SFUND RECORDS CTR
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ITX 1110-00294

SFUND RECORDS CTR
1110-00294

On February 6, 1995, EPA OSC K. Lawrence inspected the Omega site to determine Omega's initial compliance with the conditions set forth in the February 1 meeting. The visit occurred on February 6, 1995, with TAT present to take notes, photographs, and videotape. Mr. G. Forman of DTSC also attended, with Mr. M. Lucas representing Omega. At the conclusion of the site inspection, Mr. J. Tapia, representative of IT Corporation, arrived to inspect the site and mark drums for overpacking. As a result of the inspection, approximately 55 drums were identified for overpack due to leakage, corrosion, or other drum damage, and numerous pallets in poor condition were marked for replacement.

On February 7, 1995, EPA directed TAT to review a site stabilization workplan regarding Omega, and begin on-site monitoring of overpacking/stabilization activities at Omega under TDD No. T099502-006. Activities occurring under this TDD will be documented in a later report.

If you have any questions regarding this report, please do not hesitate to contact this office.

Respectfully submitted,

M. Schwennesen
Technical Assistance Team Member

attachments

cc: R. Martyn, FOSC
File

ATTACHMENT A

PHOTODOCUMENTATION

Omega Recovery Services

TDD: T099501-007 PAN: ECA1940SBA

South (main) drum storage area, view to south

January 19, 1995 Photographed by: R. Randall

South (main) drum storage area, view to northwest

January 19, 1995 Photographed by: R. Randall

Omega Recovery Services

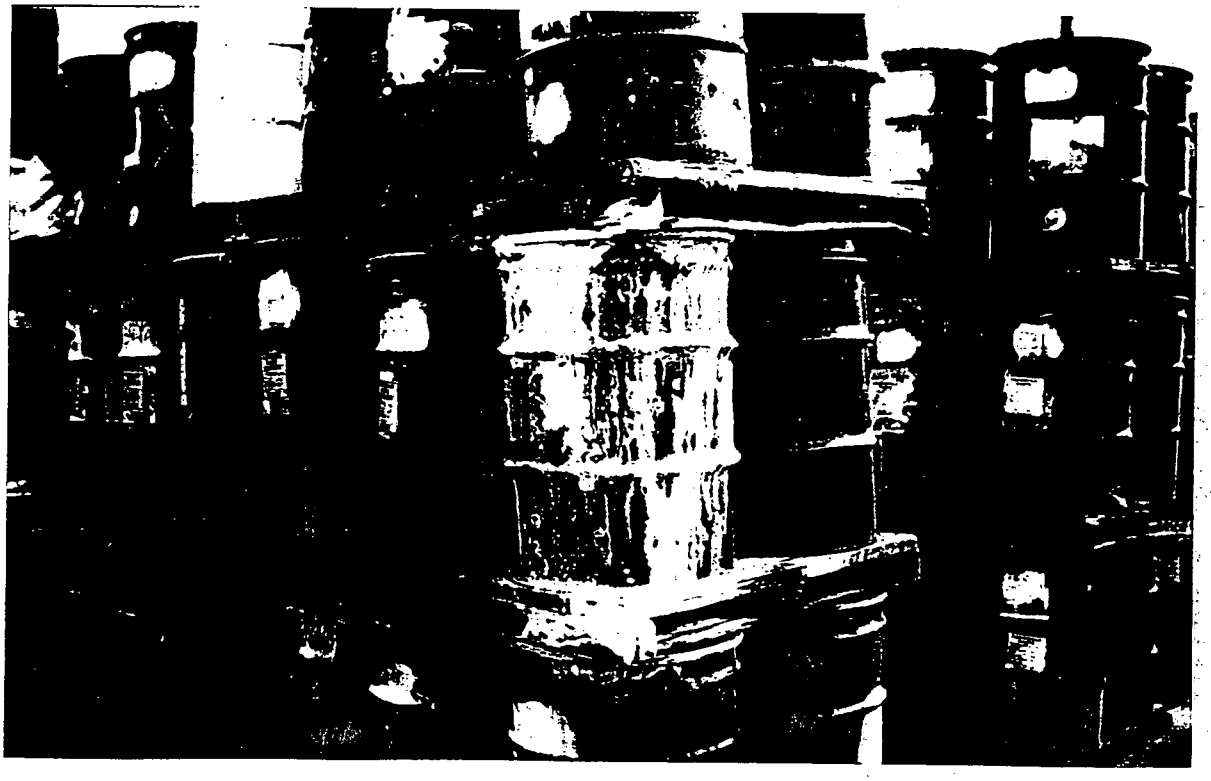
TDD: T099501-007

PAN: ECA1940SBA

Leaking drum

January 19, 1995

Photographed by: R. Randall



Leaking, corroded drum

January 19, 1995

Photographed by: R. Randall

ATTACHMENT B

ATTENDEES OF FEBRUARY 1, 1995 MEETING

OMEGA CHEMICAL CORPORATION

PRP Group Meeting
February 1, 1995

Attendance List

NAME	COMPANY	PHONE NUMBER
Sayareh Amir	DTSC	(818) 551-2822
Shawn Haddad	DTSC	2962
DAVID LENNON	IT Corporation	310-830-1781
DENNIS O'MEARA	OMEGA	(310) 698-0991
JOHN JARDS	US EPA	415-744-2298
KAY LAWRENCE	U.S. EPA	415 744 2289
RANDY RANDALL	E&E (EPA Contractor)	310 435 6188
Richard Martyn	US EPA	(415) 744-2288
EARL [illegible]	[illegible]	[illegible]
JUDITH PRATTO	Sidley & Austin for Steering Committee	213-896-6637
Robin Hulshizer	Latham + Watkins S.C.	213-891-7908
Keith F. Millhouse	Paul, Hastings	(213) 683-6244
DAN COFFEY	Attorney at Law	310 791 0197
Sarah Morrison	DTSC, Region 3	(818) 551-2821
RAJEEV SANE	UNOCAL (S.C.)	(213) 977-7332
Nancy J Long	DTSC - OLC	(916) 324-3154
Hamid Saebfar	DTSC	(818) 551-2876
PAUL BARANICH	DTSC - REG. 3	(818) 551-2914

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street

San Francisco, CA 94105-3901

NOTICE OF FEDERAL INTEREST

Issued to:
DENNIS O'MEARA - OWNER + OPERATOR
(OMEGA RECOVERY SERVICES)
AKA OMEGA CHEMICAL CORP
OMEGA CHEMICAL SITE PRP
