (by pumping and treatment) inside the slurry walls and regular monitoring of aquifers within and adjacent to the slurry walls to monitor the integrity of each slurry wall system. Maintaining inward and upward hydraulic gradients will control contaminants from escaping due to slurry wall failure. Selected wells will be monitored for chemical concentrations and water levels.

The soil remedy is expected to be in operation between 1 to 6 years. The groundwater remedy for the shallow aquifers may be in operation for as long as 46 years or into the indefinite future, because of the physical and chemical nature of the aquifers. The groundwater remedy for the deep aquifers is estimated to be in operation for at least 2 years and possibly as long as 45 years. There will be regular monitoring of the groundwater and slurry walls during the life of the remedy.

Declaration

The selected remedies are protective of human health and the environment, attain Federal and State requirements that are applicable or relevant and appropriate to the remedial actions, and are cost-effective. With respect to contamination in groundwater and soil, the statutory preference for remedies that employ treatment, reduce toxicity, mobility or volume as a principal element, and utilize permanent solutions and alternative treatment technologies to the maximum extent practicable is satisfied.

Because of the anticipated length of time to achieve the cleanup goals and the uncertainty whether the cleanup goals can be achieved, both the technologies and the cleanup goals will be reassessed every 5 years.

Daniel W. McGovern
Regional Administrator

RECORD OF DECISION

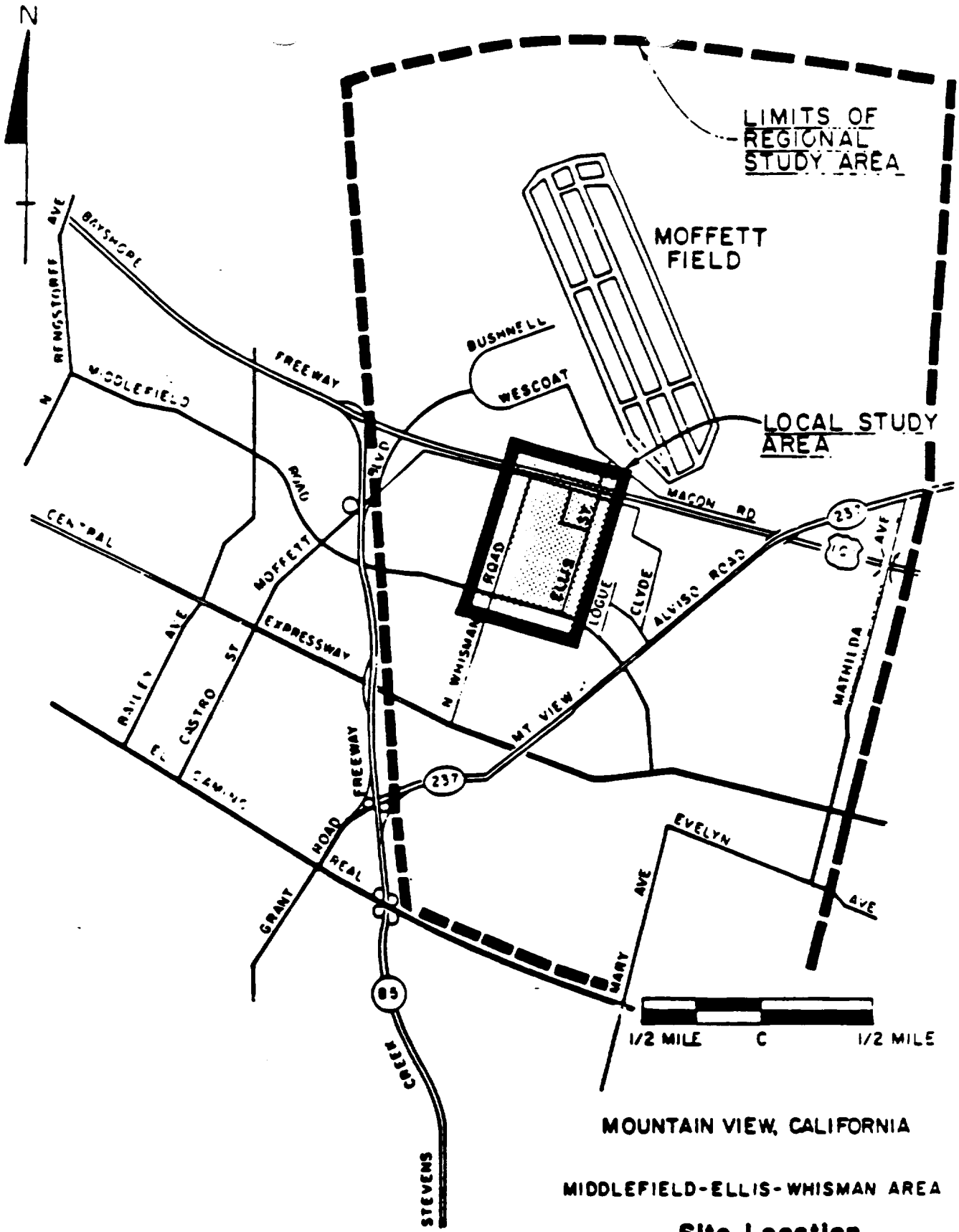
DECISION SUMMARY

1.0 SITE LOCATION AND DESCRIPTION

The Middlefield/Ellis/Whisman (MEW) Study Area is located in Santa Clara County in the city of Mountain View, California. The site is divided into a Local Study Area (LSA) and a Regional Study Area (RSA). Figure 1-1 identifies the LSA and RSA, along with local roads and landmarks. The LSA consists of three National Priority List (NPL) sites (Fairchild, Intel and Raytheon), as well as several non-Superfund sites. The LSA encompasses about 1/2 square mile of the RSA and contains primarily light industrial and commercial areas, with some residential areas west of Whisman Road. The RSA encompasses approximately 8 square miles and includes Moffett Naval Air Station (an NPL site) and NASA Ames Research Center, along with light industrial, commercial, agricultural, park, golf course, undeveloped land, residential, motel and school land uses.

Various owners or occupants in the area around the intersections of Middlefield Road, Ellis Street, Whisman Road, and the Bayshore Freeway (U.S. Highway 101), are or were involved in the manufacture of semiconductors, metal finishing operations, parts cleaning, aircraft maintenance, and other activities requiring the use of a variety of chemicals. Local facilities with current occupants are presented on Figure 1-2. Site investigations at several of these facilities have revealed the presence of toxic chemicals in the subsurface soils and groundwater. To investigate the extent of groundwater contamination emanating from the LSA, and soil contamination at their respective facilities, Fairchild, Intel, and Raytheon performed a Remedial Investigation and a Feasibility Study of potential remedial alternatives under the direction of EPA.

There are no natural surface drainage features within the Local Study Area. The nearest significant natural surface drainage features of the Regional Study Area are Stevens Creek to the west and Calabazas Creek to the east. Calabazas Creek is located approximately four miles east of the MEW Study Area. Stevens Creek forms the western boundary of the Regional Study Area. Both discharge into the San Francisco Bay. Surface water runoff from most of the RSA and all of the LSA south of the Bayshore Freeway is intercepted by a storm drain system and is discharged into Stevens Creek. To the north of the Bayshore Freeway, most of the runoff from Moffett Field Naval Air Station is collected by a storm drain system that ultimately discharges to Guadalupe Slough of San Francisco Bay. Runoff from the northwestern portion of Moffett Field discharges into Stevens Creek.

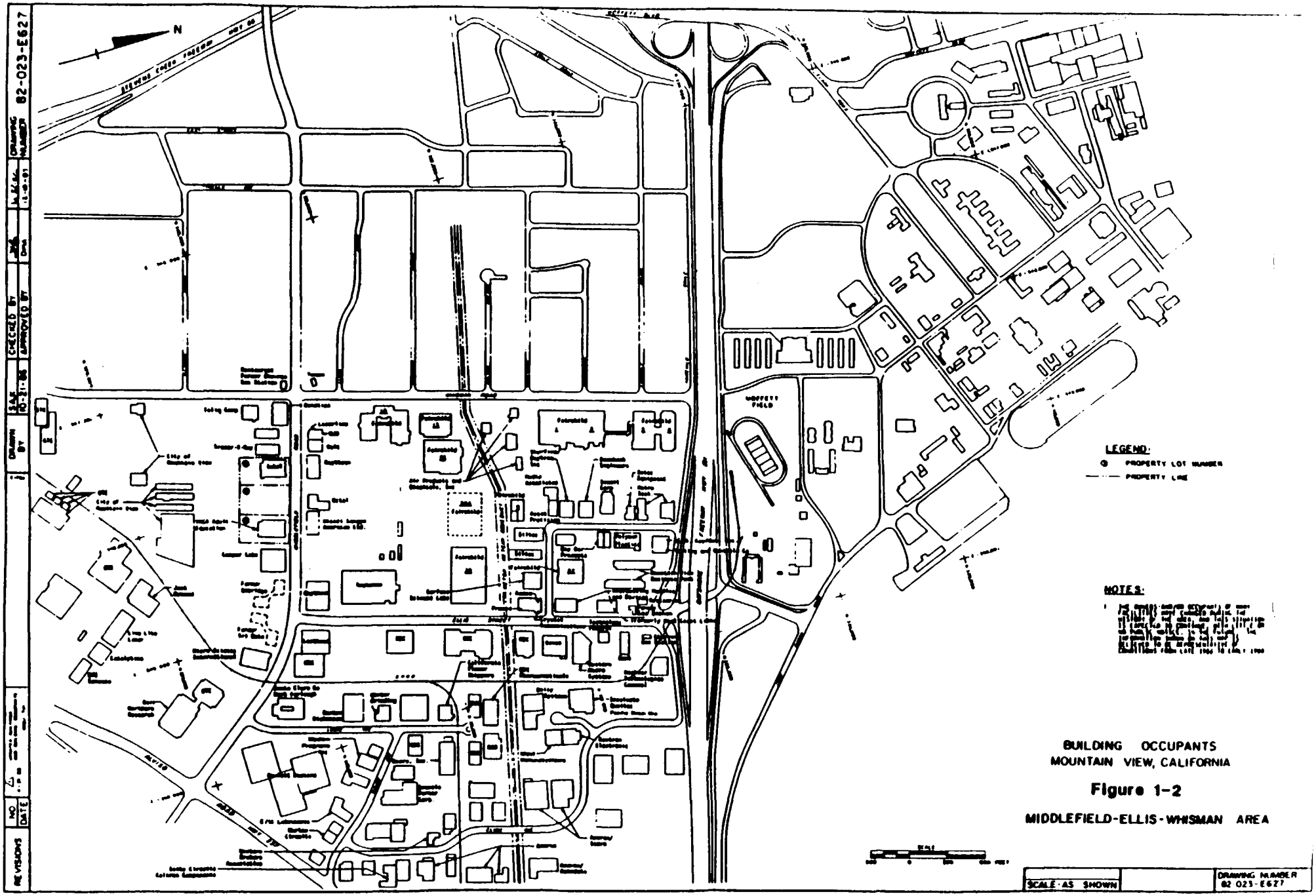


MOUNTAIN VIEW, CALIFORNIA

MIDDLEFIELD-ELLIS-WHISMAN AREA

Site Location

Figure 1-1


N
LEGEND:
PROPERTY LOT NUMBER
PROPERTY LINE
NOTES:
BUILDING OCCUPANTS
MOUNTAIN VIEW, CALIFORNIA
Figure 1-2
MIDDLEFIELD-ELLIS-WHISMAN AREA
SCALE: AS SHOWN
DRAWING NUMBER
82 023-E627
REVISIONS
NO
DATE
DRAWN BY
CHECKED BY
APPROVED BY
DATE
DRAWING NUMBER
82-023-E627

The Local and Regional Study Areas are underlain by a thick sequence of unconsolidated sediments deposited into a structural depression. The sediments are comprised of alluvial fan, estuarine, and bay mud deposits. Repeated variations in sea levels resulted in a complex sedimentary sequence characterized by irregular interbedding and interfingering of coarse and fine grained deposits.

Groundwater aquifers at the site are subdivided into shallow and deep aquifer systems, separated by a laterally extensive regional aquitard. The shallow aquifer system comprises aquifers and aquitards to a depth of approximately 160 feet below the surface. Within the shallow system four primary hydrogeologic aquifer zones have been identified based upon the occurrence of aquifer material and a similar depth below the surface. The shallow aquifer system is comprised of the A-aquifer and the underlying B1-, B2- and B3- aquifers. The regional B-C aquitard separates the B3-aquifers from the C-aquifer and the deep aquifer system. Current groundwater flow in aquifer zones above the B-C aquitard is generally to the north, toward San Francisco Bay.

2.0 SITE HISTORY

During 1981 and 1982, preliminary investigations of facilities within the LSA indicated significant concentrations of contaminants in soil and groundwater. By 1984, the Fairchild, Intel and Raytheon sites, located within the LSA, were proposed for the Federal National Priorities List (NPL). By 1985, five companies within the LSA (Fairchild, Intel, Raytheon, NEC, and Siltec) initiated a joint investigation to document and characterize the distribution of chemicals emanating from their facilities. In April 1985, the California Regional Water Quality Control Board - San Francisco Bay Region (RWQCB) adopted Waste Discharge Requirements (WDRs) for each of the five companies. The primary cause of the subsurface contamination was from leaking storage tanks and lines, and poor waste management practices.

On August 15, 1985, Fairchild, Intel, and Raytheon entered into a Consent Order with the EPA, the RWQCB, and the California Department of Health Services (DHS). Since signing of the Consent Order, the three companies have carried out an extensive Remedial Investigation and Feasibility Study (RI/FS) of chemicals emanating from the LSA and soil contamination at their respective facilities. Work has been performed under the supervision of EPA, the RWQCB, DHS, and the Santa Clara Valley Water District (SCVWD). Prior to and during the site investigation, the companies have been conducting interim clean up activities at the site. These interim remedial actions include tank removals, soil removal and treatment, well sealing, construction of slurry

walls, and hydraulic control and treatment of local groundwater. NEC and Siltec declined to enter into the Consent Order and were placed under RWQCB enforcement authority.

The three companies followed an approved Quality Assurance and Quality Control (QA/QC) Plan and approved Sampling Plans. In addition, split samples were collected by EPA from selected wells and these results were compared with the companies' sampling results. EPA determined that the companies' data quality was adequate for the purpose of the RI/FS.

The MEW Remedial Investigation Report was concluded in July, 1988. The draft Feasibility Study and EPA's Proposed Plan were presented to the community for review and public comment in November, 1988. In May 1989, Special Notice letters for the Remedial Design/Remedial Action (RD/RA) Consent Decree were sent out to the five (5) original companies and twelve (12) other Potentially Responsible Parties (PRPs).

3.0 ENFORCEMENT

The Regional Water Quality Control Board - San Francisco Bay Region (RWQCB) was the lead agency until April 1985, when the Board referred the five companies to EPA for cleanup under Superfund. In May, 1985, EPA sent general notice letters, pursuant to Section 106 of CERCLA, to the five companies. NEC and Siltec chose not to participate in the RI/FS negotiations and were referred back to the RWQCB. In August 1985, Fairchild, Intel, and Raytheon signed an Administrative Order on Consent with EPA, to conduct an RI/FS of the MEW area. The RWQCB and California Department of Health Services were cosignees of the Consent Order.

The Consent Order and Work Plan called for a comprehensive groundwater investigation of the MEW area and site specific (source) investigation at Fairchild, Intel, and Raytheon. The RWQCB issued Waste Discharge Requirements (WDRs) for NEC and Siltec which paralleled the Consent Order schedule and requirements.

During the course of the RI/FS, EPA gathered new information and evaluated existing information concerning other PRPs.

During December 1987 and January 1988, EPA issued twenty-four (24) RCRA 3007/CERCLA 104 information request letters to various other parties in the MEW area. In July 1988, EPA issued a RCRA 3013 Unilateral Order to GTE to begin an investigation of its property, to determine if the company had contributed to the MEW groundwater plume. After evaluating the 3007/104 response letters, EPA sent General Notice Letters to seventeen (17) PRPs

in September 1988. An initial PRP meeting was sponsored by EPA in October 1988, to explain the Superfund process to the noticed PRPs. EPA issued seven (7) additional General Notice and/or information request letters in March 1989. EPA subsequently issued Special Notice Letters for conducting the selected remedies in May 1989.

4.0 COMMUNITY RELATIONS

The comment period for the Proposed Plan opened November 21, 1988, and closed January 23, 1989. A public meeting was held on December 14, 1988 at the Crittenden Middle School in Mountain View and was attended by approximately 75 people.

Prior to the beginning of the public comment period, EPA published notices in "The View", "The Los Altos Town Crier", "The Times Tribune", and the "San Jose Mercury News" (Peninsula Extra Edition). The notices briefly described the Proposed Plan and announced the public comment period and the public meeting. The notice also announced the availability of the Proposed Plan for review at the information repository established at the Mountain View Public Library.

A fact sheet describing the Proposed Plan was delivered to the Mountain View Public Library in November, 1988. Copies of the fact sheet were also mailed in November, 1988 to EPA's MEW mailing list, which contains members of the general public, elected officials, and PRPs.

In addition, EPA held several workshops and briefings in November and December, 1988 for various community groups, the Mountain View City Council, and the Santa Clara County Board of Supervisors. The workshops were used to brief community groups and elected officials on the results of the MEW RI/FS and to describe EPA's proposed remedial alternatives.

EPA has prepared the attached response summary, which provides Agency responses to comments submitted in writing during the public comment period. Also attached is a transcript of the proceedings of the December 14, 1988 community meeting.

5.0 DECISION SCOPE

As discussed in the Declaration and Site History, the selected remedial actions that are presented in this decision document are designed to protect the local drinking water supplies, restore the shallow, and deep aquifers to meet MCLs and a 10^{-6} risk level respectively, control and remediate contamination in subsurface

soils, and prevent vertical migration of contamination in the aquifers. The difference in decision on cleanup goals for the shallow and deep aquifers is provided on page 22 of this document, in Section 13 on The Selected Remedies.

The remedial actions, pumping and treating groundwater and conduit sealing, will address the area-wide groundwater contamination. The remedial actions, in-situ soil vapor extraction, and excavation and treatment will address soil contamination at the Fairchild, Intel, and Raytheon NPL sites and other areas of soil contamination identified in the MEW Study Area.

6.0 NATURE AND EXTENT OF CONTAMINATION

Industrial activities conducted within the MEW Study Area required the storage, handling and use of a large number of chemicals, particularly solvents and other chemicals used in a variety of manufacturing processes. Significant quantities of volatile organic chemicals were used for degreasing, process operations, and for general maintenance. Raw and waste solvents and other chemicals were piped and stored in underground systems. The presence of chemicals in the subsurface soils and groundwater, that originated from facilities in the MEW area, are primarily the result of leaks from these subsurface tanks and lines, sumps, chemical handling and storage areas, and utility corridors. Chemical releases occurred, for the most part, below the ground surface and migrated downward into the aquifer system.

Investigations at the site have revealed the presence of over 70 compounds in groundwater, surface water, sediments, and subsurface soils. The vast majority and quantity of these compounds are found in groundwater and subsurface soils. Three major classes of chemicals were investigated during the RI: (1) volatile organic compounds, (2) semi-volatile acid and base/neutral extractable organic compounds, and (3) priority pollutant metals. Of these three classes, volatile organics are the most prevalent. Table 6-1 presents chemicals of concern, frequency of detection, and maximum concentrations.

An extensive area of groundwater contamination has been defined in the RI and is presented in Figure 6-1. Current site data indicate that chemicals are present primarily in the A-, B1-, and B2-aquifer zones. To a much lesser degree, chemicals have been detected in localized areas of the B3-, C-aquifer, and deeper aquifer zones. Contamination of the C-aquifer and deeper aquifers appears to have resulted from chemicals migrating downward from shallow areas containing elevated chemical concentrations, through conduit wells, into groundwater of the deep aquifer system. The C and Deep aquifers most affected by contamination

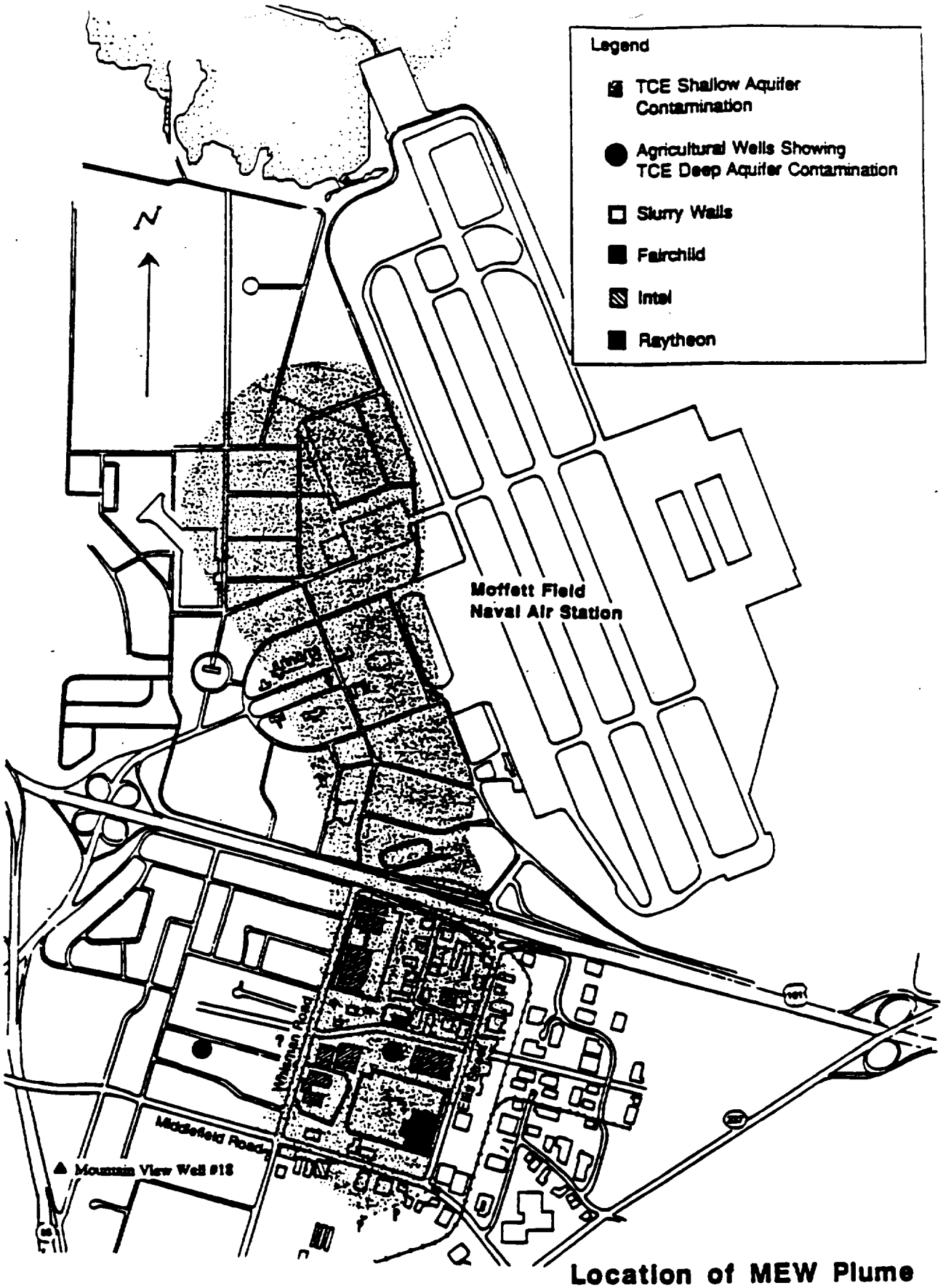
TABLE 6-1

CHEMICALS OF CONCERN
MIDDLEFIELD/ELLIS/WHISMAN STUDY AREA

Chemical	Frequency of Detection[a]	Geometric Mean Concentration[b] (mg/liter)	Maximum Concentration[b] (mg/liter)
Organics			
Chloroform	71/384	0.002	3.3
1,2-Dichlorobenzene	13/384	0.003	5.2
1,1-Dichloroethane	98/384	0.005	10.0
1,1-Dichloroethene	153/384	0.006	20.0
1,2-Dichloroethene	200/384	0.030	330.0
Freon-113	181/384	0.009	46.0
Phenol	21/273	0.002	50.0
Tetrachloroethene	64/384	0.003	3.7
1,1,1-Trichloroethane	184/384	0.017	420.0
Trichloroethene	278/384	0.175	1000.0
Vinyl Chloride	17/384	0.008	25.0
Inorganics			
Antimony	15/205	0.052	0.600
Cadmium	26/205	0.006	0.050
Arsenic	34/292	0.004	0.040
Lead	44/292	0.002	0.043

a/ Values for organics are number of detects/number of samples for the fourth round of groundwater sampling. Values for inorganics are the number of detects/number of well sampled for dissolved metals.

b/ Values reported are for all groundwater samples for each chemical.