~~ORGANIZING GROUP~~ C/O JUDITH PRATTS, ESQ.

Date: 2-1 Time: 1:37
(FOR THE SITE)

Location: 12504 E WHITTIER BLVD WHITTIER, CA

The U.S. Environmental Protection Agency (EPA) has been informed of a release or threatened release of hazardous substances, pollutants or contaminants into the environment at

OMEGA RECOVERY SERVICES CORP 12504 E WHITTIER BLVD WHITTIER, CALIFORNIA

(the site).

Under the authority of the National Contingency Plan (NCP), 40 CFR Part 300 and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended, 42 U.S.C. Section 9601, et seq., EPA evaluates whether responsible parties or other agencies are properly responding to such releases.

This site is within the jurisdiction of EPA and the EPA On Scene Coordinator (OSC), who is charged with coordinating, directing, and reviewing the work of responders to insure compliance with the NCP. The OSC for this site is RICHARD MARTUN.

Responsible parties generally include the operator and/or owner of the site and persons who generated or were involved in the transportation, management, or disposal of the materials at the site.

If public funds are expended for a response action, responsible parties may be held liable for all government costs. Before EPA initiates a response, Potentially Responsible Parties (PRP's), where practicable, are informed of the interest of EPA and offered the opportunity to conduct the response. EPA has reason to believe that you may be a PRP for this site, and by this Notice is providing you the opportunity to conduct the response. Your intention to do so, or your declination, should be immediately conveyed to the On Scene Coordinator (OSC). Correspondence should be directed to the OSC at the letterhead address.

Attachment B

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If the OSC determines that the response to the release or threatened release is not being properly conducted, EPA may initiate the required response action. At this time, the following actions are considered necessary for a proper response, within the specified time frame:

1. Provide 24 hr Security starting at 1700 hrs 2-1-95 and maintain security until site conditions no longer pose an emergency situation.

2. Select and hire a state of Calif licensed contractor to identify and manage all containers on-site that are causing a release or about to cause a release; including all containers, vats, tanks etc. This should commence no later than COB 2/2/95.

By: [signature] 2-1-95

On Scene Coordinator

Telephone: (415) 744-2288 (RICHARD MARTYN)

(415) 744-2298 (JOHN JAROS)

Acknowledgment of Receipt:

Received by [signature] on behalf Omega Chemical Site PRP Organizing Group Dennis O'Meara 2/1/95 Date: 2/1/95

Copy ___ of ___

3. Provide a qualified individual or company to perform daily inspection at the facility, and provide response to any releases observed immediately. This will commence at 0800 hrs on 2-2-95.