Location of MEW Plume

Figure 6-1

are in the areas of the so-called Rezendes Wells, located near Fairchild Building 20, and the Silva Well, located at 42 Sherland Avenue. These wells have subsequently been sealed. The closest municipal water supply well, Mountain View #18 (MV 18), is located approximately 1800 feet to the southwest of the Silva Well. Groundwater samples are collected from MV 18 on a regular basis. No contaminants have been identified in any water samples from MV 18. As part of the Remedial Design and Remedial Action (RD/RA) some additional groundwater investigations may be necessary, particularly in the Silva Well area.

Subsurface soil contamination has been found at the Fairchild, Intel, and Raytheon facilities, along with the facilities of other PRPs within the RSA. Trichloroethene (TCE), 1,1,1-trichloroethane (TCA), trichlorotrifluoroethane (Freon-113), 1,1-dichloroethene (1,1-DCE), 1,2-dichloroethene (1,2-DCE), methylene chloride, toluene, acetone, and xylene are the chemicals most commonly detected in subsurface soils in the LSA. Chemicals associated with activities in the RSA appear to be concentrated in shallow soils above approximately 50 feet or roughly extending to the B1-aquifer. Chemicals are not found in surface soil samples (upper one foot of soil) and do not appear in soils and clay of the B-C aquitard. Chemical found in subsurface soil samples are generally similar to those found in adjacent groundwater samples. As part of the Remedial Design and Remedial Action some additional soil investigations may be necessary in certain areas.

7.0 BASELINE SITE RISKS

An Endangerment Assessment prepared by EPA as part of the RI/FS was used to evaluate the ramifications of the no-action remedial alternative and to determine if an actual or threatened release of a hazardous substance from the site may present an imminent or substantial endangerment to public health, welfare, or the environment.

Large areas of the site are contaminated. The bulk of the contamination is present in groundwater and subsurface soils. Investigations at the site have revealed the presence of over 70 compounds. Because of the large number of chemicals detected at the site, a selection process was used to determine the chemicals of primary concern at the site. The organic chemicals that were selected are: trichloroethylene, 1,1,1,-trichloroethane, vinyl chloride, 1,1-dichloroethane, 1-,1-dichloroethylene, 1,2-dichloroethylene (cis and trans isomers), dichlorobenzene, chloroform, Freon 113, tetrachloroethylene, and phenol. Metals were detected infrequently. Overall metals are of less concern at the site that the volatile organic chemicals. Several of the selected contaminants (trichloroethylene, chloroform,

8.0 CHANGES TO THE PROPOSED PLAN

1. The Proposed Plan identifies vapor extraction as the preferred alternative to address contaminated soils. However, because soil excavation and treatment by aeration has been effectively implemented at MEW in the past (at Intel), and other PRPs have expressed interest in exploring this alternative for their sites, the selected remedy for soils will also allow soil excavation to be implemented, provided federal, state, and local air standards can be met. In addition to local air standards, Best Demonstrated Available Technology (BDAT) treatment standards may also be required depending upon how the excavated soil is handled. The addition of soil excavation and treatment by aeration allows flexibility during the RD/RA phases for other PRPs to use a cost effective alternative for their particular sites while also protecting human health and the environment. Soil excavation and treatment by aeration would most likely be suitable for small localized areas of contamination.

2. The Proposed Plan appears to be ambiguous in the cleanup goal for aquifers within the slurry walls. While the Proposed Plan cleanup goal for the shallow aquifers is 5 ppb for TCE, however, the plan also states that the shallow aquifer zone is defined as those shallow aquifers located outside the slurry walls.

   Although the aquifers confined by the slurry walls are disconnected from the outside aquifers (when hydraulic control is maintained by pumping aquifers inside the slurry walls) a cleanup goal of 5 ppb for TCE (the MCL) will also be established for aquifers inside the slurry walls. This goal is more protective of the public health and the environment and is consistent with cleanup goals set by the RWQCB for another site in Santa Clara Valley.

3. Identification and sealing of potential conduits was discussed in text of the Feasibility Study (FS) and in Appendix L of the FS, but not specifically noted in EPA's Proposed Plan. Potential conduits will be identified, evaluated, and sealed if necessary.

dichlorobenzene, tetrachloroethylene) have been shown to be carcinogenic in animals and have been classified by EPA as possible or probable human carcinogens. Vinyl chloride is a known human carcinogen. The other contaminants have been shown to cause systemic toxicity under certain exposure conditions.

The results of the Endangerment Assessment indicate that exposure to contaminated groundwater poses the greatest public health concern. Risks to public health were estimated by combining information on exposure at possible exposure points with toxic potency of the groundwater contaminants. Drinking water from hypothetical wells to the west of Whisman Road for a lifetime would be associated with an upperbound excess lifetime cancer risk of $6(10)^{-3}$ (average case) and $2(10)^{-2}$ (maximum case). Drinking water from a well to the north of the LSA in the A-aquifer would be associated with an upperbound excess lifetime cancer risk of $9(10)^{-3}$ (average case) and $4(10)^{-2}$ (maximum case). Drinking water from a B1-aquifer well in the same area would pose an upperbound excess lifetime cancer risk of $1(10)^{-2}$ (average case) and $5(10)^{-2}$ (maximum case). In addition, estimated intake of noncarcinogenic compounds from groundwater at these locations would exceed reference dose levels (RfDs).

Contaminants are not present at elevated levels in exposed surface soils. Consequently, substantial exposure via direct contact with contaminated soils or via inhalation of volatile compounds from soil or contaminated fugitive dust is considered unlikely under current land-use conditions. If redevelopment of the site was to occur for residential or other uses, significant exposure to contaminants can occur if localized areas of contamination remained uncovered. Short-term excavation activities at the site could lead to inhalation of volatile organic compounds or contaminated fugitive dust, but exposure would probably be of short duration and frequency, and therefore would not pose a significant public health concern.

Low concentration-levels of several chemicals were detected in Stevens Creek, at the western boundary of the RSA. Any exposure to these chemicals would probably be of short duration and frequency, and therefore the risk would be negligible.

The Endangerment Assessment also indicates that "environmental" (flora and fauna) exposure to chemicals from the MEW site is negligible.

In summary, the results of the baseline risk assessment for the no-action alternative indicate that exposure to contaminants in groundwater poses the greatest <u>potential</u> public health concern.

9.0 DESCRIPTION OF ALTERNATIVES

The MEW Feasibility Study identified an array of remediation technologies that were potentially applicable and then screened those technologies based on their applicability to site characteristics, compatibility with site-specific chemicals, and anticipated performance. After the technology screening process, alternatives were formulated using combinations of feasible technologies that are capable of meeting remedial objectives. These alternatives were evaluated based on their public health and environmental impacts and on order of magnitude cost considerations. The short- and long-term effectiveness of each alternative was also assessed. After this initial screening of remedial alternatives, a detailed analysis of the selected alternatives was performed. This section of the Record of Decision will present the alternatives evaluated in the detailed analysis of remedial alternatives.

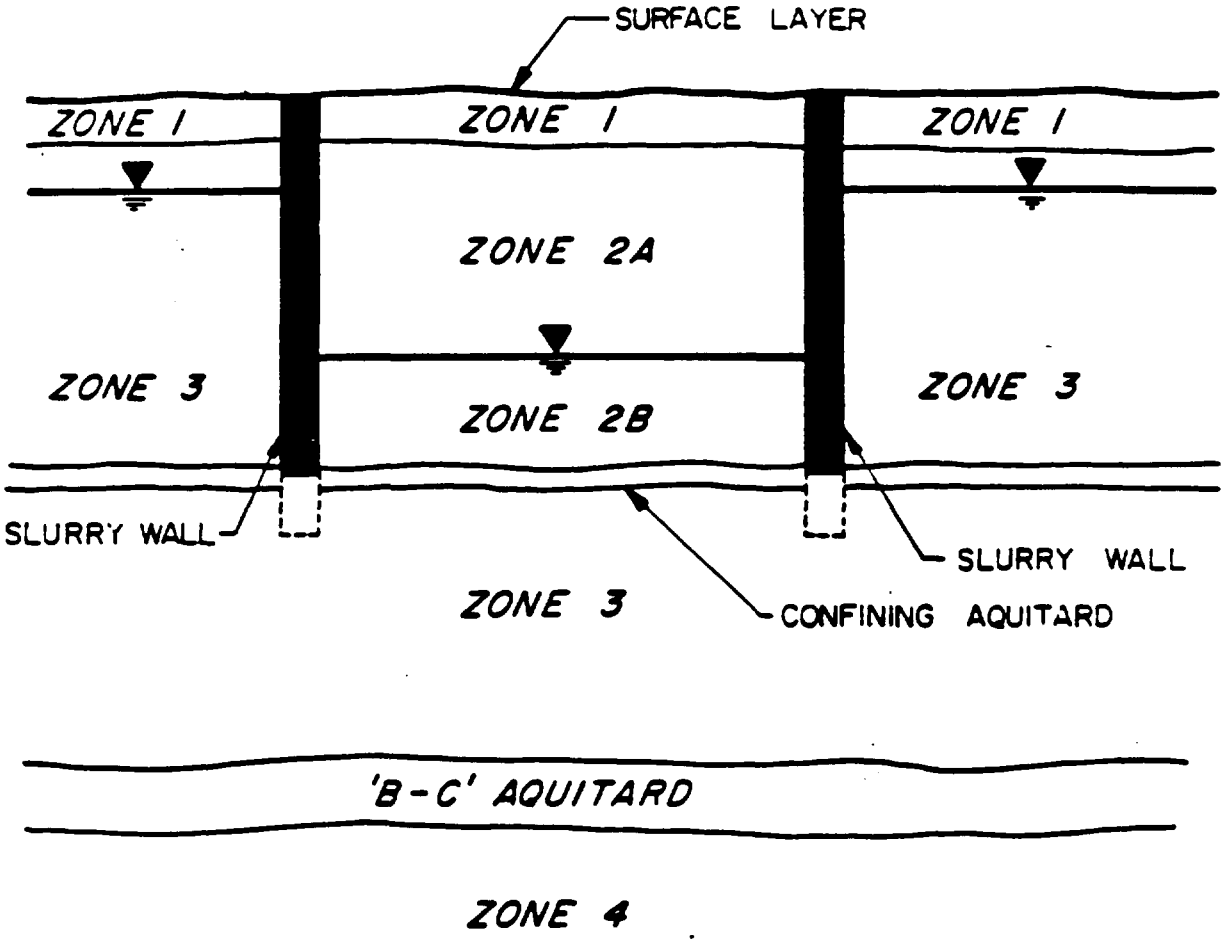
To evaluate the remedial alternatives, the MEW Study Area was divided into five subsurface zones, as show in Figure 9-1. The first subsurface zone (Zone 1, the "cohesive shallow layer") consists of soil stratum that begins at the ground surface and extends to the water table. The upper foot of the cohesive shallow layer is not included in the analysis of alternatives based upon the conclusion set forth in the Endangerment Assessment that there are no health risks from exposure to surface soils. The second subsurface zone (Zone 2A, the "unsaturated disconnected aquifers") consists of the unsaturated zone within the area bounded by the existing slurry walls. The Fairchild slurry walls extend into the A/B aquitard. The Raytheon slurry wall extends through the A/B and B1/B2 aquitards and into the B2 aquifer. The third subsurface zone (Zone 2B, the "saturated disconnected aquifers") consists of the saturated zone within the slurry walls. The fourth subsurface zone (Zone 3, the "shallow aquifers") consists of the shallow aquifer system outside of the slurry walls. The fifth subsurface zone (Zone 4, the "deep aquifers") consists of the C-aquifer and deeper aquifer zones.

The range of potential remedial alternatives are presented for each subsurface zone: Zone 1 Soils; Zone 3 Shallow Aquifers; Zone 4 Deep Aquifers; and Zones 2A and 2B Slurry Wall System.

Zone 1 - Soils

No Further Action:

The No Action alternative serves as a "baseline" against which other alternatives are compared. For soils, only soil monitoring would be conducted, and all soil pilot study activities would be discontinued.



LEGEND:

- GROUND WATER LEVEL
- SLURRY WALL EXTENSION THROUGH AQUITARD

ZONE DEFINITIONS:

ZONE 1	COHESIVE SHALLOW LAYER
ZONE 2A	UNSATURATED DISCONNECTED AQUIFERS
ZONE 2B	SATURATED DISCONNECTED AQUIFERS
ZONE 3	SHALLOW AQUIFERS
ZONE 4	DEEP AQUIFERS

SCHEMATIC OF SUBSURFACE ZONES AT MEW SITE SLURRY WALL
MOUNTAIN VIEW, CALIFORNIA
PREPARED FOR
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
MIDDLEFIELD-ELLIS-WHISMAN AREA

Figure 9-1

In-Situ Vapor Extraction and Treatment:

Soil vapor extraction involves removing the volatile soil contaminants without excavating the soil itself. This would be accomplished by installing vapor extraction wells through which air containing Volatile Organic Compounds (VOCs) is pumped from the soil. Contaminants in the extracted air are then removed using carbon treatment, if necessary, and the treated air is released. The treatment process is designed to meet all applicable air emission standards.

Partial Excavation and Ambient Temperature Aeration:

This alternative involves excavating and aerating the soil, which causes the VOCs to volatilize. Treated soils are then placed back in their original locations. The areas that would be excavated are those with the highest level of contamination. Treatment by ambient temperature aeration would be conducted inside a controlled atmosphere enclosure where necessary. This enclosure would prevent the migration of fugitive dust and chemicals vapors from the treatment area. Chemical vapors would be captured by activated carbon, if necessary. The primary disadvantages of this alternative are that soils located under buildings and other structures could not be excavated and treatment of the air emissions is difficult.

Partial Excavation and Ambient Temperature Aeration with In-Situ Vapor Extraction:

This alternative involves a combination of the previous two cleanup alternatives. Excavation and aeration would be used at those soil contamination zones that are accessible. Vapor extraction would be used for selected contamination zones that are not easily accessible, such as soil contamination zones located under buildings.

<u>Zone 3 - Shallow Aquifers</u>

No Further Action:

The No Action alternative for the shallow aquifers would involve only groundwater monitoring; no additional cleanup activities would be conducted.

Hydraulic Control by Groundwater Extraction and Treatment:

This alternative involves low-rate pumping of the affected aquifers with monitoring of the plume, and represents the lowest level of active restoration evaluated for the shallow groundwater system. Recovery wells would be installed in appropriate locations along the periphery of the plume. The extraction well

would operate at a pumping rate sufficient to insure that the plume would not expand laterally. Extracted groundwater would be treated using air stripper-based treatment systems and vapor-phase carbon adsorption (where necessary) which would be operated under applicable air and water quality requirements. The treated water would be discharged to Stevens Creek via the storm sewer system. A network of monitoring wells would be used to determine any changes in the extent of the plume.

Hydraulic Remediation by Groundwater Extraction and Treatment:

This alternative involves pumping the affected aquifers at a rate sufficient to achieve an accelerated reduction in the extent of the plume and reduction of chemical concentrations in the groundwater. This alternative would also utilize a network of monitoring wells to verify remediation progress. Extraction wells would be installed in locations around the periphery and in the plume. Extracted groundwater would be treated using air stripper-based treatment systems and vapor-phase carbon adsorption if necessary, which would be operated to meet applicable air emission limitations. Treated water would be discharged to Stevens Creek via the storm sewer system.

Vertical Impermeable Barriers:

This alternative involves constructing a vertical impermeable barrier around the entire MEW plume, in order to hydraulically isolate the shallow aquifers. This alternative would not result in a permanent reduction of chemicals currently in the shallow aquifer system, unless implemented in conjunction with other remedial alternatives.

<u>Zone 4 - Deep Aquifers</u>

No Further Action:

The No Action alternative, which is used as a baseline for evaluation of remedial alternatives, consists of monitoring the existing groundwater plume.

Hydraulic Remediation by Groundwater Extraction and Treatment:

Elements of this alternative are described above for shallow aquifers and are essentially the same for the deep aquifers.

<u>Zone 2A - Unsaturated Disconnected Aquifers (Slurry Wall System)</u>

No Further Action:

The No Action alternative involves no further treatment of Zone 2A soils, located within the area bounded by the existing slurry walls. Under this alternative, the unsaturated disconnected

aquifer soils would remain contained laterally by the slurry cutoff walls. Long-term monitoring of water levels and chemical concentrations in the saturated disconnected aquifers (Zone 2B) and the shallow aquifer (Zone 3) water-bearing zones outside (beneath and around) the slurry walls would be required to detect migration of chemicals from the unsaturated soils within the slurry walls.

In-Situ Vapor Extraction:

This alternative for remediation of the unsaturated disconnected aquifer soils involves aerating the Zone 2A soils by vacuum extraction, treating the extracted air in accordance with applicable air quality requirements. Extracted volatiles would pass through an emission control system consisting of vapor-phase carbon adsorption for removal of the VOCs from the extracted air prior to discharge to the atmosphere in accordance with appropriate air requirements. This alternative would also use existing extraction wells to remove the groundwater necessary to maintain desired water levels. The extracted groundwater would be treated using air strippers or carbon adsorption to remove VOC's prior to discharge of the extracted groundwater to Stevens Creek.

Maintain Inward and Upward Gradients:

This alternative involves pumping limited quantities of groundwater from the saturated portions of the aquifers within the slurry walls. This process will maintain a hydraulic gradient inward across the slurry walls and upward, thereby restricting the movement of chemicals outward into the shallow aquifer zone (Zone 3). The use of hydraulic control in conjunction with the slurry walls ensures that contaminates will be kept localized (within the confines of each slurry wall) and add an additional level of protection if a slurry wall failure was to occur. The conjunctive use of slurry walls and hydraulic control is referred to as a slurry wall system. The extracted groundwater would be treated using air stripping or carbon-adsorption prior to discharge to Stevens Creek.

Flushing:

This alternative, for remediation of unsaturated aquifers within the slurry walls (Zone 2A), involves the extraction of water from the saturated soils, re-saturation of the unsaturated soils, treatment of extracted groundwater by air stripping, and reinjection of the treated water into resaturated soils within the slurry walls. The unsaturated soils would be remediated by flushing using a network of water injection and extraction wells. Extracted groundwater would be treated by air stripping prior to reinjection through the injection well network.

Partial Excavation and Ambient Temperature Aeration:

This alternative for 2A soils involves the partial excavation of highly localized areas of chemicals containing unsaturated disconnected aquifer soils. Treatment by ambient temperature aeration would be conducted inside a controlled atmosphere enclosure where necessary. This enclosure would prevent the migration of fugitive dust and chemicals vapors from the treatment area. Chemical vapors would be captured by activated carbon, if necessary.

Zone 2B - Saturated Disconnected Aquifers (Slurry Wall System)

No Further Action:

The No Action alternative involves no further treatment of the contained soils or hydraulic gradient control within the area bounded by the slurry walls. Long-term monitoring of water levels and chemical concentrations in the saturated disconnected aquifers (Zone 2B) and the shallow aquifer (Zone 3) water-bearing zones outside (beneath and around) the slurry walls would be required to detect migration of chemicals from the unsaturated soils within the slurry walls.

In-Situ Vapor Extraction With Dewatering:

This alternative for remediation of saturated aquifer soils involves dewatering the aquifers within the area bounded by the slurry walls, aerating the dewatered soil pore spaces by vacuum extraction, treating the extracted air, if required, with vapor-phase carbon adsorption, treating the extracted groundwater with air stripping, and discharging the treated air and water in accordance with applicable air and water quality requirements. The extracted groundwater would be treated using air strippers or carbon adsorption to remove VOCs prior to discharge of the extracted groundwater to Stevens Creek.

Maintain Inward and Upward Hydraulic Gradients:

This hydraulic control alternative for saturated aquifers within the slurry walls (Zone 2B), involves pumping relatively small quantities of water from within the slurry wall areas for the purpose of lowering the interior water table to produce inward and upward hydraulic gradients. The inward and upward hydraulic gradients would preclude the outward migration of chemicals present with the zone contained by the slurry wall areas. The small quantities of groundwater pumped from within the slurry walls would be treated using on-site air stripper-based systems or carbon adsorption, which would be operated in accordance with applicable air and water quality requirements. The required monitoring for this alternative would be the same scope as that

required under the "No Further Action" (monitoring only) alternative.

Flushing:

This alternative for remediation of saturated aquifers within the slurry wall areas involves the extraction of water from the saturated soils, treatment of extracted groundwater by air stripping, and reinjection of the treated water into saturated soils within the slurry walls. Extracted groundwater would be treated using air strippers or carbon adsorption prior to reinjection through the injection well network.

10.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)

Under Section 121(d) of CERCLA, as amended by SARA, the selected remedy must achieve a level or standard of cleanup that assures protection of human health and the environment. In addition, CERCLA requires that remedial actions achieve a level or standard of cleanup that meets legally applicable or relevant and appropriate requirements, standards, criteria or limitations (ARARs).

ARARs associated with the site have been generally separated into three categories: (1) ambient or chemical specific requirements that set health or risk-based concentration limits or ranges for particular chemicals; (2) performance, design, or action-specific requirements that govern particular activities; and (3) location-specific requirements. For this site the selection of ARARs is dependant on the defined beneficial use of groundwater as a source of drinking water.

Beneficial Use of Local Groundwater as a Source of Drinking Water

The regulatory framework associated with the cleanup of groundwater and soil at the site is driven by the beneficial (current or potential) use of local groundwater. As stated in 40 CFR 300 of the Federal Register on page 51433 (December 21, 1988), "The goal of EPA's Superfund approach is to return usable ground waters to their beneficial uses within a timeframe that is reasonable". Drinking water is considered to be the highest beneficial use and affords the greatest level of protection and cleanup.

As required by the California Portor-Cologne Water Quality Control Act, the Regional Water Quality Control Board - San Francisco Bay Region defines the beneficial uses of various water bodies in the greater San Francisco Bay Area. Water bodies and their beneficial uses are presented in The San Francisco Basin Plan. This regional plan has been promulgated and is an ARAR for

this site. In the Basin Plan the Regional Board classifies the shallow aquifers in the area of the MEW plume as a "potentially suitable for municipal or domestic water supply". In addition, the Basin Plan states that the "use of waters in the vicinity represent the best information on beneficial uses". Currently, the C and Deep aquifers at the site are used as a municipal drinking water supply.

CHEMICAL-SPECIFIC ARARS

Chemical-specific ARARs for the MEW site are Federal and State of California drinking water standards. Each is relevant and appropriate to set cleanup standards at the site. A list of Federal and State drinking water standards are presented in Table 10-1.

Federal Drinking Water Standards

Potential drinking water standards at the site include Maximum Contaminant Level Goals (MCLGs) and Maximum Contaminant Levels (MCLs):

As stated in CERCLA Section 121 (d)(1), MCLGs are mentioned as potential cleanup standards when these levels "are relevant and appropriate under the circumstances". After weighing all factors, EPA has determined that they are not relevant and appropriate for the site.

The relevant and appropriate standards to establish groundwater cleanup levels at the site are the Federal Maximum Contaminant Levels (MCLs), as presented under Safe Drinking Water Act. EPA bases this decision on the fact that MCLs are fully protective of human health and, for carcinogens, fall within the established acceptable risk range of 10^{-4} to 10^{-7}. MCLs are ARARs for groundwater at the site and are also used to establish soil cleanup levels.

State Drinking Water Standards

California Drinking Water Standards establish enforceable limits for substances that may affect health or aesthetic qualities of water and apply to water delivered to customers. The state's Primary Standards are based on federal National Interim Primary Drinking Water Regulations. Currently, California has promulgated MCLs for cadmium, arsenic and lead, and some of the organics of concern.

TABLE 10-1

FEDERAL AND STATE GROUNDWATER STANDARDS
MIDDLEFIELD/ELLIS/WHISMAN STUDY AREA

Chemical	Federal Maximum Contaminant Levels (MCLs) (mg/liter)	State MCLs (mg/liter)
Organics		
Chloroform	0.100	-
1,2-Dichlorobenzene	-	-
1,1-Dichloroethane	-	-
1,1-Dichloroethene	0.007	0.006
1,2-Dichloroethene	-	-
Freon-113	-	-
Phenol	-	-
Tetrachloroethene	-	-
1,1,1-Trichloroethane	0.200	0.200
Trichloroethene	0.005	0.005
Vinyl Chloride	0.002	0.0005
Inorganics		
Antimony	-	-
Cadmium	0.010	0.010
Arsenic	0.050	0.050
Lead	0.050	0.050

ACTION SPECIFIC ARARs

Groundwater extraction and treatment involves pumping, treating, and discharging the treated groundwater and/or reinjecting it into the aquifer. Soil remediation can include excavation and/or in-situ treatment. With groundwater treatment and in-situ vapor extraction, Volatile Organic Chemicals (VOCs) would be removed by air stripping and/or Granular Activated Carbon (GAC) adsorption. Air stripping requires consideration of ARARs for VOC emissions, GAC use requires consideration of ARARs associated with carbon regeneration or disposal, and discharge or reinjection must meet specific ARARs.

Discharge to Surface Water

Substantive National Pollutant Discharge Elimination System (NPDES) permit requirements would apply to treated effluent discharging to surface waters. These would primarily be effluent limitations and monitoring requirements. The RWQCB regulates NPDES discharges. Ambient Water Quality Criteria are used by the State of California to set Water Quality Standards in the San Francisco Bay Regional Basin Plan. Standards in the Basin Plan are used by the RWQCB to set NPDES effluent discharge limitations.

Section 402 of the Clean Water Act, as amended in 1987, will result in the prohibition of discharge of non-storm waters to the City of Mountain View storm sewer system by 1991.

Reinjection of Treated Effluent Into Aquifers

If treated groundwater is reinjected, regulations governing underground injection may apply. Specifically, the Federal Safe Drinking Water Act requires an Underground Injection Control (UIC) program. In California, the UIC program is administered by U.S. EPA. The UIC program prohibits treated effluent from being injected, into or above a source of drinking water. Except when it is pursuant to a CERCLA cleanup UIC regulations do not regulate the concentration of constituents, rather they regulate only the method and location of the injection. These Federal requirements regarding injection may be "relevant and appropriate" to the site.

Federal RCRA requirements and the State's Toxic Injection Well Control Act of 1985 (Cal. Health & Safety Code Section 25159.10 et seq.) might also be "relevant and appropriate" to the reinjection of treated groundwater.

Discharge to Sanitary Sewers

Discharge of treated groundwater to the local sanitary sewer system requires compliance with the City's of Mountain View's Industrial Waste Ordinance and the Clean Water Act Pretreatment Standards. The City's Ordinance sets forth effluent quantity and discharge concentration limits, along with standards for monitoring and reporting. Substantive requirements are "legally applicable" for on-site discharges of the treated water. The Clean Water Act allows municipalities to determine pretreatment standards for discharges to Publicly Owned Treatment Works (POTWs), within its jurisdiction.

Air Stripping - Air Emission Standards

Any new source that emits toxic chemicals to the atmosphere at levels determined by the San Francisco Bay Area Air Quality Management District (BAAQMD) "to be appropriate for review" must have authorization to construct and operate. Although on-site treatment facilities are exempted by CERCLA from the administrative requirements of the permit, emission limits and monitoring requirements imposed by the BAAQMD permit must be met.

Carbon Adsorption

Use of granular activated carbon (GAC) for remediation of VOCs can trigger requirements associated with regeneration or disposal of the spent carbon. If the spent carbon is a listed waste or a characteristic waste then it is regulated as a hazardous waste under RCRA and California's hazardous waste control laws. Disposal of contaminants can trigger RCRA land disposal restrictions. For disposal, the spent carbon would need to be treated to meet Best Demonstrated Available Technology (BDAT) treatment standards, and RCRA off-site Subtitle C disposal restrictions would also apply.

Regeneration of activated carbon, using a high-temperature thermal process, is considered "recycling" under both Federal and California hazardous waste regulations. Transportation, storage, and generation of hazardous waste for recycling must comply with requirements in RCRA and California hazardous waste control regulations. Performance standards for hazardous waste incinerators can also be requirements for on-site carbon reactivation. On-site storage of contaminated carbon may trigger substantive requirements under municipal or county hazardous materials ordinances. If the spent carbon is a hazardous waste, construction and monitoring requirements for storage facilities may also apply.

-- ATTACHMENTS --

Excavation, Above-Ground Treatment and Disposal of Soil

Excavated contaminated soils will require on-site treatment or disposal off-site. On-site treatment by above-ground soil aeration, will need to comply with the substantive provisions of the BAAQMD and possibly RCRA land disposal restrictions. Excavated soil classified as a hazardous waste can also trigger RCRA, state and local requirements. EPA land disposal restrictions may be applicable for off-site disposal. RCRA Subtitle C may apply to disposal of soils on-site.

For the on-site treatment of soils, the BAAQMD regulates aeration of soil containing over 50 ppb of organics. The BAAQMD sets rates at which soil can be aerated depending upon the level of chemicals. BAAQMD Regulation 8, Rule 40 on the treatment of soil, assuming it is a hazardous waste, may also trigger RCRA land disposal restrictions and BDAT treatment requirements.

LOCATION SPECIFIC ARARs

Fault Zone

The MEW sites are not located within 61 meters (200 feet) of a fault. Therefore, the fault zone requirement of 40 CFR Part 264 is satisfied.

Floodplain

A hazardous waste treatment facility located in a 100-year floodplain must be designed, constructed, operated, and maintained to prevent washout of any hazardous waste by a 100-year flood. The MEW site is not located in a floodplain, therefore these requirements are neither applicable or relevant and appropriate.

11.0 OTHER CRITERIA CONSIDERED

In establishing selected remedial alternatives, EPA considers various procedures, criteria and resolutions. These "to be considered" criteria (TBCs) do not raise to the level of ARARs, but are relevant to the cleanup of the site. The following discussion presents selected criteria relevant to the selection of remedial alternatives.

TABLE 11-1

GROUNDWATER CRITERIA TO BE CONSIDERED
MIDDLEFIELD/ELLIS/WHISMAN STUDY AREA

Chemical	State Drinking Water Action Levels (mg/liter)	State Applied Action Levels[a] (mg/liter)
Organics		
Chloroform	0.020	0.006
1,2-Dichlorobenzene	0.130	-
1,1-Dichloroethane	0.020	-
1,1-Dichloroethene	-	-
1,2-Dichloroethene	0.016	-
Freon-113	18.000	-
Phenol	-	-
Tetrachloroethene	0.004	-
1,1,1-Trichloroethane	-	-
Trichloroethene	-	-
Vinyl Chloride	-	-
Inorganics		
Antimony	-	-
Cadmium	-	-
Arsenic	-	-
Lead	-	-

a/ Applied Action Level for water for human receptors.

Criteria Establishing Local Groundwater as a Source of Drinking Water

Various criteria were used to establish that the shallow, C, and Deep aquifers are a source of drinking water. EPA's groundwater classification system was used. Using the "EPA Guidelines for Ground-Water Classification" as a guide, EPA determined that the A- and B-aquifers in the MEW area are classified as "potential drinking water sources". Currently, the C-aquifer and Deep aquifers are used for drinking water and therefore would be classified as a current drinking water source. As stated in the ARARs section, the Regional Water Quality Control Board classified the shallow groundwater as "potentially suitable for municipal or domestic water supply". The RWQCB determined that this classification is consistent with the State Water Resource Control Board's Resolution No. 88-63, which describes criteria for designating sources of drinking water.

State Criteria for Groundwater Cleanup

California has criteria for evaluating drinking water quality and groundwater cleanup: advisory Drinking Water Action Levels, and advisory Applied Action Levels.

Drinking Water Action Levels are health-based concentration limits set by DHS to limit public exposure to substances not yet regulated by promulgated standards. They are advisory standards that would apply at the tap for public water supplies, and do not rise to the level of ARARs. Nonetheless, they have been considered in developing cleanup standards for the MEW site.

Applied Action Levels (AALs) were developed by DHS for use with the California Site Mitigation Decision Tree. AALs are guidelines that DHS uses to evaluate the risk a site poses to certain biologic receptors. They are neither enforceable, nor ARARs, but have been considered in developing cleanup standards for the MEW site.

Groundwater criteria, to be considered for determining cleanup levels, are presented in Table 11-1.

California Resolution 68-16

Resolution 68-16 is California's "Statement of Policy With Respect to Maintaining High Quality of Waters in California". EPA regards Resolution 68-16 as criteria to establish groundwater cleanup levels. The policy requires maintenance of existing water quality unless it is demonstrated that a change will benefit the people of the state, will not unreasonably affect beneficial uses of the water, and will not result in water quality less than prescribed by other state policies.

A beneficial use of the groundwater in the shallow and deep aquifer system is drinking water. Establishing a cleanup level which maintains this beneficial use should attain the requirements of Resolution 68-16.

Remediation Levels for Soils

A standard for the remediation of contaminated soils was reached during the Feasibility Study by using a simple percolation-transport model with the concepts presented in California's Site Mitigation Decision Tree. The model was used to determine concentrations in soil based upon transport downward into groundwater. Based upon the analysis from the model, a soil remediation goal of 100 times the groundwater remediation level is appropriate to set cleanup standards in soil.

Health Advisories

EPA considers that for a remedial action of a drinking water source to be protective, it should have a cumulative risk that falls within a range of 10^{-4} to 10^{-7} individual lifetime excess cancer risk. To evaluate the risk to public health posed by recommended cleanup goals, health advisories were used to establish cumulative risk. Lifetime average daily doses (LADD) were calculated by multiplying a concentration by 2 liters per day and dividing by 70 kilograms. Cancer risk for a constituent of a given concentration was determined by multiplying the LADD by its Cancer Potency Factor (CPF). Ratios of contaminants in aquifers of the site were then calculated in relation to TCE. A summation of risk for carcinogens in each aquifer were calculated for a given concentration of TCE. For a 5 ppb (MCL) cleanup goal for TCE in the A-, B1-, and B2- aquifers the cumulative estimated carcinogenic risk falls within a range of $1.3(10)^{-5}$ to $7.4(10)^{-5}$. In the C- and Deep aquifers the cleanup goal of 0.8 ppb corresponds to a cumulative estimated carcinogenic risk of $1.0(10)^{-6}$. Supporting calculations are presented in the Feasibility Study.

Cleanup goals in the shallow aquifers, above the B/C aquitard, are set at 5 ppb for TCE. Cleanup goals in the C and Deep aquifers, below the B/C aquitard, are set at 0.8 ppb for TCE. Assuming the ratios of carcinogen remain relatively constant, attainment of these goals will result in achieving EPA's acceptable risk range of 10^{-4} to 10^{-7} upon completion of the remedial action.

Air Stripping Control Policies

Any existing and new source(s) that emit toxic chemicals will have to comply with any EPA, BAAQMD, or Air Resources Board policies on control of air emissions from air-strippers.

12.0 SUMMARY OF ALTERNATIVES ANALYSIS

This section presents an analyses of the alternatives, evaluated in the detailed analysis of remedial alternatives, with respect EPA's evaluation criteria. Design elements of the alternatives are presented in Section 9.0. Table 12-1 provides a summary of the advantages and disadvantages of each alternative's performance and cost.

State and community acceptance are discussed below:

State Acceptance

The State (of California) generally supports EPA's proposed cleanup plan. The state commented, however, that the cleanup goals for soils and groundwater inside the boundary of the existing slurry walls should be 0.5 ppm TCE for soil and 5 ppb TCE for the groundwater; the same goals as for outside of the slurry walls.

In the Responsiveness Summary, EPA stated that the slurry walls in conjunction with pumping and monitoring will be protective of the public health and the environment, with the 1 ppm TCE cleanup goal for soils bounded by the slurry walls. This monitoring and pumping strategy will limit the amount of contamination that can leach into the shallow aquifers, outside of the slurry walls. EPA did respond to the State's request of a 5 ppb TCE cleanup goal for all shallow aquifers, by establishing the 5 ppb TCE cleanup goal for the aquifers inside of the slurry walls.

Community Acceptance

The community agrees with EPA's proposed remedial alternatives, although there is concern with the length of time estimated to achieve the shallow aquifer cleanup goals. The use of the "hazard index" was urged to establish cleanup goals instead of MCLs. EPA explained in the Responsiveness Summary that the hazard index was not applicable to the MEW area.

In addition, reuse of the extracted groundwater was recommended by the community. As stated in the Responsiveness Summary, reuse of extracted groundwater will be evaluated and is a component of the ROD.

The Responsiveness Summary (attached) addresses these concerns and others in more detail.

RESPONSIVENESS SUMMARY

Table 12-1

Criteria for the Evaluation of Remedial Alternatives

ALTERNATIVE	SHORT-TERM EFFECTIVENESS	LONG-TERM EFFECTIVENESS AND PERMANENCE	REDUCES TOXICITY, MOBILITY, VOLUME	IMPLEMENTABILITY	COMPLIANCE WITH ARARs	LONG-TERM PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT	ADDT'L CAPITAL COSTS ($000's)	ANNUAL O & M COST ($000's)	PRESENT WORTH (rounded, $000's)
Zone 1									
NO FURTHER ACTION	NO EFFECT IN SHORT-TERM	ALLOWS CONTINUED MIGRATION	NO ACTIVE REDUCTION IN TOXICITY, MOBILITY OR VOLUME	NO TECHNICAL LIMITATIONS	DOES NOT MEET ALL ARARs	PROTECTION PROVIDED BY MONITORING ONLY	N/A[1]	N/A	N/A
IN-SITU SOIL AERATION (WITH CARBON ADSORPTION AND REGENERATION)	EFFECTIVE IN SHORT-TERM	PERMANENT SOLUTION	REDUCES TOXICITY, MOBILITY AND VOLUME	NO TECHNICAL LIMITATIONS	COMPLIES WITH ARARs	PROVIDES PROTECTION	1,107 10 1,253	812 10 863	1,800 10 5,000
PARTIAL EXCAVATION WITH AMBIENT TEMPERATURE AERATION (WITH CARBON ADSORPTION AND REGENERATION)	EFFECTIVE, BUT POTENTIAL FOR INCREASED EXPOSURE DURING EXCAVATION	PERMANENT BUT NOT A COMPLETE SOLUTION	REDUCES TOXICITY, MOBILITY AND VOLUME	DIFFICULT TO CONTROL AIR EMISSIONS AND ALL IMPACTED SOILS NOT REMEDIATED	DOES NOT MEET ARARs FOR UNEXCAVATED SOILS	CHEMICALS LEFT IN SOILS COULD MIGRATE TO SHALLOW AQUIFERS	6,673	--	6,700
PARTIAL EXCAVATION WITH AMBIENT TEMPERATURE AERATION AND IN-SITU SOIL AERATION (WITH CARBON ADSORPTION AND REGENERATION)	EFFECTIVE, BUT POTENTIAL FOR INCREASES EXPOSURE DURING EXCAVATION	PERMANENT SOLUTION	REDUCES TOXICITY, MOBILITY AND VOLUME	DIFFICULT TO CONTROL AIR EMISSIONS	COMPLIES WITH ARARs	PROVIDES PROTECTION	7,225 10 7,357	278 10 282	7,500 10 8,600

Table 12-1

Criteria for the Evaluation of Remedial Alternatives
(continued)

ALTERNATIVE	SHORT-TERM EFFECTIVENESS	LONG-TERM EFFECTIVENESS AND PERMANENCE	REDUCES TOXICITY, MOBILITY, VOLUME	IMPLEMENTABILITY	COMPLIANCE WITH ARARs	LONG-TERM PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT	ADDT'L CAPITAL COSTS ($000's)	ANNUAL O & M COSTS ($000's)	PRESENT WORTH (rounded, $000's)
ZONE 3									
NO FURTHER ACTION	NO EFFECT IN SHORT TERM	ALLOWS CONTINUED MIGRATION	NO ACTIVE REDUCTION IN TOXICITY, MOBILITY OR VOLUME	NO TECHNICAL LIMITATIONS	DOES NOT MEET ALL ARARs	PROTECTION PROVIDED BY MONITORING ONLY	310	685	7,200
HYDRAULIC CONTROL BY GROUND WATER EXTRACTION AND TREATMENT	EFFECTIVE IN SHORT-TERM	PERMANENT SOLUTION BUT REQUIRES CONTINUED PUMPING	REDUCES TOXICITY, MOBILITY AND VOLUME	NO TECHNICAL LIMITATIONS	COMPLIES WITH ARARs	PARTIAL PROTECTION; NEEDS INSTITUTIONAL CONTROLS	2,703	1,678	19,3
HYDRAULIC REMEDIATION BY GROUND WATER EXTRACTION AND TREATMENT	EFFECTIVE IN SHORT-TERM	PERMANENT SOLUTION	REDUCES TOXICITY, MOBILITY AND VOLUME	NO TECHNICAL LIMITATIONS	COMPLIES WITH ARARs	PROVIDES PROTECTION	5,567	2,503	27,000 to 31,000
VERTICAL IMPERMEABLE BARRIERS	EFFECTIVE, BUT POTENTIAL FOR EXPOSURE DURING CONSTRUCTION	NOT A PERMANENT SOLUTION	DOES NOT MEET CRITERIA[1]	INFEASIBLE DUE TO TECHNICAL LIMITATIONS	DOES NOT MEET ALL ARARs	PARTIAL PROTECTION; NEEDS INSTITUTIONAL CONTROLS	35,418	0	35,400

[1] Note: Section 121(b) of CERCLA states a preference for treatment which permanently and significantly reduces the volume, toxicity or mobility of the contaminants. The use of vertical impermeable barriers (i.e., slurry walls) by themselves is containment and source control, and does not constitute treatment. Only with the addition of groundwater extraction and treatment does this alternative meet statutory criteria. While this evaluation differs somewhat from the evaluation found in the FS, it does not affect EPA's remedy selection.

Table 12-1

Criteria for the Evaluation of Remedial Alternatives

(continued)

ALTERNATIVE	SHORT-TERM EFFECTIVENESS	LONG-TERM EFFECTIVENESS AND PERMANENCE	REDUCES TOXICITY, MOBILITY, VOLUME	IMPLEMENTABILITY	COMPLIANCE WITH ARARs	LONG-TERM PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT	ADDT'L CAPITAL COSTS ($000's)	ANNUAL O & M COSTS ($000's)	PRESENT WORTH (rounded, $000's)
ZONE 4									
NO FURTHER ACTION	NO EFFECT IN SHORT-TERM	ALLOWS CONTINUED MIGRATION	NO ACTIVE REDUCTION IN TOXICITY, MOBILITY OR VOLUME	NO TECHNICAL LIMITATIONS	DOES NOT MEET ALL ARARs	PROTECTION PROVIDED BY MONITORING ONLY	82	187	2,000
HYDRAULIC REMEDIATION BY GROUND WATER EXTRACTION AND TREATMENT	EFFECTIVE IN SHORT-TERM	PERMANENT SOLUTION	REDUCES TOXICITY, MOBILITY AND VOLUME	NO TECHNICAL LIMITATIONS	COMPLIES WITH ARARs	PROVIDES PROTECTION	739	449	1,100 to 4,200

(1) N/A - NOT APPLICABLE

Table 12-1

Criteria for the Evaluation of Remedial Alternatives

(continued)

ALTERNATIVE	SHORT-TERM EFFECTIVENESS	LONG-TERM EFFECTIVENESS AND PERMANENCE	REDUCES TOXICITY, MOBILITY, VOLUME	IMPLEMENTABILITY	COMPLIANCE WITH ARARs	LONG-TERM PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT	ADDT'L CAPITAL COSTS (000'S)	ANNUAL O & M COSTS (000'S)	PRESENT WORTH (rounded, 000's)
ZONE 2A									
NO FURTHER ACTION	NO EFFECT IN SHORT-TERM	ALLOWS CONTINUED MIGRATION	NO ACTIVE REDUCTION IN TOXICITY, MOBILITY OR VOLUME,	NO TECHNICAL LIMITATIONS	DOES NOT MEET ALL ARARs	PROTECTION PROVIDED BY MONITORING ONLY	N/A	N/A	N/A
IN-SITU SOIL AERATION (WITH CARBON ADSORPTION AND REGENERATION)	EFFECTIVE IN SHORT-TERM	PERMANENT SOLUTION	REDUCES TOXICITY, MOBILITY AND VOLUME	NO TECHNICAL LIMITATIONS	COMPLIES WITH ARARs	PROVIDES PROTECTION	207	638	1,800
MAINTAIN INWARD AND UPWARD HYDRAULIC GRADIENTS (WITH TREATMENT OF EXTRACTED WATER)	EFFECTIVE IN SHORT-TERM	PERMANENT SOLUTION BUT REQUIRES CONTINUED PUMPING	REDUCES TOXICITY, MOBILITY AND VOLUME	NO TECHNICAL LIMITATIONS	COMPLIES WITH ARARs	PROVIDES PROTECTION; NEEDS INSTITUTIONAL CONTROLS	0	405	4,100
FLUSHING (WITH TREATMENT OF EXTRACTED WATER)	NOT EFFECTIVE IN SHORT-TERM	PERMANENT SOLUTION IF NO CHEMICAL MIGRATION	REDUCES TOXICITY, MOBILITY AND VOLUME IF NO CHEMICAL MIGRATION	NOT FEASIBLE DUE TO COMPLEX SITE STRATIGRAPHY	COMPLIES WITH ARARs	PROTECTION LIMITED BY CHEMICAL MIGRATION	884	867	7,500
PARTIAL EXCAVATION WITH AMBIENT TEMPERATURE AERATION (WITH CARBON ADSORPTION AND REGENERATION)	EFFECTIVE, BUT POTENTIAL FOR INCREASED EXPOSURE DURING EXCAVATION	PERMANENT SOLUTION	REDUCES TOXICITY, MOBILITY AND VOLUME	DIFFICULT TO CONTROL AIR EMISSIONS	COMPLIES WITH ARARs	PROVIDES PROTECTION	869	0	900

Table 12-1

Criteria for the Evaluation of Remedial Alternatives

(continued)

ALTERNATIVE	SHORT-TERM EFFECTIVENESS	LONG-TERM EFFECTIVENESS AND PERMANENCE	REDUCES TOXICITY, MOBILITY, VOLUME	IMPLEMENTABILITY	COMPLIANCE WITH ARARs	LONG-TERM PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT	ADDT'L CAPITAL COSTS ($000's)	ANNUAL O & M COSTS ($000's)	PRESENT WORTH (rounded, $000's)
ZONE 2B									
NO FURTHER ACTION	NO EFFECT IN SHORT-TERM	ALLOWS CONT'D MIGRATION	NO ACTIVE REDUCTION IN TOXICITY, MOBILITY OR VOLUME	NO TECHNICAL LIMITATIONS	DOES NOT MEET ALL ARARs	PROTECTION PROVIDED BY MONITORING ONLY	17	160	1,600
IN-SITU SOIL AERATION (WITH CARBON ADSORPTION AND REGENERATION)	EFFECTIVE IN SHORT-TERM	PERMANENT SOLUTION	REDUCES TOXICITY, MOBILITY AND VOLUME	NO TECHNICAL LIMITATIONS	COMPLIES WITH ARARs	PROVIDES PROTECTION	1,861 TO 2,097	1,679 TO 1,763	6,101 TO 9,800
MAINTAIN INWARD AND UPWARD HYDRAULIC GRADIENTS (WITH TREATMENT OF EXTRACTED WATER)	EFFECTIVE IN SHORT-TERM	PERMANENT SOLUTION BUT REQUIRES CONTINUED PUMPING	REDUCES TOXICITY, MOBILITY AND VOLUME	NO TECHNICAL LIMITATIONS	COMPLIES WITH ARARs	PROVIDES PROTECTION; NEEDS INSTITUTIONAL CONTROL	0	595	6,000
FLUSHING (WITH TREATMENT OF EXTRACTED WATER)	NOT EFFECTIVE IN SHORT-TERM	PERMANENT SOLUTION IF NO CHEMICAL MIGRATION	REDUCES TOXICITY, MOBILITY AND VOLUME IF NO CHEMICAL MIGRATION	NOT FEASIBLE DUE TO COMPLEX SITE STRATIGRAPHY	COMPLIES WITH ARARs	PROTECTION LIMITED BY CHEMICAL MIGRATION	1,833	1,459	13,000

RESPONSIVENESS SUMMARY FOR THE FAIRCHILD, INTEL, AND RAYTHEON SITES
MIDDLEFIELD-ELLIS-WHISMAN (M-E-W) STUDY AREA
Mountain View, California

I. COMMUNITY RELATIONS HISTORY

EPA has carried on an active community relations program at the Middlefield-Ellis-Whisman (MEW) Study Area.