4. PRP Group to submit to State of California + EPA a revised workplan to address all drums on site, including but not limited to all spills, vats, sumps etc on 2/24/95.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

MAR 2 2 1995

Daniel Wayne Coffey
Attorney at Law
1710 Esplanade, No. H
Redondo Beach, California 90277

Re: Omega Chemical Company

Dear Mr. Coffey:

U.S. EPA received a copy of Mr. O'Meara's Interim Measures and Removal Action Workplan (IM/RA Plan) dated March 3, 1995 to address current or potential releases from the drums and tanks at the Omega Chemical Corporation Site located at 12504 East Whittier Blvd, Whittier, California. EPA personnel from the Superfund program and RCRA program have reviewed this plan and their comments are attached. Mr. O'Meara has until Monday, March 27, 1995 to correct the deficiencies noted in EPA's comments on the IM/RA Plan, including the attendant financial assurance requirements. If Mr. O'Meara fails to resolve the deficiencies in these plans by March 27, 1995, including obtaining the necessary financial assurance, either U.S. EPA or the California Department of Toxic Substances Control will take appropriate measures to implement the work at the Site.

As shown by EPA's comments, the IM/RA Work Plan fails to demonstrate that Mr. O'Meara could promptly and properly carry out the drum removal action pursuant to Comprehensive Environmental Response, Compensation and Liability Act, ("CERCLA"), as amended, 42 U.S.C. Section 9601 et seq. Under Section 104(a)(1) of CERCLA, EPA must determine that an action will be done properly and promptly by the owner or operator of the facility before allowing such a person to carry out the action. This IM/RA Work Plan also fails to fulfill the Interim Measures and financial assurance requirements under the Administrative Order on Consent, U.S. EPA Docket No. RCRA-09-91-0005 ("RCRA Order") signed by Mr. O'Meara.

Under CERCLA, U.S. EPA may choose from the following options in order to assure implementation of the work: a) EPA may issue a unilateral or consent order to the Potentially Responsible Parties (PRPs) under Section 106(a) to perform the work; b) EPA may fund the work; or c) EPA may pursue civil litigation against the PRPs pursuant to Sections 106(a) and 107(a) of CERCLA. Necessary work at the Site may include the drum and tank removal,

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Attachment C

cleanup. If public funds are expended for a response action, responsible parties may be held liable for all government costs. Mr. O'Meara has been notified that he is a potentially responsible party at the Site.

If you have any technical questions concerning this Site please contact Nancy Nadel, RCRA Program (415) 744-2043 or Richard Martyn, CERCLA Program (415) 744-2288. If you have any legal questions, please contact me at (415) 744-1395.

Sincerely,

Janet R. Carlson
Assistant Regional Counsel

Deficiencies in the Interim Measures and Removal Action Work Plan dated March 3, 1995

1. Tanks
All tanks should be closed at the site, not just the tanks in the bermed area. If the facility is proposing to move some tanks to Nevada as has been verbalized, the appropriate process for such an event should be addressed including cleaning the tanks for safe moving and clean-up of the area from which the tanks are taken. Please see attached segments of the April 1992 Omega Current Conditions Report which describe former and "current" tank locations. (see attachment)

2. Haz-cat Process
Because of the results of the recent IT haz-cat, which showed that the Omega label code system was seriously inaccurate, EPA is not satisfied with a sampling effort that includes only 10% of the drums. All drums should be opened, sampled and haz-catted.

3. Transfer to Rail
Any transfers of hazardous waste from truck to rail must be conducted at a RCRA permitted Treatment, Storage and Disposal facility, or RCRA regulated tranfer station depending on the complexity of the tranfer (e.g. whether consolidation will occur). Please consult RCRA and state regulations for the appropriate handling of transfers and describe the appropriate process in the Plan based on those regulations.

4. Appropriate Disposal of Drums
US EPA considers Marine Shale as a facility operating without the appropriate permit and not eligible for interim status. Therefore, US EPA cannot accept the choice of Marine Shale as the ultimate disposal location.

5. Financial Assurance
No concrete financial assurance has been included with this plan. In order to meet the financial responsibility requirements, Mr. O'Meara must establish and maintain financial security to perform the drum and tank removal in one of the following forms: a) performance or surety bond guaranteeing performance of the work; b) one or more irrevocable letters of credit equalling the total estimated cost of the Work; c) trust fund; or d) a guarantee to perform the work by one or more parent corporations or subsidiaries, or by one or more unrelated corporations that have a substantial business relationship with Mr. O'Meara. If Mr. O'Meara chooses (d), Mr. O'Meara must demonstrate that such a third party is able to complete the requirements of 40 C.F.R. Part 264.143(f).

A file search shows that on February 4, 1991, Omega sent a Closure Trust Agreement for $121,438.00 with Racada Corporation as Trustee for the Account. Is this money still available for partial coverage of this project? Were additional funds contributed as the Omega letter suggests would occur?

A most recent year 1989 listing of wastes manifested to off-site facilities is shown in Table 2.

The largest amount of waste type has remained industrial type solvents that Omega recycled for reuse as solvent or fuel.

TABLE 2
Hazardous Wastes Manifested Off-Site from the OMEGA Facility in Calendar Year 1989

DHS Code	Waste Description	Quantity
134	Aqueous solutions with total organic residues less than 10%	19,300 gal
211	Halogenated solvents	1,600 gal
251	Still bottoms with halogenated organics	47,245 gal
252	Other still bottom wastes	665,000 gal
352	Other organic solids	120 tons

3.4 Waste Management Units -

The configuration and kinds of solid waste management units have changed during the time Omega has operated at the Facility. Current Facility diagrams (Figures 4 and 7), and lists of units described in the Original Part A, the Revised Part A, and the Part B help to document the changes in types and locations of waste management units at the Facility.

The Original Part A lists the following hazardous waste management process units although their exact location is not shown:

Table 3 List of Major Waste Management Units located at the Facility.
25,000 gallon storage tank (Consisting of 5 5,000 gallon tanks) Identified as T1 to T5
300 gallons per hour thin film chemical separators (Fat Jack) Identified as P-1
50 gallons per hour distillation column 50 ft. tall (Paul) Identified as P-2
50 gallons per hour distillation column 35 ft. tall (Kirk) Idenitified as P-3
40 gallons per hour distillation column 40 ft. tall (Craig) Idenified as P-4
40 gallons per hour distillation column 25 ft. tall (Elvis) Identified as P-5
30 gallons per hour steam distillation units (Steve) Identified as P-6
30 gallons per hour distillation column 5 ft. tall (Jake) Identified as P-7

The original locations of these units is shown on Figure 7a. The current locations of these units is shown on Figure 7b.

The waste storage units T-1 to T-5 were moved to their current location.

The Treatment Units Elvis - P-5 and Steve - P-6 were dismantled. They are no longer in use.

The currently submitted Part B states that the existing units at the Facility for storage, recycling, treatment and transport of wastes include:

3100 drum capacity drum storage areas
31 waste storage/treatment tanks
3 distillation units
3 thin film evaporation units
1 reactor
l liquid-liquid separator unit.

Figures 7 a shows the original location of the 5 - 5,000 gallon tanks and Figure 7b. shows their current location on the site.

3. 5 Waste Management Practices -

Wastes that the Omega accepts at the Facility are usually organic solvents and chemicals, and aqueous wastes with organic waste constituents. These wastes arrive at the Facility in containers and bulk truckloads and are unloaded to container storage areas or storage tanks. Omega also generates its own containerized wastes from intermediate steps of treatment processing. Omega pumps bulk materials to a holding tanks and then schedules the wastes for treatment in one of several treatment units or transfers the wastes to offsite facilities for further treatment or disposal.

From storage, Omega transports containerized wastes to treatment areas with fork-lifts. Empty drums are reconditioned or crushed and disposed of off-site as non-hazardous or hazardous waste depending on character and conditions of the drums/containers as to whether they are hazardous or non-hazardous..

Some containers hold both liquid and solid wastes such as paint solvent and oil sludges. Omega decants liquid into a treatment tank or other containers for further processing, and consolidates the remaining solids with compatible solids in other containers. Omega sends the wastes in containers and bulk tank trucks to off-site treatment facilities .

3.6 Spill and Discharge History

Figure 7a shows the original location of units at the Facility in 1987. Investigations for contamination (described in paragraph below) occurred at the same time the Facility was so configured. Prior to 1987 , storage areas were paved with asphalt that was not impervious to all possible hazardous waste migration. Ground beneath the tank storage area (as shown in Figure 7a) in the southwest corner of the Facility (as configured in 1987) was noted as having a deteriorating asphalt base during an April 1985 DHS inspection for Interim Status Document Compliance. A subsequent investigation in the southwest area attributed contamination to accidental spillage of chemicals stored in the tank farm. (LeRoy Crandall and Associates, Investigation of Subsurface Soil Contamination at Tank Farm, Omega Chemical Corporation, Whittier, California, June 26, 1985.)