In early 1986, EPA, in conjunction with Santa Clara County, initiated monthly meetings for all agencies involved in hazardous waste investigation and cleanup to review and coordinate activities. Representatives of local, state and federal agencies, elected officials, business and industry and public interest groups attend the meetings. The meetings continue on a quarterly basis.

In the spring of 1986, new contamination was found in Mountain View's deep aquifer This discovery marked the first time contamination had been detected at those depths in that part of Santa Clara County. In response to community concerns and questions about the safety of the drinking water supply, EPA prepared a fact sheet describing the situation and distributed it to the site mailing list.

In May 1986, EPA worked with Fairchild Semiconductor Corp. to prepared a 4-page insert for Mountain View's The View to explain Fairchild's proposal to construct three slurry walls in order to confine their site's contaminated soils and to pump and treat water confined by the walls.

In February 1987, Raytheon and EPA worked together to prepare another insert for The View that described Raytheon's proposed slurry wall to contain contamination around their site.

In June 1987, EPA worked with Raytheon, Intel and Fairchild to produce an insert for The View describing the draft Remedial Investigation (RI) report.

In November 1988, EPA released a Feasibility Study (FS) on the Middlefield-Ellis-Whisman Study Are to the public. The report described and evaluated various clean-up alternatives based on data and support documents available at the time. EPA's preferred alternatives were: vapor extraction and treatment for soils, pumping and treating for shallow and deep aquifers; and vapor extraction, groundwater control and treatment for the slurry wall systems.

In fulfillment of community participation requirements, EPA held a public comment period from November 21, 1988, through January 23, 1989; briefings of local officials and community members; and a community meeting. EPA also prepared a Proposed Plan fact sheet which outlined the range of cleanup alternatives, cleanup goals, and EPA's preferred alternative for distribution to the site mailing list. Prior to the fact sheet, EPA also released a press advisory announcing the range of alternatives and EPA's preferred alternative.

The community meeting was held December 14, 1988, to present clean-up alternatives, to answer questions and to take comments on the FS. Comments centered on the length of the cleanup period and on who would do the cleanup.

Written comments on EPA's Proposed Plan focussed on the following issues: cleanup levels for soil and groundwater, length of public comment period, variations in the text of the FS report, and length of cleanup time. Responses to public comments are addressed in the attached response summary. Most of the comments were submitted by Potentially Responsible Parties.

II. SUMMARY OF PUBLIC COMMENTS AND AGENCY RESPONSES

Technical Comments

1. Comment: Several comments concerned the number and location of recovery wells to be placed in the MEW area.

EPA Response: The Feasibility Study (FS) and Proposed Plan are not design documents. The exact number and location of recovery wells will be determined during the remedial design phase.

2. Comment: NASA-Ames Research Center had several concerns: 1. how the proposed treatment system would handle groundwater contaminated with fuel, 2. how other cleanup actions may be influenced by the proposed recovery wells, 3. the effects that the proposed hydraulic remediation may have on existing contamination at NASA-Ames and the adjacent Moffett Naval Air Station.

EPA Response: The above concerns will be addressed during the Remedial design and Remedial Action (RD/RA) phases. Obviously, a large degree of cooperation and coordination will be required by the affected parties during RD/RA, to ensure a successful remediation program.

3. Comment: "The FS proposes to remediate soils using in situ soil aeration. Air inlet wells may also be installed to increase the efficiency of the soil aeration system. It is suggested that if air inlet wells are to be installed they should be used to control the extent of an in situ negative soil air pressure field, not to increase soil air flow through the contaminated soils. If they are installed solely for the purpose of increasing airflow across the contaminated soil particles, their use is questionable."

EPA Response: VOC's have a marked tendency to partition into the soil atmosphere. The rate of desorption into pore space is principally a function of chemical diffusion in response to a concentration gradient. Sweeping of clean air through a soil matrix increases the concentration gradient and therefore increases partitioning and the overall efficiency of the in situ soil aeration system. The result of creating a negative air pressure field, with an in situ air stripping system, does have a minor effect on soil-air partitioning, but the field tends to be localized around the extraction well(s) and the overall effect is negligible. The key to an efficient in situ vapor extraction system is increasing the airflow across contaminated soil particles and not simply to

control the negative soil air pressure field. The use of air inlet wells will be analyzed further during the RD/RA phases of this project.

Comments On EPA's Process

1. Comment: Several commenters who are Potentially Responsible Parties (PRPs) stated that the comment period was too short to adequately review the FS and Remedial Investigation (RI) report. Requests were made to extend the comment period.

EPA Response: The National Contingency Plan (NCP) requires that the RI, FS and Proposed Plan be provided to the public for review and comment for a period of at least 21 calendar days. The new proposed NCP requires a minimum 30 calendar day public comment period.

EPA has exceeded both of these requirements by providing a 64 calendar day public comment period on the RI, FS and Proposed Plan. The comment period was extended (at the December 14, 1988 public hearing) to January 23, 1989, from the original January 9, 1989 deadline.

2. Comment: Several PRPs stated that the RI report and FS were not readily available for review.

EPA Response: A draft RI report has been available to the general public at EPA since July 1987 and also in the City of Mountain View public library since August, 1987. The final RI report has been available at these respective locations since July, 1988. Furthermore, EPA in its general notice letters issued in August and September, 1988, notified the commenters and others of the availability of an administrative record that contained supporting documentation for the MEW study area. The FS was made available to the public in the EPA and Mountain View libraries at the beginning of the comment period November 21, 1988. In addition, copies of the FS were also available for purchase from Canonie Engineers, the preparers of the FS.

3. Comment: Several PRPs claimed that there were "inconsistences" between FS reports on reserve at the Mountain View Public Library, the FS report at the EPA library, and copies provided by Canonie Engineers.

EPA Response: EPA acknowledges these concerns, however, we believe any differences to be minor in nature and would not affect the scope of the FS report. Copies of the FS report were readily available for review at the EPA library during the entire public comment period.

4. Comment: One commenter wrote that EPA announcements regarding the review and comment period and public meetings needed to be more widely distributed.

EPA Response: Announcements regarding the MEW public comment period and the public meeting were published in "The View", "The Los Altos Town Crier", "The Times Tribune", and the "San Jose Mercury News" (Peninsula Extra Edition). In addition, EPA's Proposed Plan, which also announced the public comment period and public meeting, was sent to EPA's MEW mailing list that consists of over 100

is Siltec's contention, EPA disagrees. EPA notes that a separate RI review process is simply not contemplated by CERCLA nor U.S. v. Seymour Recycling Corp. 679 F. Supp 859 (S.D.Ind. 1987). In that case, the court notes that, pursuant to CERCLA as amended by SARA, the generator defendants are entitled to comment on the selection of a remedy before the remedy is selected. In U.S. v. Seymour Recycling Corp., as here, EPA provided the generator defendants an opportunity to comment on the remedy before a selection of the remedy has been made.

EPA also notes that Siltec was given notice that it was a potential responsible party in the MEW area in May, 1985 and was given an opportunity to participate in the RI/FS process. Thus, Siltec was on notice that the RI/FS was being prepared, and therefore, Siltec should have been tracking the progress of the RI/FS.

2. Comment: Pages 3-4. Siltec has been unable to comment on the FS because of substantial uncertainty about the accuracy and validity of the FS distributed for public comment.

EPA Response: EPA disagrees with the statement that "there is substantial uncertainty about the accuracy and validity of the FS distributed for public comment." As stated above, the FS was available to the public in the EPA and Mountain View libraries at the beginning of the comment period, November 21, 1988. In addition, copies of the FS were also available for purchase from Canonie Engineers. Any inconsistency between the copies was minor in nature.

3. Comment: Siltec stated that "[T]he opportunity for meaningful comment is compromised where complete copies of relevant agency documents have not been made available in a timely fashion" citing the case of U.S. v. Rohm and Haas Co. Inc. 669 F. Supp. 672, 683.

EPA Response: The facts of U.S. v. Rohn and Haas Company, Inc. are very different than here. In particular, the public was given 5 days to submit comments in U.S. v. Rohm and Haas Company, Inc. Here the public, including Siltec, was given 64 days to submit comments.

4. Comment: Siltec recommends that cleanup of the C aquifer (the areas below the B-C aquitard) should be addressed as a separable operable unit as the term is defined at 40 CFR Section 300.6 and as permitted by 40 CFR Section 300.68(c).

EPA Response: 40 CFR Section 300.6 simply defines an operable unit as "a discrete part of the entire response action that decreases a release, threat of release, or pathway of exposure." EPA fails to see the benefit of addressing the C aquifer as a separate operable unit solely for cost allocation purposes.

The Following Selected Comments Concerning EPA's Process Were Submitted by Air Products

1. Comment: "EPA does not have the power to create or affect liability of persons at a 'Superfund site' simply by drawing the 'site boundary' at one location versus another."

EPA Response: The FS does not address the liability of persons at the MEW site. EPA notes that liability is determined by CERCLA Section 107, not the drawing of site boundaries.

2. Comment: "EPA lacks the authority under Section 104 to order Air Products to require testing."

EPA Response: Orders requiring testing under Section 104 are not addressed in the RI and FS. EPA notes Air Product's legal opinion.

Comments Concerning the Proposed Cleanup Goals

1. Comment: The Regional Water Quality Control Board (RWQCB) commented that the cleanup goal for the groundwater inside the slurry walls should be set at 5 parts per billion (ppb) -- the same goal set for the groundwater outside of the slurry walls. The Board commented that EPA's groundwater classification applies to all aquifers including aquifers within slurry walls.

EPA Response: EPA's Proposed Plan recommended a 5 ppb cleanup goal for the shallow aquifers. Although not specifically stated, this 5 ppb goal would also apply to the aquifers within the slurry walls.

2. Comment: The RWQCB also commented that the cleanup goal for soils within the slurry walls should be set at .5 parts per million (ppm) -- the same level for soils outside the slurry walls. The Board was concerned about relying solely on slurry walls to prevent migration of contamination "because the long term integrity of slurry walls has not been demonstrated."

EPA Response: In addition to pumping within the slurry walls (to assure an inward gradient), there will be continuous monitoring of water levels and chemical concentration inside and outside of the slurry walls. Performance monitoring will be an integral part of any RD/RA Consent Decree. In the event of a slurry wall failure, additional measures can be taken such as, modification of the walls and pumping rates, or applying more stringent cleanup levels inside the slurry walls.

3. Comment: The Santa Clara Valley Water District (SCVWD) commented that they would not prevent a well from tapping the shallow aquifers.

EPA Response: Comment acknowledged.

4. Comment: The SCVWD is concerned that a cleanup goal has not been established for the aquifers within the slurry walls.

EPA Response: See EPA response to comment no. 1.

5. Comment: The SCVWD commented that specific protocol should be developed for reviewing and evaluating the performance of the selected remedy.

EPA Response: The RD/RA process will incorporate specific criteria for evaluating the cleanup goals and the effectiveness of the remedy. The cleanup goals and remedy will be evaluated at least once every 5 years.

6. Comment: The SCVWD recommended that a cleanup goal of 0.8 ppb also be established for the shallow aquifers.

EPA Response: A 5 ppb cleanup goal is protective of human health, especially since these aquifers are not currently used for drinking water. The 5 ppb level also falls within EPA's acceptable risk range of 10^{-4} to 10^{-7}.

In addition, the cleanup goal may not even be technically feasible because the aquifers are relatively "tight" (low water bearing zones) and have a high clay content, thereby making chemical removal difficult and costly.

7. Comment: The League of Women Voters urged EPA to use a "hazard index" to establish cleanup goals instead of the Maximum Contaminant Level (MCL) for TCE. The League is concerned about the "mixtures of chemicals" and their effects and cited the IBM and Fairchild sites in San Jose where the hazard index was used.

EPA Response: EPA believes that a 5 ppb TCE cleanup goal for the shallow aquifers is protective of human health. See EPA response to the SCVWD.

The ratio of TCE to other chemicals (found at the site) is high enough that a 5 ppb cleanup of TCE will result in a cleanup of the other chemicals below their corresponding MCLs. The 5 ppb cleanup goal takes into account the additive effects of the chemicals found at the site, and the resulting risk falls within EPA's acceptable range of 10^{-4} to 10^{-7}.

The IBM and Fairchild San Jose sites have TCA as the dominant chemical. Drinking water wells have also been affected at the IBM and Fairchild sites in San Jose, while no drinking water wells have been impacted at MEW.

8. Comment: One commenter wrote that Alternative Concentrations Limits (ACLs) would be appropriate "if no health risk occurs through exposure by contact or through ingestion of the contaminated groundwater." The commenter questioned whether such exposures can be prevented.

EPA Response: EPA is not proposing the use of ACLs at this time. The applicability of ACLs will be determined during subsequent review periods, once the remedy has been implemented and periodically evaluated.

The Following Selected Comments Concerning Cleanup Goals Were Submitted By Crosby, Heafly, Roach and May, a Law Firm Representing Sobrato Development

1. Comment: The 5 ppb cleanup level for the shallow aquifers "is not necessary to protect human health and safety", and the cleanup level "is unreasonably burdensome and cost inefficient. The firm also wrote that the shallow aquifers "are not reasonably anticipated to become suppliers of drinking water in the near or distant future", and that the enforcement of existing institutional controls can be used to protect human health. Therefore, less stringent standards should be applied to the shallow aquifers namely 500 ppb.

EPA Response: It should first be noted that EPA has proposed cleanup goals rather than cleanup levels. These goals and the remedies will be evaluated periodically to determine if they are technically practical, and therefore they may be subject to modification.

EPA based its proposed cleanup goals on several factors: 1. The shallow aquifers are potential drinking water sources even though they are not currently being used for drinking. This determination is also consistent with the Regional Water Quality Control Board's Basin Plan and Non-Degradation Policy which are designed to protect natural resources; 2. The 5 ppb goal meets EPA's acceptable risk range of 10^{-4} to 10^{-7}. The 500 ppb cleanup level which the commenter is proposing would exceed this acceptable risk; 3. It is unlikely that all of the abandoned agriculture wells which are currently acting as conduits or are potential conduits threatening the deep (current drinking water) aquifers will ever be located and properly sealed. Experience has shown that abandoned wells (e.g., Rezendes Wells) can cause significant contamination to migrate from the shallow aquifers to the deep aquifers. Therefore, absent sealing all of the abandoned wells, it becomes necessary to reduce the contamination in the shallow aquifers. The 5 ppb level would then be the maximum level that could potentially migrate to the deep aquifers.

2. Comment: "The worst case scenario soil remediation application is inappropriate." The commenter objected to uniform application of the worst-case scenario to the entire MEW area. The commenter also stated that future use assumptions of the MEW site are inconsistent with the City of Mountain View General Plan and with California Health and Safety Code institutional controls.

EPA Response: Because multiple sources have impacted a common groundwater area with commingled contaminant plumes (which threaten a current drinking water supply), EPA believes that a uniform application of a reasonable "worst-case" scenario and a uniform application of cleanup goals is the most efficient method to assure the protection of public health. This is also consistent with the approach taken at other sites in Santa Clara Valley and the country. Although the City of Mountain View's General plan may currently call for industrial/commercial use of the site, General Plans and land use are subject to change. The site is also presently bordered by residences west of Whisman and on Moffett Naval Air Station, and a change in the electronics industry may make residential use of the site plausible in the future. Other than deed notifications, it is not clear to which institutional controls of the California Health and Safety Code the commenter is referring.

Response To Selected Comments From Sobrato

1. Comment: "The MEW FS purports to apply a percolation rate of 2 inches/year in calculating the allowable contamination concentrations in the soil. Such a percolation rate is considered extremely unlikely in properties, like SOBRATO's, which have been covered and contained by asphalt. In addition, surface runoff at the site is comprehensively routed to storm sewers and drains. Therefore, percolation rates on the SOBRATO properties should be expected to approach nearly zero."

EPA Response: Although field studies have not been conducted at the MEW site to determine the amount of water infiltrating through the topsoil, the literature describes exponentially decreasing infiltration rates following a rainstorm. However, more water may infiltrate to the aquifers in periods of long storms, especially following extended dry periods.

The scenario of calculating soil remediation levels, by assuming potential residential use rather than current industrial usage, is EPA policy. This policy has been consistently applied throughout other regions under similar circumstances. The rationale supporting this policy is that surface coverings and land use may change and, over the long term, institutional controls may be unreliable. The 2 inch/year percolation rate is applied consistently throughout the MEW area.

2. Comment: "We (Sobrato) would like to point out that if the rationale used as the basis for the California Assessment Manual (Ca. Admin. Code Title 22, Division 4, Chapter 30, Article 11) criteria is applied to the subject properties, the soil cleanup level would be, at a minimum, 5.0 mg/kg."

EPA Response: The criteria presented in the cited California Administrative Code defines a regulated hazardous waste and is not appropriate for determining a soil cleanup level.

The Following Selected Comments Were Submitted by Heller, Ehrman, White & McAuliffe, Attorneys for NEC Electronics, Inc.

1. Comment: The intended application of the "No Further Action" (monitoring only) alternative is unclear, since it is discussed primarily for Zone 1 soils located inside slurry walls.

EPA Response: EPA does not understand the comment, as we believe the application of the "No Further Action" alternative is adequately explained for each of the remedial alternatives in Chapter 8 of the FS.

2. Comment: No estimates of the remediation periods for "Partial Excavation with Ambient Temperature Aeration" (Alternative 3) and "Partial EXcavation and Ambient Temperature Aeration with In Situ Soil Aeration" (Alternative 4) are provided.

EPA Response: The time frame for this alternative would be governed by the factors identified in Appendices G and H of the FS, which state that the remediation of excavated soils requires 48 hours of disking soils in six inch lifts. The number of lifts required would depend upon the volume of soil to be remediated. Table 0-22 of Appendix O provides the volume of soils to be excavated and remediated.

3. Comment: NEC Electronics requested the "latitude" to explore other "options" including those remedial methods outlined in the FS, and other methods in order to achieve the ROD cleanup goals for vadose zone soils.

ADMINISTRATIVE RECORD INDEX

13.0 THE SELECTED REMEDIES

The selected remedies for soils are: 1) in-situ vapor extraction with treatment by vapor phase granular activated carbon (GAC), and 2) excavation and treatment by aeration to meet federal, state, and local air standards. Most of the vapor extraction will be performed on soils inside of the existing Fairchild and Raytheon slurry walls, where the highest concentrations of soil contamination are found. The vapor extraction is estimated to be in operation from 1 to 6 years. The excavation and treatment of contaminated soils may invoke RCRA Landban requirements which would also require treatment to meet BDAT standards. Intel has previously excavated and aerated their contaminated soil under RWQCB orders. These selected remedial alternatives will likely be used at other potential sources in the MEW area. EPA expects soil remediation to be implemented by the PRPs.

The soil cleanup goals for the MEW area are: 0.5 parts per million (ppm) TCE for all soils outside of the slurry walls and 1 ppm TCE for soils inside the slurry walls. The cleanup goal for soils outside of the slurry walls is based upon the amount of contamination that can remain in the soil, leach into the groundwater and still achieve the cleanup goal for the shallow aquifers. The rationale for the use of a higher cleanup goal for soils bounded by the slurry walls is presented in the following discussion. Although the aquifers bounded by the slurry walls are considered potential drinking water sources, this groundwater is effectively isolated when local hydraulic control is implemented by pumping inside the confines of the slurry walls. This isolation of contaminated groundwater and soil bounded by the slurry walls provides an additional level of protection of the significantly larger drinking water source outside of the slurry walls. This additional level of protection through the use of a slurry wall system (slurry wall and hydraulic control) allows for a higher soil cleanup goal for soils confined by the slurry walls. But, the use of the 1 ppm TCE cleanup level for these soils is dependent upon the continued operation of a pumping system which maintains local hydraulic control of groundwater inside the slurry walls. If local hydraulic control by pumping was to cease, then the lower soil cleanup goal of 0.5 ppm TCE would need to be attained. In summary, the soil cleanup goal is higher inside of the slurry walls because of the extra degree of protectiveness provided by the slurry walls in conjunction with the maintenance of inward and upward gradients into the area confined by the slurry walls, with a system of hydraulic control by pumping of groundwater. To ensure that the slurry wall system is effectively working, regular monitoring will be performed of local groundwater quality and water elevations. During the

duration of the remedy, there will be an evaluation of the remedy and cleanup goals at least every five years.

The selected groundwater remedy is hydraulic remediation by groundwater extraction and treatment. The groundwater cleanup goals by pumping and treatment are: 5 ppb TCE for the shallow aquifers (including the aquifers inside the slurry walls) and 0.8 ppb TCE for the C and Deep aquifers. The cleanup goal is more stringent for the C and Deep aquifers, because they are currently used as a supply for municipal drinking water and will be technically easier to remediate than the shallow aquifers. The 0.8 ppb cleanup goal corresponds to a 10^{-6} cumulative (human) cancer risk.

Although the shallow aquifers are not currently used for drinking water, they are a potential source for drinking water and therefore a 5 ppb TCE cleanup goal has been established which corresponds to between a 10^{-6} and 10^{-5} excess cancer risk, which is within EPA's acceptable risk range. Cancer risks have been screened for all aquifers and the chemical ratio of TCE to other chemicals found at the site is such that achieving the cleanup goal for TCE will result in cleanup of the other site chemicals to at least their respective MCLs.

The estimated time to reach the deep aquifer cleanup goal is between 2 to 45 years. The time to reach the shallow aquifer cleanup goal may be considerably longer, possibly from 46 years or into the indefinite future, because of the physical and chemical nature of the shallow aquifers. They are low yielding and contain soils with a high clay content which attract and retain the site chemicals. During the duration of the remedial effort, both shallow and deep aquifers will be regularly monitored for water quality and groundwater elevations.

The extracted groundwater will be treated largely by air strippers, although some companies (e.g., Intel) may use their existing liquid phase GAC units. The three currently operating air strippers have been permitted by the Bay Area Air Quality Management District and are not using emissions controls. The air stripper stacks have been designed to meet risk levels of $<10^{-6}$ excess cancers. We anticipate that with the additional air strippers to be installed and the increased flow rates during full scale remediation, emissions controls will likely be needed to meet more stringent air district standards. The emissions controls will consist of GAC vapor phase carbon units.

The extracted groundwater will be reused to the maximum extent feasible, with 100% reuse as a goal. The remaining extracted groundwater will be discharged under NPDES requirements to Stevens Creek. Work has already commenced on various water reuse options, which will be presented and implemented during the RD/RA phase.

The remedy also includes the identification and sealing of any conduits or potential conduits, using the decision process outlined in the FS. Several identified abandoned agriculture wells have allowed contamination to migrate from the shallow aquifers to the deep aquifers. These wells have subsequently been sealed. Additional wells have been identified for sealing and other wells may also be identified during RD/RA phase which will require sealing.

To evaluate the effectiveness of remedial actions and to determine when cleanup goals are attained, regular monitoring of chemical concentrations and water elevations is required at selected wells across the site. For soil cleanup, EPA will need to concur on a method to determine when the required cleanup goals have been achieved.

The estimated costs of the selected remedies are provided in Table 12-1 and include the use of emissions controls, well sealing, and monitoring. The total cost of the remedies, in present worth dollars, is estimated to be between $49M to $56M.

14.0 STATUTORY DETERMINATIONS

The selected remedies are protective of human health and the environment -- as required by Section 121 of CERCLA -- in that contamination in groundwater is treated to at least MCLs and falls within EPA's acceptable risk range of 10^{-4} to 10^{-7}. In addition, the remedy at least attains the requirements of all ARARs, including Federal and State MCLs.

Furthermore, as shown on Table 12-1, the groundwater remedy - pumping, and treating with air strippers and the soil remedy - vapor extraction, are cost effective technologies. Soil excavation with aeration has also been shown to be cost effective when it was used at the Intel facility, and may also be used at other facilities.

The selected remedies will permanently and significantly reduce the toxicity, mobility, and volume of hazardous substances with respect to their presence in soils and groundwater. The use of vapor extraction for soils is an innovative treatment technology for removing VOCs.

Contamination is controlled and removed from the groundwater, thereby reducing the potential threat to the nearby public water supply wells and also restoring the aquifers to meet drinking water standards. The slurry walls in conjunction with pumping and treatment reduces toxicity, volume and mobility of contamination to migrate from major source areas. The sealing of conduit wells

will reduce the likelihood of vertical migration of contamination.

Emissions from soil vapor extraction will be controlled by vapor phase GAC. Emissions from air stripping towers will meet local air district requirements, which are anticipated to be a 10^{-6} risk level, and therefore will likely require vapor phase GAC. The regeneration of spent carbon from the GAC emission controls will meet all Federal, State, and local requirements.

Middlefield-Ellis-Whisman Area Superfund Site
Mountain View, California
*** Administrative Record Index ***

DOC #	DATE	FROM/ORGANIZATION	TO/ORGANIZATION	DESCRIPTION/SUBJECT	PAGES
1	06/11/76	Malcolm Burns Santa Clara Valley Water Dist.	County Sanitarians	Well Sealing Instructions Various Drawings	7
2	02/08/85	Roger B. Jamet RWQCB SF Bay Region		Revised Tentative Order	8
3	03/20/85	Thomas Berkins R.W.Q.C.B. SF Bay Region	Donald Dalke R.W.Q.C.B. SF Bay Region	Summary Reports for the Mountain View Five	13
4	04/22/85	Thomas Berkins, Lester Feldman, Lawrence Kolb R.W.Q.C.B. SF Bay Region	Roger James R.W.Q.C.B. SF Bay Region	Fairchild, Intel, NEC, Raytheon, Siltec, Mountain View, Santa Clara Co.	8
5	04/30/85	R.W.Q.C.B. SF Bay Region		Fairchild, Intel, NEC, Raytheon, Siltec, Mountain View, Santa Clara County Requirements for Site Cleanup	2
6	07/26/85	Gordon Snow Resources Agency of California	Glenn Kistner EPA Region 9	State Review of Mountain View Five Superfund Project	1
7	08/15/85	Harding, Lawson Assoc.; Canonie Engineers	EPA Region 9	Work Plan Remedial Investig. Feasibility Study and Operational Unit Feasibility Study Middlefield Ellis-Whisman Area	75
8	08/15/85	EPA Region 9	Intel, Fairchild & Raytheon	Administrative Order on Consent	22
9	08/15/85	Lloyd R. Day Cooley, Godward, Castro, Huddleson & Tatum	Eric G. Lappala Harding, Lawson Assoc.	Mountain View RI/FS and O.U.F.S.	1
10	08/31/85	Terrence J. McManus Intel	Glenn Kistner EPA Region 9	Project Schedule	6
11	09/06/85	Terrence McManus Intel	Glenn Kistner EPA Region 9	Project Schedule	5

Middlefield-Ellis-Whisman Area Superfund Site
Mountain View, California
*** Administrative Record Index ***

DOC #	DATE	FROM/ORGANIZATION	TO/ORGANIZATION	DESCRIPTION/SUBJECT	PAGES
12	09/25/85	Canonie Engineers	EPA Region 9	Addendum: QAIQC Plan Existing Monitoring Wells RIFS Middle-field-Ellis-Whisman (MEW) Area	175
13	09/25/85	Steve Dobrijevic, Phillip Antommaria Canonie Engineers	Intel	Monitoring Report Remedial Investigation Feasibility Study Date Through July 1985	175
14	10/28/85	James McClure, Eric Lappala Harding Lawson Assoc.	EPA Region 9	Technical Memo: Well Inventory Middlefield-Ellis-Whisman Study Area RI/FS	25
15	11/15/85	Canonie Engineers	Intel, Fairchild & Raytheon	Soil Evaluation Report Remedial Investigation Feasibility Study Volume I	175
16	11/15/85	Canonie Engineers	Intel, Fairchild & Raytheon	Soil Evaluation Report Remedial Investigation Feasibility Study Volume II	175
17	11/15/85	Canonie Engineers	Intel Fairchild & Raytheon	Soil Evaluation Report Remedial Investigation Feasibility Study Volume III	150
18	11/22/85	James McClure, Eric Lappala Harding, Lawson Assoc.	EPA Region 9	Technical Memo: Potential Conduits Evaluation Middle-field Ellis-Whisman Study Area	35
19	11/26/85	Glenn Kistner EPA Region 9	Terrence McManus Intel	EPA Comments on the Database Management System Plan, Hydrogeologic Model Plan, Well Inventory	6
20	12/00/85	Canonie Engineers	Intel, Fairchild & Raytheon, Siltec	Pumping Test, City of Mountain View Well No. 18	200
21	12/20/85	Glenn Kistner EPA Region 9	Terrence McManus Intel	Preliminary Definition of Remedial Action Objectives MEW Study Area Mountain View, CA (cover ltr)	22
22	01/00/86	Canonie Engineering	Fairchild	Pumping Tests Interim Remedial Program Mountain View Facility Volume 1 of 2	300

Middlefield-Ellis-Whisman Area Superfund Site
Mountain View, California
*** Administrative Record Index ***

DOC #	DATE	FROM/ORGANIZATION	TO/ORGANIZATION	DESCRIPTION/SUBJECT	PAGES
23	01/00/86	Canonie Engineers	Fairchild	Pumping Tests Interim Remedial Program Mountain View Facility Volume 2 of 2	300
24	01/28/86	Glenn Kistner EPA Region 9	Terrence McManus Intel	EPA comments to the Middlefield-Ellis-Whisman Study Area "Soil Evaluation Report"	12
25	01/28//86	Glenn Kistner EPA Region 9	Thomas Trapp Landels Ripley & Diamond	Additional EPA comments concerning the "Soil Evaluation Report" and Fairchild	3
26	01/30/86	Glenn Kistner EPA Region 9	Terrence McManus Intel	EPA Comments on the "Existing Data Review" for the Middlefield-Ellis-Whisman Study Area Remedial Investigation	17
27	02/00/86	Canonie Engineers	Intel, Fairchild & Raytheon	Historic Flow Analysis Hydrogeologic Model Description Remedial Investigation Feasibility Study	22
28	02/25/86	Catherine Henrich, Eric Lappala Harding Lawson Assoc.	EPA Region 9	Third Quarterly Report "Remedial Investigation Feasibility Study Middlefield-Ellis-Whisman Study Area	40
29	02/25/86	Harding Lawson Assoc.	EPA Region 9	Tables Third Quarterly Report: Remedial Investigation/Feasibility Study Middlefield-Ellis Whisman Study Area	100
30	02/27/86	Canonie Engineers For Intel, Fairchild & Raytheon	U.S. EPA	Responses to EPA Comments on the Middlefield-Ellis-Whisman Area RI/FS Soil Evaluation Report	60
31	02/27/86	Philip L. Fitzwater Harding Lawson Assoc.	Glenn Kistner EPA Region 9	Transmittal: Reports in reply to EPA comments on the "Soil Evaluation Report"	15
32	03/12/86	Glenn Kistner EPA Region 9	Larry Anon Fairchild	EPA and Company Agreements	2
33	03/26/86	Catherine Henrich, Eric Lappala Harding Lawson Assoc.	Glenn Kistner EPA Region 9	Transmittal: Chronology of Events and Chemical Results from SWI-230, RJC and R4C	100

Middlefield-Ellis-Whisman Area Superfund Site
Mountain View, California
*** Administrative Record Index ***

DOC #	DATE	FROM/ORGANIZATION	TO/ORGANIZATION	DESCRIPTION/SUBJECT	PAGES
34	03/28/86	Glenn Kistner EPA Region 9	Larry Amon Intel	Initial Screening of Alternatives	4
35	04/03/86	Glenn Kistner EPA Region 9	Larry Amon Fairchild	Delay re Aquifier Test Report	1
36	04/04/86	Glenn Kistner EPA Region 9	Larry Amon Fairchild	EPA's draft comments on: "Monitoring Network Well Summary" Historic Flow Analysis Hydrogeologic Model	10
37	04/04/86	Ronald Stoufer & Phillip Fitzwater Harding Lawson Assoc.	Raytheon	Phase IV Subsurface Investigation Raytheon 350 Ellis St. Mountain View, Ca.	150
38	04/07/86	James Wilson, Eric Lappala Harding Lawson Assoc.	EPA Region 9	Quality Assurance/Quality Control Plan: Remedial Investigation Feasibility Study and Operable Unit Feasibility	135
39	05/00/86	International Technology	Intel	Subsurface Soil Remediation Intel Mountain View, CA	310
40	05/02/86	Michael Rosa Raytheon	Glenn Kistner EPA Region 9	RI/FS Schedule	1
41	05/09/86	Glenn Kistner EPA Region 9	Michael Rosa Raytheon	Deep Well Monitoring Program	2
42	05/13/86	Canonie Engineers	Fairchild	Investigation of Well 652W22A3 Silva Well, Remedial Investigation Feasibility Study Middlefield-Ellis-Whisman Area	32
43	05/20/86	Michael B. Rosa Raytheon	Jim Grove EPA Region 9	Deep Aquifer Monitoring Program	8
44	05/21/86	Dennis Fesmire Canonie Environmental	File	Attachment B Contact with Garcia Well and Pump Co.	2

Middlefield-Ellis-Whisman Area Superfund Site
Mountain View, California
*** Administrative Record Index ***

DOC #	DATE	FROM/ORGANIZATION	TO/ORGANIZATION	DESCRIPTION/SUBJECT	PAGES
45	05/27/86	Stevo Dobrijevic Phillip Antommaria Canonie Engineers	Larry Amon Fairchild	Status Report Fairchild Mountain View Facility 9/1/85 through 3/31/86 Vol. I	300
46	05/27/86	Stevo Dobrijevic Phillip Antommaria Cannonie Engineers	Larry Amon Fairchild	Status Report Fairchild Mountain View Facility 9/1/85 through 3/31/86 Vol. 2	210
47	06/00/86	Canonie Engineers	Intel, Fairchild & Raytheon	Area North of Bayshore Freeway Remedial Investigation Feasibility Study	15
48	06/00/86	Canonie Engineers	Fairchild	Draft Report: Interim Remedial Actions Fairchild Semiconduct. Mt. View Facility Volume 1 of 3	10
49	06/00/86	Canonie Engineers	Fairchild	Draft Report: Interim Remedial Actions Fairchild Semiconduct. Mt. View Facility Vol. 2 of 3	200
50	06/00/86	Canonie Engineers	Fairchild	Draft Report: Interim Remedial Actions Fairchild Semiconduct. Mt. View Facility Vol. 3 of 3	400
51	06/02/86	Bryan Rector Intel	Glenn Kistner EPA Region 9	Intel Groundwater Remedial Actions Attached: Groundwater Remedial Actions Final Phase 3/19/86	250
52	06/05/86	Michael Rosa Raytheon	Glenn Kistner EPA Region 9	Schedule for Sampling Round 3.5 Middlefield-Ellis-Whisman RI/FS	200
53	06/12/86	P.K. Chattopadhyay Ecology & Environment	Jim Wilson Harding Lawson Assoc.	Request for Laboratory Analytical Raw Data Mountain View Site	6
54	06/16/86	Robert P. Stern EPA Region 9		Mountain View Cleanup	1
55	06/17/86	Terry Wilson EPA Region 9	Press (News Release)	EPA Request Public Comment On Fairchild Groundwater Cleanup Plans in Mountain View	1

Middlefield-Ellis-Whisman Area Superfund Site
Mountain View, California
*** Administrative Record Index ***

DOC #	DATE	FROM/ORGANIZATION	TO/ORGANIZATION	DESCRIPTION/SUBJECT	PAGES
56	06/23/86	Michael Rosa Raytheon	Glenn Kistner EPA Region 9	Notification of Additional Groundwater sampling for the Middlefield-Ellis-Whisman RI/FS	28
57	07/00/86			Middlefield-Ellis-Whisman Area RI/FS Well Inventory Summary Production Wells	7
58	07/00/86	Canonie Enginecrs	Fairchild	Parking Structure Private Well Investigations and Proposed Well Sealing Plan MEW Area, Mt. View, California	25
59	07/00/86	Canonie Engineer	Fairchild	Deep Well Cluster Number 3 DW3 Installation & Pumping Chronology Middlefield-Ellis-Whisman Area Mountain View, CA	25
60	07/07/86	Michael Kent Citizens for a Better Environment	Robert Stern EPA	Fairchild Interim Remedial Action Proposal	3
61	07/08/86	Glenn Kistner EPA Region 9	Michael Rosa Raytheon	Well Inventory & Potential Conduits Evaluation	5
62	07/23/86	Harry Seraydarian EPA Region 9	Larry Amon Diamond Images	Interim Remedial Actions Report	1
63	07/24/86	Phillip Antommaria Canonie Engineers	Raytheon	B-C Acuitard Soil Chemical Analysis Results Middlefield-Ellis-Whisman Area Mountain View, CA	60
64	07/28/86	Michael Rosa Raytheon	Glenn Kistner EPA Region 9	Draft Map showing distribution and classification of wells in MEW study Area	3
65	07/29/86	Michael Rosa Raytheon	Glenn Kistner EPA Region 9	Lost Wells	2
66	08/00/86	Canonie Engineers	Intel, Fairchild & Raytheon	Soil Sampling and Analysis Remedial Investigation Feasibility Study	25

Middlefield-Ellis-Whisman Area Superfund Site
Mountain View, California
*** Administrative Record Index ***

DOC #	DATE	FROM/ORGANIZATION	TO/ORGANIZATION	DESCRIPTION/SUBJECT	PAGES
67	08/20/86	Eugenia Zorich Harding Lawson Assoc.	Glenn Kistner EPA Region 9	Transmittal of Status Report Water Quality Summary 350 Ellis St. Mountain View, CA 8-8-86	135
68	08/25/86	Michael Rosa Raytheon	Glenn Kistner EPA Region 9	Response to July 8 EPA Letter on Potential Conduits	15
69	09/04/86	Harding Lawson Assoc.	EPA Region 9	Sampling Plan: Remedial Investigation Feasibility Study Middlefield-Ellis-Whisman Study Area Mountain View, CA	210
70	09/05/86	Canonie Environmental	Fairchild	Evaluation Report Stevens Creek Recharge: Groundwater Treatment Fairchild Mountain View Facility	25
71	09/17/86	Glenn Kistner EPA Region 9	Michael G. Rosa Raytheon	8-27-86 Technical Meeting of the Agencies and Companies	4
72	09/26/86	Glenn Kistner EPA Region 9	Michael Rosa Raytheon	Short and Long Term Aquifier Test Report	11
73	09/30/86	David K. Rogers The Mark Group	Bryan Rector Intel	Transmittal of Summary Report Soil And Groundwater Data Intel Site Mountain View, CA	200
74	10/07/86	Stevo Dobrijevic & Phillip Antommaria Canonie Engineers	Michael Rosa Raytheon	Response to EPA Comments on the Construction DW6 Multiple Monitoring Wells in a Single Borehole	25
75	10/14/86	Stevo Dobrijevic Phillip Antommaria Canonie Environmental	Thomas Berkins R.W.Q.C.B.	Additional Information Pertaining to Stevens Creek	110
76	10/20/86	Stevo Dobrijevic Canonie Environmental	C.R. Bostic Fairchild	Non-RI/FS Water Quality Data Fairchild Mountain View, CA	100
77	10/20/86	Eugenia Zorich James McClure Harding Lawson Assoc.	EPA Region 9	Interim Round Water Quality Sampling Report: Remedial Investig./Feasibility Study	160

Middlefield-Ellis-Whisman Area Superfund Site
Mountain View, California
*** Administrative Record Index ***

DOC #	DATE	FROM/ORGANIZATION	TO/ORGANIZATION	DESCRIPTION/SUBJECT	PAGES
78	10/21/86	Dennis L. Curran Canonie Environmental	Glenn Kistner EPA Region 9	Response to EPA Comments Technical Memo Parking Structure Private Well Investigations with Attachments.	20
79	10/21/86	Dennis Curran Canonie Environmental	Glenn Kistner EPA Region 9	Response to EPA Comments Technical Memo Parking Structure Private Well Investigations And Proposed Well Sealing Plan	10
80	11/21/86	Phillip Antommaria Stevo Dobrijevic Canonie Environmental	C.R. Bostic Fairchild	Technical Memo Well Inventory and Evaluation Update Middlefield-Ellis-Whisman Area Remedial Investigation	11
81	11/21/86	C.R. Bostic Fairchild	Glenn Kistner EPA Region 9	Responses to Aquifer Test Report Comments	15
82	11/24/86	Stevo Dobrijevic Canonie Environmental	C.R. Bostic Fairchild	Transmittal: Observation Wells Fairchild Mountain View, CA	100
83	11/24/86	C.R. Bostic Fairchild	Glenn Kistner EPA Region 9	Water Level Data From 1-86 Through 12/86 for the 'c' and Deeper Aquifer Wells, Remedial Investigation Feasibility Stdy	7
84	12/00/86	Camp Dresser & McKee	EPA Region 9	Final Community Relations Plan Middlefield-Ellis-Whisman Area Mountain View, CA	40
85	12/19/86	Dennis J. Curran Canonie Environmental	Glenn Kistner EPA Region 9	Transmittal Historic Water Level Data RI/FS Study MEW Area	200
86	00/00/00			(Documents numbered out of sequence)	7
87	12/24/86	Kent Kitchingman EPA Region 9	Alexis Strauss EPA Region 9	Review of Analytical Data Re: Mountain View Site utilizing Organics Analysis Attachments	65
88	12/30/86			Wells Recommended Sealed By the Companies as of 11/21/86 Mountain View MEW Site	1

Middlefield-Ellis-Whisman Area Superfund Site
Mountain View, California
*** Administrative Record Index ***

DOC #	DATE	FROM/ORGANIZATION	TO/ORGANIZATION	DESCRIPTION/SUBJECT	PAGES
89	01/02/87	Robert Williams Ecology & Environment, Inc.		Groundwater Sampling Audit MEW Study Area	40
90	01/22/87	Eugenia Zorich James McClure Harding Lawson Assoc.	EPA Region 9	Fourth Water Quality Sampling Round Report Remedial Investigation Feasibility Study Middlefield-Ellis-Whisman Area	150
91	01/22/87	Harding Lawson Assoc.	EPA	Fourth Water Quality Sampling Round Report Remedial Investigation Feasibility Study Middlefield-Ellis-Whisman Area	360
92	01/22/87	Terrence McManus Intel	Glenn Kistner EPA Region 9	Response to EPA's Comment on Determination of a Clean Well Letter of 12/24/86	18
93	01/29/87	Kent M. Kitchingman EPA Region 9	Alexis Strauss EPA Region 9	Review of Analytical Data Quality Assurance Reports 1/6 through 1/29/87 Separate Attachments	325
94	02/01/87	Canonie Environmental	EPA Region 9	Technical Memo DW6 Well Cluster Installations MEW Area Remedial Investigation Feasibility Study	150
95	02/04/87	Glenn Kistner EPA Region 9	C.R. Bostic Fairchild	Request for Round 3 Laboratory Data	1
96	02/05/87	Glenn Kistner EPA Region 9	Michael Rosa Raytheon	Interim Remedial Measures	9
97	02/06/87	C.R. Bostic Fairchild	Glenn Kistner EPA Region 9	Mountain View RI/EA/FS Schedules	2
98	02/10/87	Kent Kitchingman EPA Region 9	James Grove EPA Region 9	Review of Analytical Data, Quality Assurance Reports 2/3/87 thru 2/10/87 Separate Reports	60
99	02/13/87	E.R. Bostic Fairchild	Glenn Kistner EPA Region 9	Detailed Feasibility Study Analysis	4

Middlefield-Ellis-Whisman Area Superfund Site
Mountain View, California
*** Administrative Record Index ***

DOC #	DATE	FROM/ORGANIZATION	TO/ORGANIZATION	DESCRIPTION/SUBJECT	PAGES
100	02/23/87	Craig Von Bargen Camp Dresser & McKee Inc.	Glenn Kistner EPA Region 9	Review of Raytheon Interim Remedial Measure(s)	3
101	03/00/87	Golder Assoc.	Raytheon	Interim Remedial Measures Volume I	300
102	03/00/87	Golder Assoc.	Raytheon	Interim Remedial Measures Volume II	400
103	03/02/87	C.R. Bostic Fairchild	Glenn Kistner EPA Region 9	Transmittal Siltec Area Water Quality Data Mountain View, CA	25
104	03/05/87	C.R. Bostic Fairchild	Glenn Kistner EPA Region 9	Addendum to Technical Memo: Short and Long term Aquifer Tests Remedial Investigation Feasibility MEW Study Area	250
105	03/11/87	Glenn Kistner EPA Region 9	C.R. Bostic Fairchild	Potential Conduits Evaluation ("Decision Tree")	8
106	03/23/87	Stevo Dobrijevic Phillip Antommaria Canonie Environmental	C.R. Bostic Fairchild	Status Report Fairchild Mountain View Facility 4/1/86 through 12/31/86 Vol. I	125
107	03/23/87	Stevo Dobrijevic Phillip Antommaria Canonie Environmental	C.R. Bostic Fairchild	Status Report Fairchild Mountain View Facility 4/1/86 through 12/31/86 Vol. 2	300
108	03/30/87	Glenn Kistner EPA Region 9	C.R. Bostic Fairchild	Request for Rounds 3.5 and 4 Laboratory Data	3
109	04/00/87	Meredith Boli & Assoc.		Expanded PRP Search Mountain View Site April 1987 Volume I	300
110	04/00/87	Meredith Boli & Assoc.		Expanded PRP Search Mountain View Site April 1987	250

Middlefield-Ellis-Whisman Area Superfund Site
Mountain View, California
*** Administrative Record Index ***

DOC #	DATE	FROM/ORGANIZATION	TO/ORGANIZATION	DESCRIPTION/SUBJECT	PAGES
111	04/02/87	Glenn Kistner EPA Region 9	C.R. Bostic Fairchild	Sealing of Potential Conduits	3
112	04/08/87	Ted Smith Silicon Valley Toxics Coalition	Robert P. Stern EPA Region 9	Mountain View Cleanup	2
113	04/10/87	Joshua R. Floum Heller, Ehrman, White & McAuliffe	Glenn Kistner EPA Region 9	Your Ref. No. T-1-3	2
114	04/13/87	Michael Kent Citizens for a Better Environment	Rob Stern EPA Region 9	Interim Clean up Proposal by Raytheon Mountain View	2
115	04/13/87	C.R. Bostic Fairchild	Glenn Kistner EPA Region 9	Data Verification of Sample Rounds	2
116	04/13/87	Joshua R. Floum Heller, Ehrman, White & McAuliffe	Glenn Kistner EPA Region 9	Raytheon Slurry Wall	2
117	05/12/87	Jeff Zelikson EPA Region 9	Michael Rosa Raytheon	Interim Remedial Measures	2
118	05/19/87	John Masterman Intel	Glenn Kistner EPA Region 9	Transmittal Laboratory Data Validation Water Quality Sampling Rounds 3.5 & 4 RI/FS MEW Area	3
119	06/05/87	Phillip Fitzwater Leslee Conner Harding Lawson Assoc.	Raytheon	Status Report: Water Quality and Water Level Data Summary	250
120	06/12/87	John Masterman Intel	Glenn Kistner EPA Region 9	Transmittal Selected Organic & Inorganic Chemicals RI/FS MEW Area	200
121	06/26/87	Golder Assoc.		Status Report Soil Boring and Monitoring Well Program	250