In a report on soil and ground water contamination dated 1988, Omega's contractor found ground water contamination to be related to soil contamination. Hazardous wastes found in soils and ground water are the same as those hazardous wastes listed in Omega's Original Part A and Revised Part A. Soil contaminated with hazardous waste was found beneath two drum storage areas. The ground water monitoring well which detected significant contamination is located

FIGURE 7A

OMEGA CHEMICAL CORP - OMEGA RECOVERY SERVICES
12504 E. WHITTIER BLVD. WHITTIER, CA 90602
CAD042245001

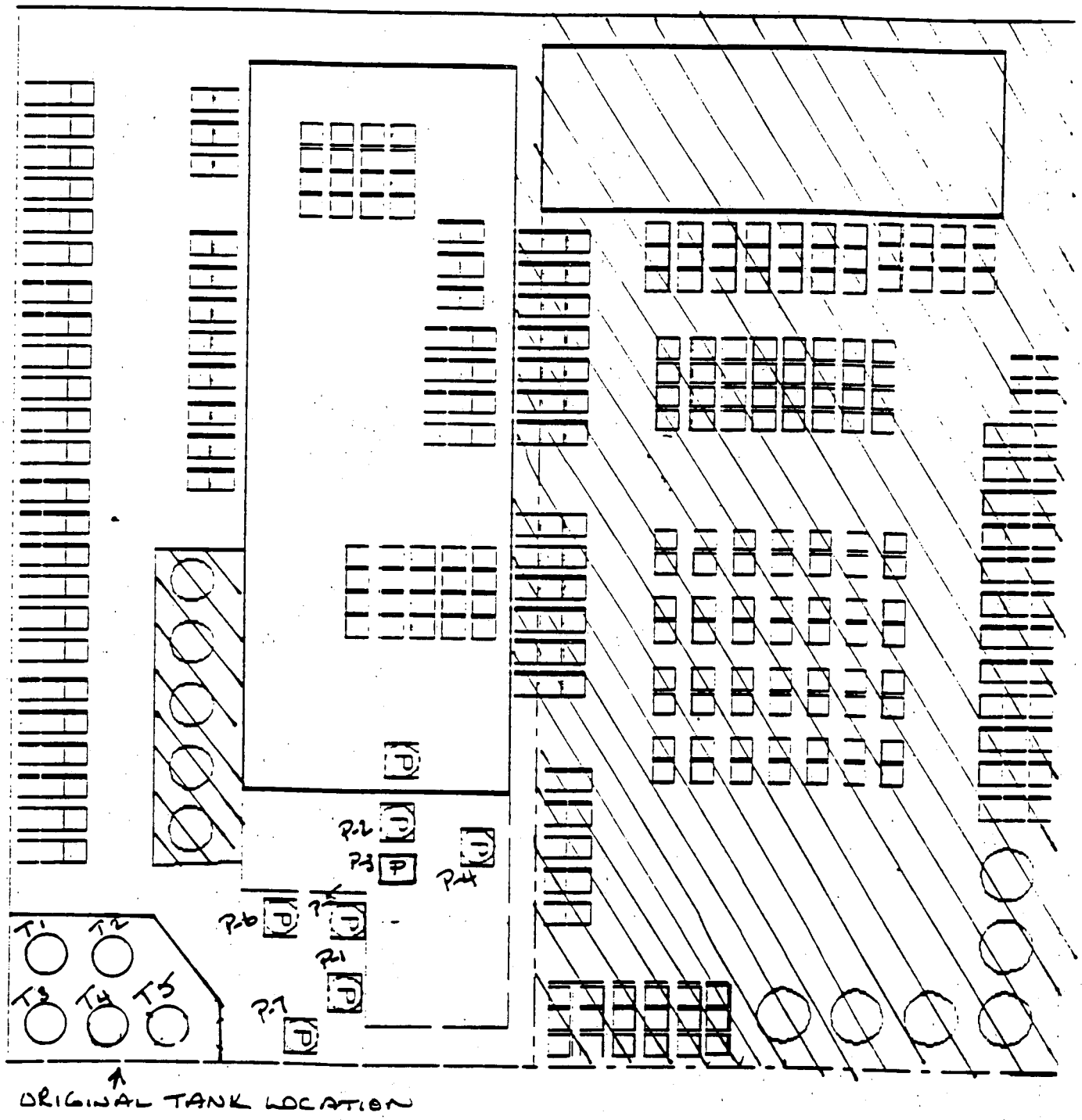
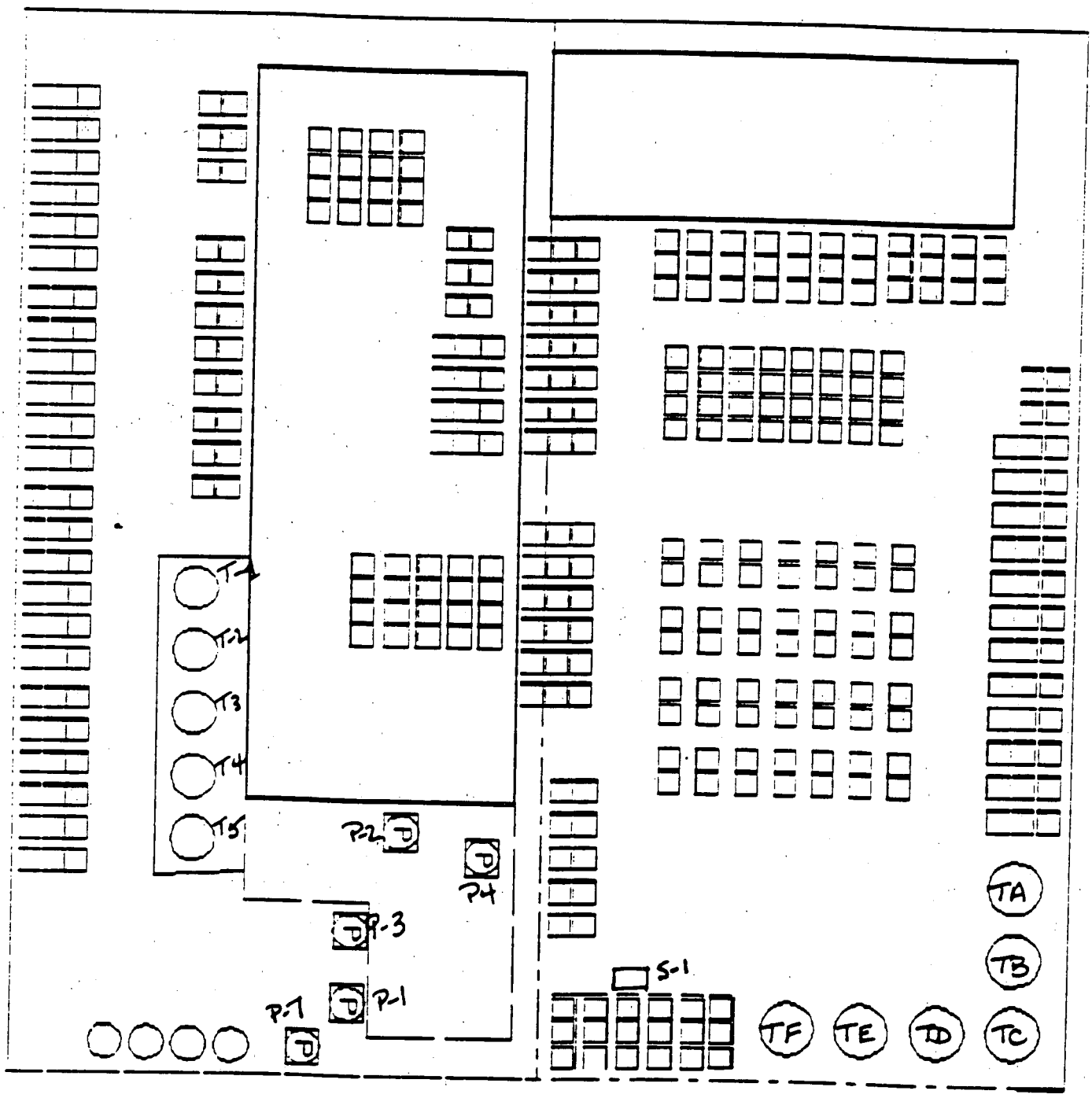


FIGURE 7B

OMEGA CHEMICAL CORP - OMEGA RECOVERY SERVICES
12504 E. WHITTIER BLVD. WHITTIER. CA 90602
CAD042245001



Daniel Wayne Coffey

Attorney at Law
1710 Esplanade, No. H
Redondo Beach, California 90277

(310) 791-0197 Phone | Committed to a Better Environment Since 1980 | Facsimile (310) 378-2541

Monday, March 27, 1995 4:40 pm

SENT BY MAIL AND FAX

Janet R. Carlson
Assistant Regional Counsel
EPA Region IX
75 Hawthorne
San Francisco, CA 94105

Nancy Nadel
Corrective Action Program
Mail Stop H-3-1, 10th floor
EPA Region IX
75 Hawthorne
San Francisco, CA 94105

Re: Response March 22, 1995 Letter from US EPA and Alternative Proposal.