Middlefield-Ellis-Whisman Area Superfund Site
Mountain View, California
*** Administrative Record Index ***

DOC #	DATE	FROM/ORGANIZATION	TO/ORGANIZATION	DESCRIPTION/SUBJECT	PAGES
122	06/29/87	Julie Tumross Phillip Fitzwater Harding Lawson Assoc.	Intel, Raytheon & Fairchild	Mountain View Well 18 MV18 Aquifer Test MEW Study Area Mountain View, CA Vol.I	30
123	06/29/87	Harding Lawson Assoc.	Intel, Raytheon & Fairchild	Mountain View Well 18 (MV18) Aquifer Test (MEW) Study Area Mountain View, CA Vol. II	400
124	06/29/87	Anthony Burgess Golder Assoc.	Glenn Kistner EPA Region 9	Deep Soil Investigation 365 East Middlefiled Road Mountain View, CA	20
125	06/30/87	James M. Oliver Phillip Fitzwater Harding Lawson Assoc.	Glenn Kistner EPA Region 9	Intel Soil Boring Data Mountain View, CA	200
126	07/00/87	Middlefield-Ellis-Whisman Companies	EPA Region 9	RI Vol. 1-3 & 9 Docs & Vol. 2-8 Revised Materials in Record (Vol. 4-8 Avail. at Mt. View Public Lib. & EPA Region 9.)	2102
127	07/21/87	Glenn Kistner EPA Region 9	John Masterman Intel	Additional Deep Monitoring Wells	2
128	07/21/87	Phillip Fitzwater Harding Lawson Assoc.	Michael Rosa Raytheon	Transmittal of Final Phase III Subsurface Investigation Report	225
129	07/24/87	John Masterman Intel	Glenn Kistner EPA Region 9	Intel Response to EPA 6/11/87 comments on Remedial Investigation	41
130	08/04/87	John Masterman Intel	Glenn Kistner EPA Region 9	Additional Deep Monitoring Wells	2
131	08/04/87	Jeff Zelikson EPA Region 9	Dave Deardorf Raytheon	Vapor Extraction Work	2
132	08/11/87	Kent Kitchingman EPA Region 9	Amy Zimpher EPA Region 9	Review of Analytical Data	2

Middlefield-Ellis-Whisman Area Superfund Site
Mountain View, California
*** Administrative Record Index ***

DOC #	DATE	FROM/ORGANIZATION	TO/ORGANIZATION	DESCRIPTION/SUBJECT	PAGES
133	00/00/00			Organic Chemical Analysis Methods	2

Middlefield-Ellis-Whisman Area Superfund Site
Mountain View, California
ADMINISTRATIVE RECORD INDEX
Supplement No. 1

DOC. #	DATE	FROM/ORGANIZATION	TO/ORGANIZATION	DESCRIPTION/SUBJECT	PAGES
1	11/14/86	James M. Oliver James G. McClure Harding Lawson Associates	EPA Region 9	Technical Memo: Francia Well Time Series Test RI/FS	85
2	03/02/87	Stevo Dobrijevic Canonie Environmental	C.R. Bostic Fairchild Semiconductor Corp.	Siltec Area Water Quality Data	37
3	11/01/87	Canonie		On-Site Concentrations of Metals in Ground Water	26
4	12/04/87	Harding Lawson	EPA	Occurrence of Antimony, Arsenic, Cadmium and Lead in Publicly Sampled Water Supply Wells and Water Supply Systems, Santa Clara County, CA. RI/FS	187
5	01/04/88	ICF - Clement	Camp Dresser & McKee, Inc.	Endangerment Assessment (Draft)	228
6	01/08/88	C.R. Bostic Fairchild Corp.	Glenn R. Kistner EPA Region 9	Ltr: Administrative Record for ROD	1
7	01/27/88	Keith A. Takata EPA Region 9	C.R. Bostic Fairchild	Ltr: Use the Upper Aquifers (A & B) in Mt. View	3
8	02/00/88	Canonie	EPA Region 9	Report: Rezendes Well 23C"2 Pumping Test Fairchild Mt. View Facility	127
9	02/04/88	Glenn R. Kistner EPA Region 9	C.R. Bostic Fairchild	Ltr re: Administrative Record for the Site	1
10	02/08/88	James Jasperse David P. Hochmuth Harding Lawson	Raytheon	Soil Vapor Extraction Study	260
11	03/03/88	Dennis L. Curren Canonie	Glenn R. Kistner EPA Region 9	Ltr: Monitoring Well Locations and Screen Intervals, Additional "B1" Wells North of Bayshore	4
12	03/10/88	C.R. Bostic Fairchild	Glenn R. Kistner EPA Region 9	Report: Potential Conduits Study and Remediation Boundary	71

Middlefield-Ellis-Whisman Area Superfund Site
Mountain View, California
ADMINISTRATIVE RECORD INDEX
Supplement No. 1

DOC. #	DATE	FROM/ORGANIZATION	TO/ORGANIZATION	DESCRIPTION/SUBJECT	PAGES
13	03/11/88	Intel, Fairchild & Raytheon	EPA Region 9	Selection of Metals of Concern	19
14	03/11/88	Intel, Fairchild & Raytheon	EPA Region 9	Comments on the Endangerment Assessment	7
15	03/24/88	Eric G. Lappala Harding Lawson	Intel, Fairchild & Raytheon	Ltr: CDM Modeling for the RI/FS	7
16	04/04/88	Eric G. Lappala Harding Lawson	Intel, Fairchild & Raytheon	Ltr: 3/3/88 Meeting with CDM On Modeling For the RI/FS	3
17	04/05/88	Glenn R. Kistner EPA Region 9	C.R. Bostic Fairchild	Ltr: EPA Review of the "Potential Conduits Study and Remediation Boundary Report", 3/88	7
18	04/05/88	C.R. Bostic Fairchild	Glenn R. Kistner EPA Region 9	Ltr: Computer Modeling for the site	3
19	04/06/88	James G. McClure Harding Lawson	C.R. Bostic Fairchild	Ltr: Summary of Activities for 3/88	2
20	04/14/88	Canonie	EPA Region 9	Water Quality Test Results	18
21	04/15/88	Dennis L. Curran Canonie	C. Robert Bostic	Ltr: Monthly Status Report 3/88	1
22	04/25/88	Glenn R. Kistner EPA Region 9	George Gullage Raytheon	Ltr: Data Validation	1
23	04/27/88	John Mastermann Intel	Glenn R. Kistner EPA Region 9	Ltr: Response to Specific RI Report Comments by EPA	4
24	05/09/88	C.R. Bostic Fairchild	Roger B. James Regional Water Quality Control Board	Semiannual Status Report: Fairchild 7/1/87 - 12/31/87	180
25	05/18/88	Glenn R. Kistner EPA Region 9	George Gullage Raytheon	Ltr: Response To Companies' Letter On Groundwater Modeling	3
26	05/20/88	Chein Ping Kao CDHS	Helen McKinley EPA Region 9	Ltr: State ARARS for the site	5

Middlefield-Ellis-Whisman Area Superfund Site
Mountain View, California
ADMINISTRATIVE RECORD INDEX
Supplement No. 1

DOC. #	DATE	FROM/ORGANIZATION	TO/ORGANIZATION	DESCRIPTION/SUBJECT	PAGES
27	06/14/88	Eric G. Lappala Harding Lawson	Intel, Fairchild & Raytheon	Ltr: Requirements for Additional Information to Adequately Review Ground-Water Flow and Transport Modeling Performed by CDM	4
28	06/15/88	George A. Gullage Raytheon	Glenn R. Kistner EPA Region 9	Ltr: RI Report - 6/15/88 Revision RI/FS	3
29	06/24/88	Dennis L. Curran Canonie	C.R. Bostic Fairchild	Ltr: Information Needed on CDM Silva Well Model	1
30	07/05/88	C.R. Bostic Fairchild	Glenn R. Kistner EPA Region 9	Ltr: CDM Modeling Reports	2
31	07/11/88	George R. Gullage Raytheon	Glenn R. Kistner EPA Region 9	Ltr: Preliminary Responses to EPA Comments on FS	13
32	08/08/88	Phil Bobel EPA Region 9	George Gullage Raytheon	Ltr: Approval Of 6/15/88 RI Report	2
33	08/12/88	Glenn R. Kistner EPA Region 9	George Gullage Raytheon	Ltr: Camp Dresser and McKee's Groundwater Modeling	3
34	09/02/88	ICF - Clement	Camp Dresser & McKee	Endangerment Assessment	215
35	10/12/88	C. R. Bostic Fairchild	Steven R. Ritchie Regional Water Quality Control Board	Semiannual Status Report: Fairchild 1/88 - 6/88	123
36	10/21/88	Camp Dresser & McKee	EPA	Evaluation of Potential Conduits in the Local Study Area	22
37	11/01/88	Glenn R. Kistner		Guidance Documents For Administrative Record	2
38	11/01/88	EPA Region 9		Fact Sheet: EPA Announces Proposed Plan to Clean Up M-E-W Superfund Sites	10
39	11/01/88	Canonie	Fairchild, Intel & Raytheon	Draft Rpt: Feasibility Study, M-E-W Area, Mt. View, CA	1100

Middlefield-Ellis-Whisman Area Superfund Site
Mountain View, California
ADMINISTRATIVE RECORD INDEX
Supplement No. 1

DOC. #	DATE	FROM/ORGANIZATION	TO/ORGANIZATION	DESCRIPTION/SUBJECT	PAGES
40	11/23/88	Phil Bobel EPA Region 9	George Gullage Raytheon	Ltr: Approval of Feasibility Study Report for M-E-W Area, Mt. View, CA, with Caveats	2

Middlefield-Ellis-Whisman Superfund Site
Mountain View, California
ADMINISTRATIVE RECORD INDEX
Supplement No. 2

DATE	DOC. #	AUTHOR	RECIPIENT	DESCRIPTION/SUBJECT	PAGES
	0.00			Guidance Documents for Administrative Record	1
02/01/86	1.00	EPA-9 Remedial Response Program		National Priorities List (NPL) Site Raytheon Corp., Mtn. View, CA	28
02/01/86	2.00	EPA-9 Remedial Response Program		National Priorities List (NPL) Site, Intel Corp., Mtn. View, CA	24
02/01/86	3.00	EPA-9 Remedial Response Program		National Priorities List (NPL) Site Fairchild Camera & Instrument Corp., Mtn. View, CA	10
05/01/86	4.00	EPA-9		Environmental News: New Contamination Found in Mtn. View's Deep Aquifer. w/map.	2
07/07/86	5.00	Michael Kent Research Assoc. Citizens for a Better Environment	Robert Stern EPA Community Relations Coordinator EPA-9	Comments on Fairchild Semiconductor Interim Remedial Action Proposal.	3
07/21/86	6.00	Chet Lauchner Director - Facilities Planning, Int'l Ops., Siltec Corp	Glenn Kistner EPA-9	Comments on "Interim Remedial Actions, Farichild Semiconductor Corporation, Mtn. View Facility " Draft Report by Canonie 6/86	3
07/28/86	7.00	Ted Smith Executive Director Silicon Valley Toxics Coalition	Robert Stern EPA Community Relations Coordinator EPA-9	Comments on Fairchild Semiconductor Interim Cleanup	2
08/22/86	8.00	Harry Seraydarian EPA Region 9	Chet Lauchner Siltec	Ltr: Response to 7/21 & 08/07/86 Ltr. about Fairchild Slurry Wall	2
10/01/86	8.10	CDM		Soil Sampling & Tank Inventory Data Compilation.	153
01/09/88	8.90	Dianne McKenna Santa Clara, Board of Supervisor	Glenn Kistner EPA Region 9	Ltr: Comment on the Clean-up Plan	1

Middlefield-Ellis-Whisman Superfund Site
Mountain View, California
ADMINISTRATIVE RECORD INDEX
Supplement No. 2

DATE	DOC. #	AUTHOR	RECIPIENT	DESCRIPTION/SUBJECT	PAGES
02/04/88	9.00	C. Robert Bostic	Glenn R. Kistner EPA Region 9	Interim Decision Process Potential Conduits Evaluation Rpt with cover letter	7
06/01/88	10.00	Lorance D. Wilson Santa Clara Valley Water District	Glenn R. Kistner EPA Region 9	Ltr: Closure of Franzia & Silva Wells	1
06/15/88	11.00	Glenn Kistner RPM EPA-9	George Gullage Proj. Coordinator Ratheon Co.	General Comments on Draft FS for MEW Study Area, w/TL to George Gullage 6/15/88	6
06/22/88	12.00	Roger B James Executive Officer CRWQCB-SF	Philip Bobel EPA-9	Comments on the MEW Feasibility Study by Canonie 5/3/88	4
06/24/88	13.00	Glenn Kistner RPM EPA-9	George Gullage Proj. Coordinator, MEW Study Area, Raytheon Company	EPA Comments On The MEW Feasibility Study W/TL to George Gullage 7/24/88	10
06/28/88	14.00	NEC Electronics, Inc.		Technical Review Comments Remedial Investigation Report RI/FS MEW Area, Mtn. View CA w/LTR to Glenn Kistner 6/28/88. w/charts & maps.	21
09/00/88	15.00	Geraghty & Miller		Intel RI/EA/FS Vol. 1-4 with cover letter	2000
09/14/88	16.00	George A. Gullage Raytheon	Glenn Kistner EPA Region 9	Ltr: Comments on Final Draft Endangerment Assessment	2
09/15/88	17.00	Rick Robison Reg. 2 - Toxic Substances Control Division CADOHS	Glenn Kistner RPM EPA-9	CADOHS Comments on MEW Draft FS Report 8/16/88 Revision	2
10/00/88	18.00	Canonie		Rpt: Sampling Plan Addendum No. 2 Walker Drive Investigation RI/FS	9
10/13/88	19.00	George A. Gullage Raytheon	Mark Harris City of Mt. View	Ltr: A summary of MV18 "B" and "Deep" Aquifer Monitoring Activities with a Distribution List	3

Middlefield-Ellis-Whisman Superfund Site
Mountain View, California
ADMINISTRATIVE RECORD INDEX
Supplement No. 2

DATE	DOC. #	AUTHOR	RECIPIENT	DESCRIPTION/SUBJECT	PAGES
10/13/88	20.00	Glenn Kistner EPA Region 9	George A. Gullage Raytheon	Cover Ltr of Sampling Plan Addendum No. 2 with a Distribution List	2
10/19/88	21.00	Steve Morse CRWQCB	Glenn Kistner EPA Region 9	Ltr: Draft FS, 10/07/88 Revision	2
10/21/88	21.10	CDM		Evaluation of Potential Conduits in the Local Study Area, MEW (Update of 5/9/88 Document).	34
10/23/88	22.00	Terrence J. McManus Intel	Philip Bobel EPA Region 9	Ltr: Request to Comment on RI/EA/FS & Sign Separate ROD	1
10/25/88	23.00	Bryan M. Rector	Glenn Kistner EPA Region 9	Intel Mt. View Ground Water Data Base Rpt. From 10/86 - 7/88 attached with Lab Analytical Rpts, Cover letter, Airbill, Transmittal Letter	850
11/00/88	24.00	EPA	Public	Fact Sheet	1
11/10/88	25.00	Glenn R. Kistner EPA Region 9	George Gullage Raytheon	Ltr: Approval of Sampling Plan Addendum No. 2 Walker Drive Investigation RI/FS But Not of Objective of the Plan	2
11/21/88	26.00	C. Robert Bostic Schlumberger	Philip Bobel EPA Region 9	Ltr: Intel's RI/EA/FS for Lot #3 & Concern about Separate ROD	2
11/23/88	27.00	Phil Bobel EPA Region 9	George Gullage Raytheon	Ltr: Approval of Revised FS under 5 Caveats	2
11/25/88	28.00	Glenn Kistner EPA Region 9	Glenn Stober CA Office of Planning & Research	Ltr: Cover Ltr of FS for Comment	2
12/01/88	29.00	George Gullage Raytheon	Glenn Kistner EPA Region 9	Ltr: Confirmation of the Sampling Plan Addendum No. 2 Walker Drive Investigation, RI/FS, with a Distribution List	2
12/02/88	30.00	Glenn R. Kistner EPA Region 9	George Gullage Raytheon	Ltr: Reuse of Groundwater	1

Middlefield-Ellis-Whisman Superfund Site
Mountain View, California
ADMINISTRATIVE RECORD INDEX
Supplement No. 2

DATE	DOC. #	AUTHOR	RECIPIENT	DESCRIPTION/SUBJECT	PAGES
12/09/88	31.00	Gordon C. Atkinson Cooley Godward Castro Huddleson & Tatum	David McFadden EPA Region 9	Ltr: Intel's RI/EA/FS Lot #3 & Separate ROD	2
12/14/88	32.00	Susan Nisbet Crangle & Assn.		Community Meeting	81
12/14/88	33.00	Laura T. Tarquinio League of Women Voters	Glenn Kistner EPA Region 9	Ltr: Comment on the Proposed Cleanup Plan	2
12/14/88	34.00	Michele B. Corash Morrison & Foerster	Amy Zimpfer EPA Region 9	Ltr: Request Extension of Comment Period on Draft FS	4
12/21/88	35.00			Water Elevation Rpt.	52
01/04/89	36.00	Gordon F. Snow The Resources Agency of CA	Glenn Kistner EPA Region 9	Ltr: State has no comments on FS	1
01/04/89	37.00	George A. Gullage Raytheon	Glenn R. Kistner EPA Region 9	Submittal of Technical Report on Extracted Groundwater Use	28
01/09/89	38.00	Margaret R. Dollbaum Folger & Levin	Glenn Kistner EPA Region 9	Ltr: Litronix Needs More Time to Review Draft FS	1
01/10/89	40.00	George A. Gullage Raytheon	Glenn R. Kistner EPA Region 9	Ltr: Propose Interim Remedial Actions of OU-3 Cluster and Packing of Silva Well	2
01/17/89	41.00	Phil Bobel EPA Region 9	Terrence J. McManus Intel	Ltr: Comments on RI/FS/EA for Intel Lot #3	2
01/17/89	42.00	Phil Bobel EPA Region 9	George Gullage Raytheon	Ltr: Authorization to work on RA at the OU-3 Well Cluster & Pumping and Treatment of Groundwater.	1
01/18/89	43.00	Sandy Olliges Ames Research Center	Glenn Kistner EPA Region 9	Ltr: On Behalf of NASA-Ames to Comment on FS	2
01/20/89	44.00	David C. Keehn Air Products	Glenn Kistner EPA Region 9	Ltr: Comments on Draft FS and Propose Selection of Remedy for the Site	3

Middlefield-Ellis-Whisman Superfund Site
Mountain View, California
ADMINISTRATIVE RECORD INDEX
Supplement No. 2

DATE	DOC. #	AUTHOR	RECIPIENT	DESCRIPTION/SUBJECT	PAGES
01/20/89	45.00	Stanely T. Meyers Siltec	Glenn Kistner EPA Region 9	Ltr: Comment on RI (06/88) & Draft FS (11/88) and Propose Cleanup Remedy for the Site	17
01/20/89	46.00	Jeffrey J. Lederman Ware & Freiederich	Glenn Kistner EPA Region 9	Ltr: Comments of Renault & Handley Group on Draft FS	3
01/23/89	47.00	Thomas E. Nookano Crosby, Heafey, Roach & May	Glenn Kistner EPA Region 9	Ltr: Comment on FS of Cleanup Alternative on Behalf of Sobratoto	7
01/23/89	48.00	Steven R. Ritchie CRWQCB-SF	Glenn Kistner EPA Region 9	Ltr: Comment on Proposed Cleanup Plan	2
01/23/89	49.00	Robert C. Thompson Graham & James	Glenn Kistner EPA Region 9	Ltr: Comments of Tri-Data on Draft FS	3
01/23/89	50.00	Jonathan S. Leo Heller, Ehrman, White & McAuliffe	Glenn Kistner EPA Region 9	Ltr: Comments of NEC Electronics on Draft FS Attached with Technical Review Comments	13
01/23/89	51.00	Carie Goodman McKinney McCutchen, Doyle, Brown & Enersen	Glenn Kistner EPA Region 9	Ltr: Request RI/FS/EA (10/23/88) to be Included in A.R.	1
01/23/89	52.00	Robert S. Rosborough Pillsbury, Madison & Sutro	Glenn Kistner EPA Region 9	Comments of Spectra-Physics on Draft FS	2
01/23/89	53.00	Bart D. Denum Tracor	Glenn Kistner EPA Region 9	Ltr: Comment on Draft FS And Object Any Responsibility to Pollute the Site	3
01/23/89	54.00	Louise T. Lew U S Dept. of Navy	Glenn Kistner EPA Region 9	Comments on Draft FS Attached with Cover Ltr.	8
01/24/89	55.00	Roger B. James Santa Clara Valley Water District	Glenn Kistner EPA Region 9	Ltr: Comment on Proposed Plan Attached with Recommended Position of Santa Clara Valley Water District on IBM Remedial Action Plan	3
01/24/89	56.00	Versar	Tracor X-Ray Inc.	Rpt: Investigation of Soil Contamination at 345 Middlefield Rd. Attached with Letter to Glenn Kistner.	82

Middlefield-Ellis-Whisman Superfund Site
Mountain View, California
ADMINISTRATIVE RECORD INDEX
Supplement No. 2

DATE	DOC. #	AUTHOR	RECIPIENT	DESCRIPTION/SUBJECT	PAGES
01/30/89	57.00	Glenn R. Kistner EPA Region 9	Mark Harris City of Mt. View	Ltr: Permission to Seal the City Park and Recreation Well	1
01/31/89	58.00	George A. Gullage Raytheon	Glenn Kistner EPA Region 9	Groundwater Level Monitoring-C Aquifer and Water Quality Result - Silva Well Cluster Attached Cover Letter	19
02/07/89	59.00	Phil Bobel EPA Region 9	George Gullage Raytheon	Ltr: Notice of Sealing Wells and Liability for the Cost	1
02/22/89	60.00	Philip Bobel Chief-Remedial Br. Superfund Prog. EPA-9	Terry McManus Mgr-Corporate Environmental Affairs, Intel Corp.	Intel Comments on MEW FS.	2
03/02/89	61.00	George Gullage Proj. Coordinator Raytheon Co.	Distribution	Public Comments on MEW Area FS REport w/TL to Glenn Kistner 3/2/89	7
03/06/89	62.00	EPA-9		Environmental News: EPA Plans to seal two Near-by Wells, (2)	1
03/15/89	63.00	George Gullage Proj. Coordinator Raytheon Co.	Glenn Kistner EPA-9	Comments RE: Philp bobel's letter of 2/7/89	2
03/21/89	64.00	George Gullage Proj. Coordinator Raytheon Co.	Distribution	Public Comments on the MEW Area FS Report w/TL to Glenn Kistner 3/21/89.	4
04/12/89	65.00	Canonie	George Gullage Proj. Coordinator Raytheon Co.	Rpt: Walker Drive Investigation RI/FS MEW Study Area Mtn. View, CA	46

Middlefield-Ellis-Whisman Superfund Site
Mountain View, California
ADMINISTRATIVE RECORD INDEX
Suppelement No. 3

DATE	DOC.#	AUTHOR	RECIPIENT	DESCRIPTION/SUBJECT	PAGES
	0			Toxic Air Pollutant Source Assessment Manual for California Air Pollution Control Districts ("CAPCOA guidance") August 1987.	50
04/25/89	1	Bay Area Air Quality Management District	interested parties	Workshop Notice: Proposed Regulation 8, Rule 46. Air Stripping & Soil Vapor Extraction Operation.	3
	0				
*** Total ***	1				

APPENDIX C

APPENDIX C

1. Workplan for Silva Well Area

- Install pump in existing well 103 B-1
- Install pump in existing well 8C
- Drill soil boring to 500 feet to determine stratigraphy in Silva Well Area
- Complete wells at depths equivalent to Silva Well perforated zones (i.e., from 285 to 300' and 400 to 420') to confirm vertical definition of chemical concentrations
- Complete an additional B1 well to provide water level confirmation on zone of influence of well 103 B-1 and to pump in the event 103 B-1 extraction capacity is insufficient
- Operate system and monitor system performance
- Pump extracted water to City of Mountain View sanitary system

2. Contingency Items

- If 103 B-1 does not provide sufficient extraction capacity, pump from new B-1 well
- If deepest well (to 420') shows evidence of chemical concentrations, install deeper well (greater than 450')
- If deeper wells show evidence of chemicals, install additional pumps and initiate pumping
- If effluent cannot be discharged to Mountain View sanitary system, install and operate piping system to convey water to a treatment plant (e.g., stripping tower at Building 19)

3. Silva Well Workplan Implementation

Within 30 days of the entry of this Consent Decree, Defendants shall submit to EPA a proposed schedule for implementation of the Silva Well Workplan, including a schedule for

submission to the agency of proposals for boring and well locations.

4. Limits on Obligation

Defendants shall not be obligated under this Consent Decree either (i) to operate and maintain the systems described in parts 1 and 2 above for more than three years from the date of commencement of groundwater extraction, or (ii) to continue to operate and maintain the systems described in parts 1 and 2 once the Defendants' response costs related to performance of the Silva Well Workplan have exceeded $1 million. Defendants shall provide written notice to EPA not less than 90 days before any scheduled cessation of work related to performance of the Silva Well Workplan. In the event that EPA determines that, following the termination of Defendants' obligations pursuant to this subparagraph 4, the Silva Well Area has not been fully remediated in accordance with the ROD, EPA shall not have authority to require Defendants to perform further work in the Silva Well Area pursuant to this Decree. EPA reserves its rights, however, to take any other action available to EPA outside this Decree, including the right to issue an enforcement order pursuant to Section 106, to undertake any response action pursuant to Section 104 or Section 106, or to recover costs pursuant to Section 107 of CERCLA.

APPENDIX D

Attachment 4
Navy Actions in MEW[1] Study Area

(The deadlines in this Attachment 4 are enforceable and although Target Dates are only for the purpose of projecting an overall schedule and are not enforceable, all Parties will endeavor to complete all tasks as quickly as practical.)

Action	Deadline	Target Dates[2]
TANK & SUMP REMOVALS [3]		
Field work for Removals at Site 19 (Tanks 2,14, 43, 53); Site 14 (Tank 67);Site 18 (Sump 66)[4]	Initiated 7 May 1990	-----
EE/CA for Additional Removals & Monitoring Well Installations at Site 9 (Tanks 47, 48, 49, 50[5], 56A-D); Site 10 (Tanks 51, 52); Site 16 (Sump 60); Site 17 (Sump 61)[6]	1 August 1990 (Submit EE/CA[7] to agencies and public for 30 day review and comment [8])	-----
Action Memorandum for Additional Removals and Monitoring Well Installation at Site 9, Site 10, Site 16 & Site 17	Submit Action Memorandum 30 days after the end of the public comment period and agency review	1 October 1990
Additional Removals and Monitoring Well Installation at Site 9, Site 10, Site 16 & Site 17	Initiate field work 60 days after receipt of comments from both the agencies and the public	1 November 1990
Summary Report for Tank and Sump Removals[9]	6 months after initiation of field work for additional tank/sump removal or 30 days after the last tank/sump is removed, whichever is sooner	1 May 1991

[1] Middlefield, Ellis and Whisman.

[2] Estimated dates are calculated only for the purpose of projecting an overall schedule and are not enforceable. Actual dates of finalization of documents may vary depending on actual document review times of EPA, DHS, and RWQCB, and actual response times of the Navy.

[3] Documents associated with Tank and Sump Removals are considered Secondary Documents under this Agreement. The purpose of this task is to locate and remove leaking or abandoned underground storage tanks within the MEW Study Area and address possible source loading to groundw via soil.

[4] Existence of Tanks 47,48,49,& 50 have not as yet been confirmed.

[5] Removal Action Plan for Tanks 2, 14, 43, 53, 67, 68, and Sump 66 was submitted to the agencies on 17 August 1988 which satisfies the requirements of an Engineering Evaluation and Cost Analysis (EE/CA). Sufficient monitoring well coverage exists at these sites, however if additional wells are required based on new soil and groundwater analysis they will be installed under the subsequent removal contract.

[6] Monitoring wells shall be installed as necessary based upon soil and groundwater analysis following tank removal should sufficient coverage not already exist.

[7] Engineering Evaluation/Cost Analysis.

[8] The EE/CA will be submitted to the signatories for review and comment concurrent with the public comment period required for non-time critical removals. Concurrent reviews will shorten the total review time thereby expediting the total schedule for removal of the tanks and sumps.

[9] The summary report will set out the findings developed in the course of implementing this action. Groundwater source control, if any, will be addressed in the Phase II Removals at Sites 8 & 9. Final cleanup measures will be determined in the Record of Decision for the Phase I & II RI/FS.

Attachment 5
Additional Navy Actions in MEW Study Area

(The deadlines in this Attachment 5 are enforceable and although Target Dates are only for the purpose of projecting an overall schedule and are not enforceable, all Parties will endeavor to complete all tasks as quickly as practical.)

Action	Deadline	Target Dates[2]
SITE INVESTIGATIONS FOR INFERRED SOURCES IS8 & IS9[1]		
Contract Award for Site Investigations at Inferred Sources IS8 & IS9	Awarded 7 March 1990	-----
Work Plans for Inferred Sources IS8 & IS9[2]	15 July 1990	-----
Site Investigation Report for Inferred Sources IS8 & IS9[3]	90 days following completion of field work	1 March 1991
PHASE I REMOVALS AT SITES 12 & SITE 14 (TANKS 19 & 20)[4]		
Draft Action Memorandum for Phase I Removal at Site 12 & Site 14 (Tanks 19 & 20)	1 July 1990[17]	-----
Final Action Memorandum for Phase I Removal at Site 12 & Site 14	Per Consultation Section[5]	1 September 1990
35% Design Work Plan for Phase I Removal at Site 12 & Site 14[6]	Submit 35% Design 90 days following submission of Draft Action Memorandum	1 November 1990
100% Design Work Plan for Phase I Removal at Site 12 &Site 14[7]	Submit 100% Design 120 days after receipt of comments from agencies on 35% Design)	1 March 1991
Final Design Removal Work Plan for Phase I Removal at Site 12 & Site 14[8]	Per Consultation Section. Final Design submitted 45 days after receipt of comments from agencies on 100% Design.	15 May 1991
Construction Start for Phase I Removal at Site 12 & Site 14	60 days after final design approval[9]	15 July 1991
Start-Up Date for Phase I Removal at Site 12 & Site 14	5 months after construction start date	15 December 1991

PHASE II REMOVALS AT SITES 8 & 9 [10]

Phase II Removal Contract Award at Sites 8 & 9[11]	90 days after initiation of Phase II Groundwater Sampling	Complete
Draft Action Memorandum for Phase II Removal at Sites 8 & 9[12]	1 March 1991[17]	-----
Final Action Memorandum for Phase II Removal at Sites 8 & 9	Per Consultation Section	1 May 1991
35% Design Work Plan for Phase II Removal at Sites 8 &9[13]	Submit 35% Design 90 days following submission of Draft Action Memorandum	1 July 1991
100% Design Work Plan for Phase II Removal at Sites 8 & 9[14]	Submit 100% Design 120 days after receipt of comments from agencies on 35% Design	1 December 1991
Final Design Removal Work Plan for Phase II Removal at Sites 8 & 9[15]	Per Consultation Section Final design submitted 45 days after receipt of comments from agencies on 100% Design	15 February 1992
Construction Start for Phase II Removal at Sites 8 & 9	60 days after final design approval[9]	15 April 1992
Start-Up Date[16] for Phase II Removal at Sites 8 & 9	5 months after construction start date	15 September 1992

[1] Inferred Sources IS8 & IS9 are those sources identified in the MEW RI/FS for which groundwater data indicates contamination levels in excess of plume "background" levels, but for which no known source can be identified. IS 8 and IS 9 are not associated with sites 8 and 9 of the NAS Moffett Field RI/FS.

[2] The work plans for the site investigation are considered Secondary Documents under this agreement.

[3] The site investigation report shall be considered a Primary Document under this Agreement. Further work, if necessary, shall be addressed within the context of the on-going RI/FS at NAS Moffett Field.

[4] Tanks 19 and 20 have already been removed. Documents under Phase I Removals at Sites 12 & 14 are considered Primary Documents for the purposes of this attachment (except as noted otherwise). Review times have been agreed upon by the signatories to this Agreement as thirty (30) days for Draft Primary Documents. A Draft Final Primary Document becomes a Final

Primary Document 30 days after the receipt of a Draft Final Primary Document by the EPA, DHS and RWQCB, if Section 10, Resolution of Disputes, is not invoked.

[5] See Section 9, Consultation with EPA, DHS and RWQCB, of the Agreement for discussion of review time periods, response time periods, and consultation procedures. See footnote [4] above for agency review times.

[6] The 35% Design Work Plan for Phase I Removals at Sites 12 & 14 is a Secondary Document under this Agreement. Comments received on this plan will be addressed in the 100% Design Work Plan for Phase II Removals at Sites 12 & 14.

[7] The 100% Design Work Plan for Phase I Removals at Sites 12 & 14 is a Draft Primary Document. Comments received on the 35% and 100% will be addressed in the Final Design Work Plan for Phase I Removals at Sites 12 & 14.

[8] The Final Design Work Plan for Phase I Removals at Sites 12 & 14 is a Draft Final Primary Document. A Draft Final Primary Document becomes a Final Primary Document 30 days after the receipt of the Draft Final by EPA, DHS and RWQCB if Section 10, Resolution of Disputes, is not invoked.

[9] Initiation of specifications for the source control will begin following incorporation of 100% design comments.

[10] Documents under Phase II Removals at Sites 8 & 9 are considered Primary Documents for the purposes of this attachment (except as noted otherwise). Review times have been agreed upon by the signatories to this Agreement as thirty (30) days for Draft Primary Documents. A Draft Final Primary Document becomes a Final Primary Document 30 days after the receipt of a Draft Final Primary Document by the EPA, DHS and RWQCB, if Section 10, Resolution of Disputes, is not invoked.

[11] Site 9 shall mean the area west of Hangar 1 at Moffett Field which lies directly over the MEW plume depicted in the July 1989 MEW Study Area Record of Decision. The tanks and sumps identified in the Tank and Sump Removal Action (2, 14, 43, 47, 48, 49, 50, 51, 52, 53, 56A-D, 60, 61, 66, 67) of this attachment are located within this Site 9 area. Any groundwater source control, if required, from the Tank and Sump Removal Action shall be addressed in this action.

[12] If after three rounds of Phase II sampling it can be determined that a Removal can be established, an Action Memorandum will be generated. However, if three rounds of sampling are insufficient, an additional round of sampling and analysis will be taken and a Letter of Notification shall be submitted as required to the Parties amending the Action Memorandum.

[13] The 35% Design Work Plan for Phase II Removal at Sites 8 & 9 is a Secondary Document under this Agreement. Comments received on this plan will be addressed in the 100% Design Work Plan for Phase II Removal at Sites 8 & 9.

[14] The 100% Design Work Plan for Phase II Removal at Sites 8 & 9 is a Draft Primary Document. Comments received on the 35% and 100% will be addressed in the Final Design Work Plan for Phase II Removal at Sites 8 & 9.

[15] The Final Design Work Plan for Phase II Removal at Sites 8 & 9 is a Draft Final Primary Document. A Draft Final Primary Document becomes a Final Primary Document 30 days after the receipt of the Draft Final by EPA, DHS and RWQCB if Section 10, Resolution of Disputes, is not invoked.

[16] Actual clean up operations begin.

[17] Parties recognize that this date may be extended pursuant to Section 27.

APPENDIX E

TABLE 2-3

FREQUENCY OF OCCURRENCE OF VOLATILE ORGANIC CHEMICALS
IN GROUNDWATER IN THE LSA/RSA

Chemical	Frequency of Detection	Percentage
1,1-Dichloroethane	98/384	25.5
1,2-Dichloroethane	9/384	2.3
1,1-Dichloroethylene	153/384	39.8
1,1,2,2-Tetrachloroethane	1/384	0.3
2,2,3,3-Tetramethyl butane	2/384	0.5
1,1,1-Trichloroethane	184/384	47.9
1,1,2-Trichloroethane	5/384	1.3
Acetone	5/384	1.3
Benzene	7/384	1.8
Bromodichloromethane	2/384	0.5
Chlorobenzene	2/384	0.5
Chloroethane	1/384	0.3
Chloroform	71/384	18.5
Dibromochloroethane	1/384	0.3
Dichlorodifluoromethane	1/384	0.3
Dichlorotrifluoroethane	11/384	2.9
Ethylbenzene	8/384	2.1
Freon-113	181/384	47.1
Methylene chloride	13/384	3.4
Tetrachloroethylene	64/384	16.7
Toluene	14/384	3.6
Total 1,2-Dichloroethylene	200/384	52.1
Total Dichlorobenzenes	13/384	3.4
Trichloroethylene	278/384	72.4
Trichlorofluoromethane	4/384	1.0
Vinyl chloride	17/384	4.4
Xylene(s)	12/384	3.1

NOTE: Fourth Round Sampling Data (October-November 1986)

TABLE 2-4

FREQUENCY OF OCCURRENCE OF ACID AND BASE/NEUTRAL CHEMICALS
IN GROUNDWATER IN THE LSA/RSA

Chemical	Frequency of Detection	Percentage
Phenol	21/273	7.7
Bis(2-ethylhexyl) phthalate	13/273	4.8
Pentachlorophenol	6/273	2.2
4-Chloro-3-methylphenol	3/273	1.1
2-Nitrophenol	1/273	0.4
Phenanthrene	1/273	0.4
Pyrene	1/273	0.4
Fluoranthene	1/273	0.4
2,4,6-Trichlorophenol	1/273	0.4
Hexahydroazepinone	23/273	8.4
Isopropyl alcohol	4/273	1.5
Methyldodecoate	2/273	0.7
Methylpyrrolidionoe	2/273	0.7
N-Nitrosodimethylamine	1/273	0.4
1,2,4-Trichlorobenzene	9/273	3.3
Naphthalene	1/273	0.4
Dodecanol	1/273	0.4
Alkyl Hydroxyphenol	2/273	0.7
Alkoxy Propanol	1/273	0.4
2,4-Pentadiene-nitrile	1/273	0.4
1-(2-Methoxy-1-methylethoxy)-2-propanol	1/273	0.4
Propanoic acid, 2-methyl-1,1-(1,1-dimethyl)-2-methyl-1,3-propane-diylester	1/273	0.4
Ethanol, 1-(2-butoxyethoxy)	2/273	0.7
Ethanol, 2-[2-(2-ethoxyethoxyethoxy)]	1/273	0.4
Hydrocarbon	1/273	0.4
C3 Dioxolane isomers	1/273	0.4
An Alcohol	1/273	0.4
Unknown #1	2/273	0.7
Unknown #2	2/273	0.7
Unknown #3	2/273	0.7

NOTE: **Sampling data from 7/1/85 - 4/28/87 and including results of second, third, interim, and fourth rounds of RI/FS sampling**

TABLE 2-5

FREQUENCY OF OCCURRENCE OF INORGANICS
IN GROUNDWATER AT THE MEW SITE

Chemical	Frequency of Detection	%
Antimony	15/205	7
Arsenic	34/292	12
Beryllium	0/205	0
Cadmium	26/205	13
Chromium	47/292	16
Copper	20/292	7
Lead	44/292	15
Mercury	5/277	2
Nickel	42/259	16
Selenium	22/233	9
Silver	21/205	10
Thallium	3/205	1
Zinc	84/205	41

NOTE: Sampling data from 7/1/85 - 4/28/87 and including results of second, third, interim, and fourth rounds of RI/FS sampling.

EPA Response: EPA anticipates that the MEW FS will be applied as appropriate to other sites in the MEW area. The remedy, in-situ vapor extraction, was selected based on a thorough evaluation of the alternatives. In addition, soil excavation and treatment by aeration was also selected, based on prior implementation in MEW. If new information or alternatives are brought to the attention of the agency in the future, the EPA may consider them.

4. Comment: It is highly unlikely that contamination in the Rezendes Wells could have come from NEC's 501 Ellis Street facilities.

EPA Response: The specific origins of the Rezendes Wells' contamination is not an issue in the selection of a remedy, nor is liability for the deep aquifers, since Superfund liability is strict, joint, and several.

5. Comment: When shallow groundwater is mixed with deep aquifer groundwater in the same treatment system, there will be a "deleterious effect on the water so treated." This mixed groundwater will have limited uses "if surface discharge is rejected as an alternative after treatment."

EPA Response: While this appears to be mainly true for the A and B1 aquifers, most of the B2 and B3 aquifers would not require treatment for major ions and coliform bacteria. See Table 1-6 (Volume I) of the Remedial Investigation Report. Furthermore, the "deleterious effects" of mixing the deep and shallow ground waters in a treatment system will ultimately be determined by the end use of the water.

6. Comment: The effects of long term pumping of the shallow aquifers should be carefully evaluated in light of recent experience with a similar system at other sites in the region. It is not clear if recharge rates and aquifer yields have been evaluated.

EPA Response: While it is not clear to which other sites in the region the commenter is referring, aquifer yields and recharge rates will be thoroughly evaluated during RD and before any full scale remediation beings. In addition, water levels, subsidence, etc. will be carefully monitored during RA.

7. Comment: There is no indication that scaling and biological growth in the air stripping columns have been considered in treatment facility design or in the operation and maintenance costs (O&M) shown in the FS.

EPA Response: The operation and maintenance cost estimates for the treatment systems include packing replacement and acid feed system maintenance, which are intended to solve or prevent scaling and biological growth problems. (Appendices J and K).

8. Comment: "There is no indication that the FS has considered the costs of complete replacement of treatment units in the annual O&M costs or the capital costs for the facilities."

EPA Response: The annual operation and maintenance costs for each treatment system includes replacement costs (e.g., $6,000 for blower repair or replacement,

$11,500 for packing replacement, $14,000 to $22,000 for the acid feed system, $1,000 for electrical controls, and $3,000 to $4,000 for the air stripper tower).

Response To Selected Comments From Siltec

Comments on Soil Remediation Levels

1. General Comment: The proposed soil remediation level of 0.5 ppm TCE for all soils throughout the MEW site which lie outside the slurry walls is not adequately supported by the FS. We (Siltec) believe that a 0.5 ppm TCE soil remediation level is incorrectly calculated and incorrectly expressed for several reasons.

2. Comment: The FS states that supporting justification and analysis for selection of a soil remediation level is based on a "worst case" hypothetical exposure scenario where the MEW site would be converted to an unpaved residential area characterized by open lawns and unsewered roof drains allowing maximum infiltration and subsequent percolation (FS, Appendix Q, p. Q-10). We (Siltec) believe the RI/FS errs in using the worst case analysis to identify the soil remediation level. An appropriate analysis should consider other more probable scenarios as the basis for selection of soil remedy for the MEW Study Area.

EPA Response to Comments 1 and 2: The scenario of calculating soil remediation levels by assuming potential residential exposure is EPA policy. This policy has been consistently applied throughout other regions under similar circumstances. The rationale supporting this policy is that land use can change and, over the long term, institutional controls (e.g., zoning and local planning) may not be reliable.

In addition, the modeling scenario in Appendix Q is certainly not an extreme worst case. The following items are examples:

> The model allows for instantaneous dilution with the groundwater aquifers below the contaminated soil zone. In the real world, instantaneous mixing would not occur leading to higher concentrations in the upper portion of the aquifer than predicted by the model. The instantaneous mixing given by the model allows for a dilution of 89 times (0.0112). At many sites throughout the country, where similar evaluations are performed, no groundwater dilution would be allowed. The given model assumes the receptor to be at the boundary of the contaminated zone. In many instances, a theoretical receptor's well would be modeled directly below the site. If all of the examples given above were incorporated into the model, much higher receptor concentrations would be predicted. The result would be much lower soil clean up levels.

Because of the facts given above, the model is considered a reasonable worst case scenario, not an extreme worst case. This is consistent with EPA guidance.

3. Comment: Further time sensitive analysis such as the analysis provided in Table Q-9 is useful to evaluate the degree of potential harm as measured by various conservative assumptions. Table Q-9, for example, shows that health based

levels of TCE in the aquifer would be approached for only one year in a thirty-year period and that otherwise the level of TCE in groundwater would be below those levels.

EPA Response: Table Q-9 represents one case (conservative in concentration and percolation, not conservative in Kd) from the potential cases given on Table Q-3. Other cases could be performed. Given different scenarios, (e.g., longer areas, higher soil concentrations and lower dilution), long term elevated groundwater concentrations could easily be greater than 5 ug/L.

4. Comment: The worst-case analysis used to support a soil remediation level of 0.5 ppm TCE in soil assumes a percolation rate of 2 inches/year. However, the EPA approved model used to arrive at percolation rates is stated to result in "virtually no percolation to the saturated zone." The FS use of a 2 inch percolation rate is based on a theoretical possibility of the effect of prolonged Pacific frontal systems. No justification for or analysis of the effect of the frontal system is given by the FS. If a worst case analysis is used at all, the soil remediation level analysis should be calculated using a lower percolation rate.

EPA Response: Although field studies have not been conducted at the MEW site to determine the amount of water infiltrating through the topsoil, the literature describes exponentially decreasing infiltration rates following a rainstorm. However, more water may infiltrate to the aquifers in periods of long storms, especially following extended dry periods.

Assumptions used in the EPA model resulted in calculating little or no infiltration in the MEW area. This model uses average monthly precipitation and temperatures to calculate average monthly evapotranspiration rates and percolation rates. As a result, the percolation model does not consider the single storm event. Infiltration calculations based on single storm events may yield higher computed percolation rates. Also, the percolation model uses only precipitation as a water input. Additional surface water recharge can be caused by irrigation related to landscaping. Based on these factors and conservative engineering judgment, the FS used a percolation rate of two inches/year.

5. Comment: The worst-case scenario is inconsistently applied for soil remediation levels. The 1 ppm TCE soil remediation level for inside the slurry walls is based on the implicit assumption that those areas will remain under industrial/commercial control necessary to maintain effectiveness of the slurry walls.

EPA Response: A residential reasonable worst-case scenario was uniformly applied throughout the MEW area. The 1 ppm TCE cleanup goal was based on the added degree of protection provided by the slurry walls and the continued monitoring and pumping which will be part of the overall remedy, regardless of the existing or potential land use.

6. Comment: The worst case assumption stated in the FS at Appendix Q uses a retardation factor of 6.0. Based on Appendix P-A, the worst case retardation factor discovered by the analysis lies at a minimum range of 6.5-8.5 as measured

by laboratory data and at 7.0 as measured by field data. Any calculations involving worst case assumptions should use these higher retardation factors.

EPA Response: Table Q-9 is based on R of 12.0. Use of a R of 6.0 is conservative but certainly not worst case. Many adsorption R values may be as low as 2.2 for TCE. Desorption R values may be much higher. "Worst case" analysis should use lower R values not higher as implied.

7. Comment: The soil remediation analysis is ostensibly calculated so as to demonstrate protection of the underlying aquifer as measured by a health based concentration of 5 ppb TCE in the aquifer. On this basis, the FS concludes that 0.5 ppm TCE in soil is an appropriate soil remediation level. However, the solution to the equations provided in the analysis have apparently been solved to result in no more than 4.85 ppb TCE in the underlying aquifer.

EPA Response: The difference between 4.85 and 5.0 and the use of "standard scientific conventions" (i.e., significant figures) versus "nonstandard convention" is trivial and meaningless to argue over given the accuracy of the methodology and the assumptions. For example, the difference between 0.0111 and 0.0112 (the dilution factor) is not meaningful or the difference is not significant.