Dear Ms. Carlson and Ms. Nadel:

After receiving your faxed letter dated March 22, 1995, concerning Mr. O'Meara's Interim Measures and Removal Action Workplan (IM/RA Plan) dated March 3, 1995, it came to our attention that an "alternate" PRP group - for lack of better name - was in the process of forming. We have undertaken conversations with them in order to determine if alternative funding mechanisms might be put in place to pay for the massively increased costs associated with the removal action now mandated by EPA's and DTSC's additional sampling and handling requirements.

After further consideration, and given the financially impossible nature of the new requests made by EPA and DTSC, the only opportunity we have left is to seek assistance from the other PRP groups. Due to the recent arrival of a second group we believe that there still exists an opportunity to reduce the overall cost for a removal action and therefore believe that this is the best possible alternative. However, given the extremely short timetable set by EPA, this would appear unlikely. It should be noted that this same "alternate" group has a meeting with DTSC set for April 10, 1995, and thus it appears there is no real rush to decide what action should be taken at the site. Furthermore, we realize that you know that the response could not be prepared and would simply be a waste of money without further clarification as was requested on Friday. We await your clarifications. We also still await a response to the March 3, 1995, Plan from the State of California, DTSC. To date, none has come. They are now two weeks behind schedule.

If EPA has decided to effect an immediate removal action, as appears to be the case, then, of course, assuming that all legal preconditions have been met, that decision would preclude any further discussions regarding an economically viable removal action at the site. However, we have been informed that within a week or two a decision might be made by the "alternate" group and that they might be able to assist financially to effect an economically sensible removal. Otherwise, we believe that the EPA, not DTSC, should take the lead as mentioned in the March 22, 1995 letter to avoid continuation of the astonishing set of circumstances which have developed to date.

Thank you for your attention to this matter.

Very Truly Yours,

Daniel Coffey

Attachment D

PROP-C-Controlled/Proprietary

PROP-C-Controlled/Proprietary

PROP-C-Controlled/Proprietary

PROP-C-Controlled/Proprietary

PROP-C-Controlled/Proprietary

PROP-C-Controlled/Proprietary

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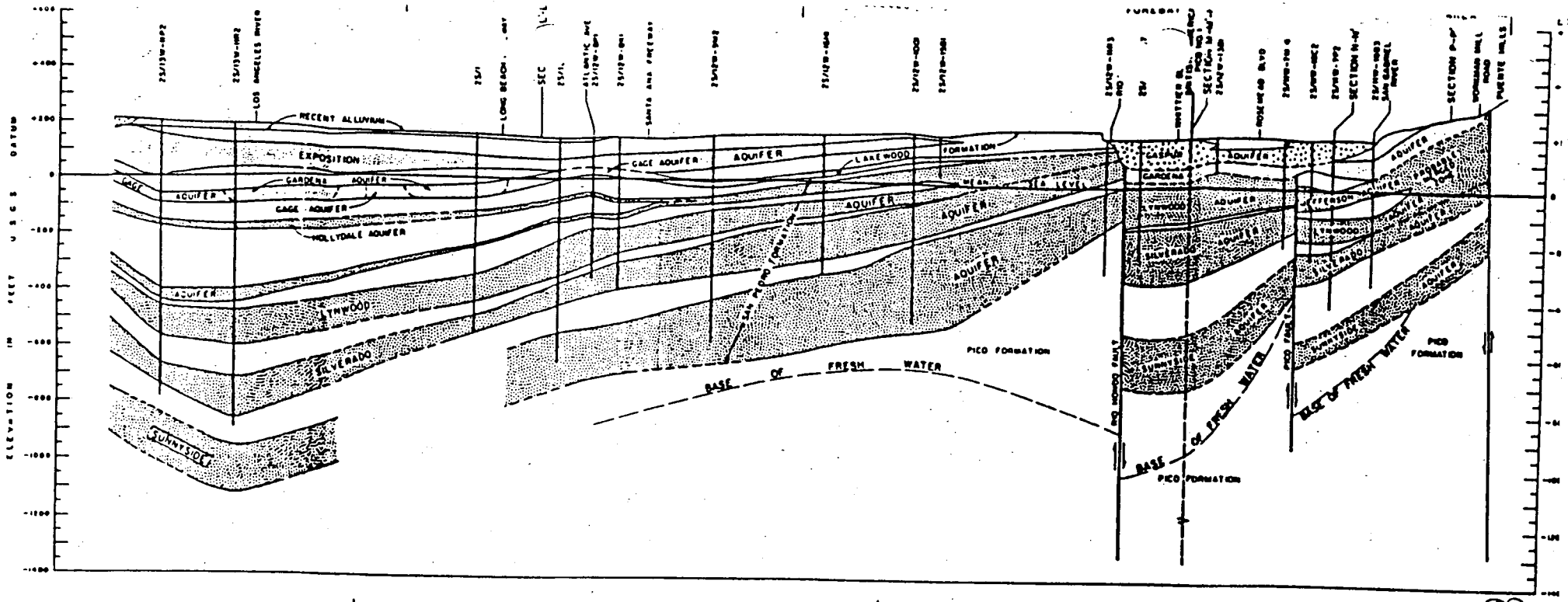