8. Comment: ". . . the FS incorrectly calculates the value for $(Q\ in)_g$. . ."

EPA Response: The referenced calculations have been reviewed and found to be correct. A typographical error exists in $(Qin)_g$, which should be expressed in $ft^3/year$. Despite the typographical error, the correct units were actually used and the calculation in the FS are correct as stated.

9. Comment: " . . . the actual analysis provided to support the soil remediation level is expressed as a concentration of TCE in soil per specified unit of available square surface area through which percolation may occur. Based on this analysis, it is inadequate to express the remediation level for the entire site without reference to the corresponding surface area."

EPA Response: Using the site specific approach given in Appendix Q requires areas of contamination to be used in the calculations. A similar calculation can be made using percolation through a unit surface area through a given mass resulting in flux into groundwater. The remediation levels calculated from these approaches are presented in terms of mg/kg. Soil clean-up levels need to be in terms of mg/kg for application of an area-wide clean-up goal and for verification of remediation.

10. Comment: The FS is unclear as to the use of recommended soil cleanup levels (RSCLs).

EPA Response: RSCLs were not used to determine soil cleanup levels at MEW. In fact, RSCLs are outdated and are no longer used, even by the California Department of Health Services.

11. Comment: Siltec recommended that a cleanup level greater than 1 ppm for TCE be set, based on soil cleanup levels "found at" other relevant Superfund sites. The sites referred to are found in New Hampshire, Rhode Island and Michigan.

EPA Response: A cleanup level established for one site (especially in another part of the country) is not necessarily adequate at other sites. Site characteristics can vary greatly (e.g., soil, groundwater, geology, affected populations, etc.) and, therefore, each site must be evaluated on a case-by-case basis.

11. Comment: The RI report incorrectly stated that Siltec used TCA.

EPA Response: Comment noted, however, EPA in its August 8, 1988 approval letter for the RI stated, "EPA neither agrees nor disagrees with the assumptions or assertions regarding 'inferred sources' or 'other PRPs' as presented in the RI report."

13. Comment: ". . . TCE contamination in the groundwater is not attributable to leaks from an above ground storage tank and groundwater flow beneath Siltec property is to the northeast."

EPA Response: See above response. In its RI approval letter, EPA also stated, "EPA neither agrees nor disagrees with the configurations and boundaries of the chemical plumes, or with the graphical interpretation of the potentiometric surface/water table of each aquifer as presented in the RI report." "The configuration and boundaries are, however, adequate to evaluate remedial alternatives." The points raised by Siltec are minor since they deal with only a small portion of the MEW area, and therefore are unlikely to have any bearing on the selection of remedial alternatives for the overall area. Furthermore, well elevation data and TCE concentration contour plumes have been reviewed and the data substantiates that the groundwater (in the shallow aquifers) flows in a north or northwest direction, consistent with the RI report.

14. Comment: Soil remediation at Siltec would be unnecessary if soil remediation levels were "properly derived", therefore, the statement in the FS that on-site soil remediation is necessary at Siltec should be stricken from the text.

EPA Response: Soil remediation levels for the MEW area have been properly derived. Individual sites which will require soil remediation will be determined by EPA on a case-by-case basis.

15. Comment: Siltec believes that the effects of sanitary and storm sewers as potential conduits in the local study area (LSA) have not been adequately studied and that further investigation may show that sewers in the LSA do act as conduits.

EPA Response: An adequate evaluation of potential horizontal conduits was performed by Fairchild, Intel, and Raytheon as part of the RI. The results of the investigation were included in the RI report. The report concluded that horizontal conduits (at least within the local study area) are not a problem. If Siltec wishes to perform an additional study, it may do so during RD/RA.

The Following Selected Comments Were Submitted by the League of Women Voters

1. Comment: Identification of all the responsible parties should be expedited to increase the financial resources needed for cleanup. "Close monitoring by EPA is also essential to guarantee that all polluters have been identified and are participating in the cleanup."

EPA Response: EPA has issued "Special Notice" letters for cleanup liability to 17 Potentially Responsible Parties (PRPs) in the MEW area. Agency negotiations with the PRPs for cleanup and oversight costs will commence shortly. In addition, as cleanup progresses, monitoring data will be evaluated to determine if other sources have contributed or are contributing to the MEW contamination.

2. Comment: The League agrees with the "pump and treat alternative" for the shallow aquifers.

EPA Response: Comment noted.

3. Comment: The Proposed Plan should identify ways of reusing extracted groundwater.

EPA Response: Groundwater reuse is currently being evaluated and will be incorporated into the ROD and the RD/RA Consent Decree.

The Following Comments Were Submitted by the U.S. Navy

General Comments

1. "Unlike other FS reports, this report does not present supporting engineering calculations on treatment sizing, pumping requirements, simulated drawdown cones, or construction materials and methods. As such, the document is generic in nature and essentially requires the reader to assume that the black box system is optimal."

EPA Response: Such detailed design information is typically not provided in the FS because it is unnecessary, and consequently will be presented during Remedial Design (RD).

2. "The report does not present specific design information for water treatment, soils aeration, and several other alternatives discussed. Without this fundamental information, it is impossible to critique the authors conclusions."

EPA Response: The information presented in the report is sufficient for evaluating various alternatives. Specific design information will be presented during RD.

3. "A groundwater model is not specified, and pumping specifics (e.g., rate, duration, equipment) are not provided."

EPA Response: The information regarding the groundwater model can be found in Appendix P of the Feasibility Study.

4. "Offsite remediation is mentioned throughout the document in a cursory manner, yet a number of pumping wells are shown on NAS Moffett Field property and a treatment system is shown on NASA property. How was the information gathered in the NAS Moffett Field Remedial Investigation incorporated into the treatment designs and ground water extraction schemes?"

EPA Response: As the FS report states, the number and location of pumping wells and treatment systems is for costing estimates only. The actual number and location of these units will be provided during RD. Also, site specific sources on Moffett Field were not incorporated into the treatment designs and extraction schemes.

5. "The document does not present information as to the potential timing for installation of off site or on site remediation. Due to other investigations currently ongoing, extensive coordination is needed. To date, what coordination is proposed?"

EPA Response: Timing and coordination for well installation will be part of the Remedial Design and Remedial Action (RD/RA) negotiations process, and therefore are not incorporated into the FS.

6. "It was difficult to determine if the unsaturated zone model is accurate without supporting calculations. In addition, how is differentiation made between vapor phase transport and liquid phase transport?"

EPA Response: Supporting calculations for the unsaturated zone model are found in Appendix P of the FS. Vapor phase transport was not considered.

Executive Summary

1. "ES-1. Uncontrolled sources are cited as present and impacting potential remediation. These sources are not clearly defined in the text nor are their impacts."

EPA Response: Uncontrolled sources will be defined during the RD/RA phase and as other PRPs are included in the process.

2. "ES-1. It is stated that the FS is designed to adequately address unknown or uncontrolled sources of pollution. No reference was found in the text that presents how uncontrolled sources are handled in the FS design process."

EPA Response: See response above.

3. "ES-2. Chemicals have been detected in all 5 aquifers. Was there any investigation as to the vertical distribution of chemicals in any of the aquifers, particularly the C aquifer?"

EPA Response: Section 4.0 of the Remedial Investigation Report (July, 1987 and revised June, 1988) contains the results of a thorough investigation of the chemical distribution in soils and groundwater in all aquifers.

4. "ES-2. How was the total volume of TCE, TCA, etc. calculated? This was not described in the text."

EPA Response: The estimation of volumes of chemicals in various aquifers is described in Section 4.3.2 (pp. 4-63 through 4-66) of the RI Report.

5. "Shallow aquifers beneath the site are cited by the RWQCB as being a potential drinking water source. This argument appears unfounded since the general water quality is poor and the aquifers thin, discontinuous, and low yielding. How much potential does EPA or RWQCB see for the shallow aquifers being utilized as a drinking water source?"

EPA Response: While the water quality and yields of the shallow aquifers may be lesser in relation to the deep aquifers, the shallow aquifers near the site have been used for drinking water in the past, according to the Santa Clara Valley Water District. Although currently no one is using the shallow aquifers for drinking water, the aquifers do meet EPA's groundwater classification criteria for potential drinking water sources and are also protected under the RWQCB's Basin Plan and Non-Degradation policy. Both agencies regard the shallow aquifers as a resource that should be protected and restored.

6. "ES-5. The upper foot of soil is not considered for remediation based on health risk. Was potential leaching of these materials and subsequent concentrations in lower zones considered?"

EPA Response: The Endangerment Assessment prepared by EPA concluded that there is very little contamination present in surface soils, therefore, leaching (from the surface soils) is unlikely to be a problem.

7. "ES-7. Throughout the document, maintaining an inward and upward hydraulic gradient has been discussed. However, calculations on how much water should be pumped to establish this gradient or exactly what minimum magnitude of the gradient is necessary but not present."

EPA Response: Water pumpage will be determined during RD/RA.

Chapter 1

1. "P12. Recent groundwater extraction from within the slurry walls is presented. There does not appear to be any reference in the text as to the quantity of water being pumped or the quality of effluent. This type of information is critical in evaluating appropriate remedial alternatives. No reference is made as to the established NPDES levels to Stevens Creek or the POTW. This information is vital in establishing cost effective disposal options."

EPA Response: EPA does not believe that this information is necessary for the FS report. The information will be provided during the RD phase. NPDES levels may be obtained from the RWQCB.

Chapter 2

1. "P-17. Three additional recovery wells were added in 1985. What was the rationale behind their installation? Where are they? Do they all couple into one treatment system? If so, was the original system redesigned? Where is the treatment system?"

2. "P-17. Twenty-one (26?) recovery wells are apparently now operating. A schematic of the operating system(s) is essential along with design details and rationale. None of this information is provided making a good review of additional pump and treat scenarios difficult."

3. "P-18. Three stripping towers are said to treat some portion of the recovered water. What portion goes to the POTW and to Stevens Creek?"

EPA Response: The above information is not necessary for the FS and will be provided during the RD phase.

4. "P-22. The Raytheon slurry wall is said to partially penetrate the B2 aquifer. Why was the wall keyed into permeable materials?"

EPA Response: This information may be obtained by reading the Raytheon "Slurry Wall Construction Report" Golder Associates, January 1988, which is on file at EPA and is also part of the administrative record.

5. "P-23. 1,300 lbs. and 230 lbs. of VOCs were removed from two plots. What percentage recovery of VOCs was achieved?"

EPA Response: This will not be known until the remedy has been completed.

6. "P-24. In-situ tests apparently suggest an effective radius of influence of 40 feet for venting wells. The specifics of these tests were not presented. What were the physical soil properties? Soil moisture and temperature? Total concentration of chemicals in the soil? Generally, in the fine grained soils, vent wells are placed on 5 to 10 feet centers. Although it is not possible to check the authors' calculations, previous experience suggests that the vent system as given may not be adequate."

EPA Response: The information may be found in a report titled, "Soil Vapor Extraction Study", Raytheon Company, prepared by Harding Lawson Associates dated, February 8, 1988. The report is available for review at EPA and is also part of the administrative record.

7. "P-26. The slurry wall around Fairchild building 9 appears to be built through a highly contaminated area. Why? (See figure 2-1.6)"

EPA Response: This information is not relevant to the proposed cleanup plan.

8. "P-27. Metals have been detected in the groundwater but are essentially discounted because of the statement: "Metals...are not very mobile in groundwater...". The presence of metals in the soils and groundwater should be considered in the design of treatment alternatives. Metals present in the high ppb range may have adverse affects on potential treatment options such as biological reactors and promote scaling in air stripping towers."

EPA Response: Metals will be considered during RD.

9. "P-33. Chemical concentrations were detected in Stevens Creek. What were the concentrations of these chemicals? How were these chemicals addressed in NPDES permitting at the site?"

EPA Response: This information is not relevant to the FS. NPDES permitting requirements may be obtained from the RWQCB.

10."P-33. How were the synergistic and antagonistic effects of the various non target chemicals addressed when designing water treatment systems? For example, is fouling of the aeration tower packing material due to high levels of inorganics a potential problem at the MEW remediation area?

EPA Response: This information will be developed during RD.

11. "P-34. Chemicals detected in samples below 10X or 5x associated field blanks are reported as non-detected. Which specific compounds other than the four chemicals listed fell under the 10X rule? On what basis was the 5X rule chosen?"

EPA Response: This information can be found in the "Endangerment Assessment" report available at EPA and in the City of Mountain View Public Library.

12. "P-36. The mobility of metals is again mentioned yet there is no discussion on the redox potential, precipitation or exchange of these chemicals in the presence of soil components such as humic acids. Lead for example can be solubilized by some naturally occurring acids and some lead compounds produced are classified as soluble. If lead is able to come in contact with estuarine benthic microbes through surface water transport or shallow groundwater flow, these microbes can methylate lead to form tetramethyl lead which is volatile and more toxic. Although situations like the one described are not common, a more comprehensive review of metals contamination should be considered."

EPA Response: See above response and response to comment 8.

Chapter 3

1. "P-54. In paragraph 2, soil remediation levels are left open, yet all remedial alternatives are based on 1 ppm and 0.5 ppm TCE cleanup levels. This apparent inconsistency needs clarification."

EPA Response: Soil remediation levels inside the slurry walls are "left open" only if Alternative Concentration Levels (ACLs) are chosen as cleanup levels for

aquifers inside the slurry walls. EPA has chosen Maximum Contaminant Levels (MCLs) for the shallow aquifers including those located inside slurry walls.

2. "P-57. The federal pre-treatment guidelines for toxics of 1.37 ppm from manufacturing facilities would be relevant only if the local treatment works would agree to use this guideline."

EPA Response: Correct.

Chapter 5

1. "P-92/106. In-situ biological treatment is considered only to a very limited extent. Specifically, the authors address biodegradation in an undisturbed state. Further they discount this option quickly by citing a single study performed by Stanford University. No significant conclusions were drawn from this work.

Aerobic biodegradation can be performed using an above grade landfarming technique. This technique is very successful with aromatic hydrocarbons and would augment soil aeration. The technique can be used with similar farm equipment employed by the aeration alternative. Although biodegradation alone is not a plausible solution, biodegradation using marine bacteria, sewage sludge or some strains of soil bacteria can enhance the remove of chlorinated alphatics sorbed to the soil matrix and should be considered."

EPA Response: Comment noted.

2. "P-95. On site treatment options deal exclusively with volatile compounds. The extracted water stream will contain numerous other chemicals such as iron, magnesium, calcium carbonate, and heavy metals. These compounds must be treated prior to entry into an aeration tower to prevent fouling and to promote treatment to the limits set. Treatment units including precipitation tanks and mixers, in line filtration, and multimedia filtration should be addressed."

EPA Response: This will be addressed during RD.

3. "P-101. The chemical characteristics listed are properties associated with volatilization and sorption. Characteristics such as pH, TDS, BOD and TSS need to be quantified prior to design of water treatment."

EPA Response: Comment noted.

4. "P-103. The contention that additional surface capping would have a minimal influence on infiltration should be supported by calculations provided in the document."

EPA Response: Most of the site (approx. 80%) is already capped. Therefore, additional capping will have little, if any, influence.

5. "P-104. It is contended that excavation would require demolition of several buildings. Which buildings?"

EPA Response: Potentially, any building situated over soil contamination.

6. "P-105. Limited space available for stockpiling soils is given as a reason to discard excavation, yet landfarming soils for volatilization of organics is passed through for consideration. If space is limited, where would the above grade landfarming be accomplished?"

EPA Response: This information will be developed during RD.

7. "P-108. Aeration is described as not being effective on phenol. However, no treatment method is offered for phenol in lieu of aeration. Why?"

EPA Response: As phenols in soil have not been quantitatively defined, information will be developed during RD, and incorporated as necessary into the treatment methods.

8. "P-108. What constitutes successful dewatering? (para 4). If vapor extraction is to be successful, what is the maximum residual water content in sandy soils? Cohesive soils?"

EPA Response: This information will be developed during RD.

9. "P-108. Adverse settling due to dewatering was encountered. What was the magnitude of this settlement? Why was this situation not reviewed in Chapter 9 with respect to the long term pumping scheme?"

EPA Response: It is not known if settlement was due in part, solely, or at all because of dewatering. Additional information will be developed during RD/RA.

10. "P-108. It is stated that settling will not affect slurry wall integrity. Were calculations performed to support this contention?"

EPA Response: The FS Report states that settlement conditions are not expected to affect the integrity of the slurry walls. Calculations to support this conclusion were performed by consultants for Raytheon independent of the FS report.

11. "P-109. The report claims that in-situ aeration is applicable to soils beneath buildings. It is not clear from the supplied figures how soils beneath buildings are being remediated."

EPA Response: Soils beneath buildings are not currently being remediated. Those areas will be addressed during RD/RA.

12. "P-109. What are the serious concerns about steam injections?"

13. "P-109. What are the potential adverse effects of steam flushing? They are not presented in the discussion."

EPA Response: The concerns about steam injections are that the levels of development and field experience are minimal. Massive injections of steam would result in the significant elevation of subsurface soil temperatures and pore

pressures under structures on the site. These temperatures and pressures could result in possible injuries to personnel and disruption of industrial operations due to 1. heave or settlement and/or 2. the accidental uncontrolled release of steam to the surface.

14. "P-112. The arguments that flushing may increase the boundaries of chemical-bearing groundwater and that the flow injected water cannot be controlled are not valid. If injection wells are properly placed upgradient of the plume and extraction wells placed downgradient, a closed loop system can be maintained. Flushing increases the hydraulic gradient and can substantially reduce remediation time. Further, flow controllers connected to sensors in monitor wells can maintain a predetermined hydraulic head."

EPA Response: Sections 5.3.11, 5.3.25, 6.2.9, 7.2.2.4, and 7.2.3.4 of the FS explain why flushing is not considered for site remediation.

15. "P-112. 1. It is stated in the FS that it is unlikely that enough water could be injected to alter the piezometric surface. This argument contradicts the previous statement regarding complex stratigraphy. The aquifers are low yielding, discontinuous and relatively thin bedded. All of these physical characteristics suggest an induced head could be applied. 2. Were calculations performed or a flow model used to show the effects of water injection?"

EPA Response: 1. The text of the FS does not contradict the above statement. The text does state that due to the "extremely variable permeabilities . . . it (is) impossible to ensure that adequate flushing rates can be maintained in all . . . areas. Also, it is unlikely that it will be possible to inject groundwater at a rate that would significantly alter water levels or piezometric surfaces in areas not in the immediate vicinity of the injection well". 2. No.

Chapter 7

1. "P-160. An 80 foot square grid would be required according to section 7.2.1.2. Earlier in the report, a 35 foot spacing was presented."

EPA Response: The exact spacing is unknown at this time, but will be determined during RA.

2. "P-160. In figures 7.2-1 a-c, extraction wells are shown but air inlet wells are not shown. The text describes inlet/extraction wells. Is this a pump in, pull out process or just vapor extraction?"

EPA Response: The process will be determined during RD.

Chapter 9

1. "P-260. Stevens Creek is proposed as the ultimate receptor for treated groundwater although it is not specifically stated in this chapter. How will the added flow affect the stream channel?"

EPA Response: As described in Section 2.2 (pp 2-4) of the RI Report, Stevens Creek is an intermittent stream. Therefore, the addition of a year-round flow of

treated groundwater from MEW Area remedial actions might change portions of the creek downstream of groundwater discharge points to a perennial condition, to the extent that the discharge flow exceeded local stream bed percolation capacity. However, the proposed flow of treated groundwater is not expected to be large enough, when compared to normal storm run off, to materially affect the channel.

2. "P-260. Have channel hydraulics been modelled using the HEC-1 or similar flood routing scheme to ensure that the added water will not create a local flooding problem?"

EPA Response: No.

3. "P-245. Seven tenths of a pound of TCE is considered to be de minimus. How is this value calculated (weight or volume basis)? What criteria is used for determining the volume or weight to test?"

EPA Response: The term "de minimus" was developed by Fairchild, Intel, and Raytheon to describe certain "minor" contaminated areas. EPA does not use this terminology to describe contaminated areas. Calculations and criteria may be found in Appendix O of the FS report.

4. "P-245. How was the pumping scheme outside the slurry walls designed to ensure that an upward gradient is maintained inside the slurry walls? If the groundwater surface is sufficiently suppressed outside the walls then inside pumping is negated."

EPA Response: The gradients are currently being monitored and will be monitored during RD/RA.

5. "P-260. Why are only B1 and A aquifer wells proposed offsite in the downgradient direction?"

EPA Response: Because there is no contamination downgradient in the B2 and B3 aquifers.

6. "P-260. What is the rationale for placement of wells within NAS Moffett Field? Was flow modelling performed?"

EPA Response: Wells were placed in relation to the contamination plume. Flow modelling was not performed.

7. "P-260. Since chemical transport modelling was accomplished in only two dimensions, how were the effects of drawdown of chemicals through shallow aquitards considered?"

EPA Response: The effects of drawdown of chemicals through shallow aquitards were not considered since the model assumes that the aquifer is confined.

8. "P-261. Air stripping and activated carbon filtration are listed as treatment components. Will these systems require continuous monitoring?"

EPA Response: No.

9. "P-261. What are the estimated carbon use rates and packing life spans? What other components comprise the treatment systems? How much area will be required?"

10. "P-261. How will utilities be handled for the off site systems?"

11. "P-266. What is the rationale for the placement of the three "C" aquifer wells? What are the proposed pumping rates? Will the higher volume pumped from the "C" aquifer have a tendency to dilute the waste stream from the lower yielding upper aquifer wells? If so, what is the expected average concentration of chemicals on the influent side of the air stripper?"

EPA Response: The information for questions 9-11 will be developed during RD.

12. "P-267. The Operation and Maintenance costs are not well defined in the appendices. How was the 2.9 million dollars of annual O&M derived for the off site remediation scheme? How many treatment systems are included in the off site program?"

EPA Response: The O&M costs are adequate for the purposes of the FS. The exact number of treatment systems will be developed during RD.

13. "Figure 9.2-4. Some fairly extensive piping is shown on NAS Moffett Field property. How would this piping be installed? Have the numerous subgrade utilities on the facility been factored into the estimated cost?"

EPA Response: The drawn piping is a conceptual design and the installation will be refined during RD. Yes.

JACK • DYMOND • ASSOCIATES

May 18, 1989

Gregory E. Eckert
U.S. Environmental Protection Agency
Region IX
215 Fremont Street
San Francisco, CA 94105

RE: Statement of Work
430 Ferguson Drive, Mountain View, CA

Dear Mr. Eckert:

In response to your letter T-4-5, attached please find as Exhibit "A" a "Statement of Work" from Earth Metrics Inc.. This firm has been contracted to follow EPA SOW requirements and has been instructed to proceed immediately on testing.

Mr. Michael Hogan of Earth Metrics, (Phone 415-578-9900), as I have been told, has already been in contact with you for some clarification of the required procedures. It is my understanding that his questions have been answered and is now ready to proceed with soils testing.

Anyway, this letter is to serve notice that we are complying with the EPA requirements as set forth in your letter T-4-5 and attachment 2; "SOW outlining information to be included in the site assessment workplan. Phase 1, a sampling of soil gas."

Sincerely,

Ronald Meredith
Property Manager

201 San Antonio Circle • Mountain View, California 94040 • (415) 941-8237

EXHIBIT A

Statement of Work

Our work will consist of the following tasks:

1. Selection of nine to ten test locations which do not require concrete opening.

2. Auguring to a maximum depth of approximately 15 feet or groundwater (whichever comes first) at each of the test locations.

3. Archive any samples for subsequent laboratory* analysis if positive soil gas results are found.

4. Conduct field test soil gas analysis at each of three depths for each test location.

5. Compile analysis results and discuss meaning of results, likelihood of existence of subsurface contamination, likelihood (if any) of spreading of contamination and general recommendations for further action (if needed). This task does not include preparation of a detailed engineering remediation plan, if such plan is required.

6. Development of a written report of findings.

The client is responsible for securing timely rights of access. If any concrete pavement opening and closing is required for drilling, such pavement opening and closing will be considered as an additional charge. (Earth Metrics will attempt selection of all test locations such that no pavement opening is required.)

* Note that no laboratory tests of soil samples are proposed in the work described herein.