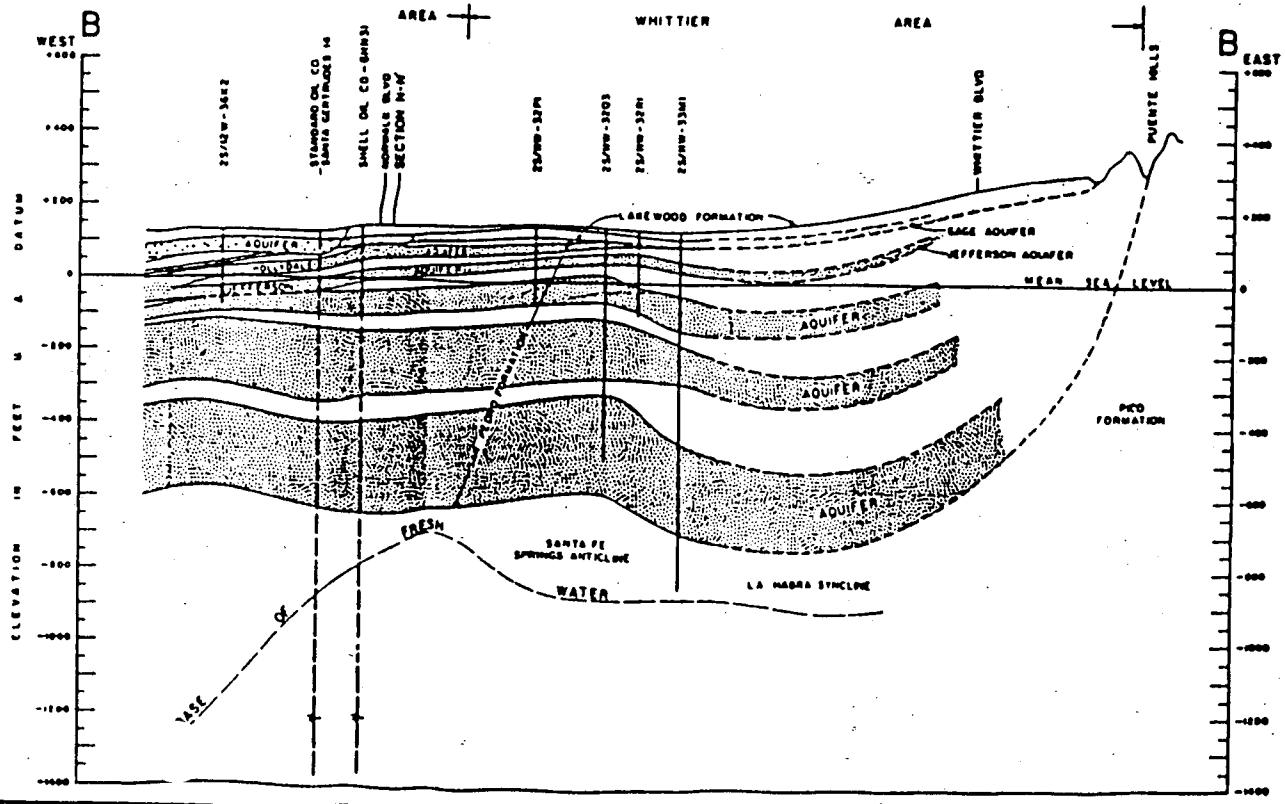

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LEGEND

- AQUICLUDES AND DEEPER UNDIFFERENTIATED FORM.
- AQUIFERS IN RECENT ALLUVIUM (INCLUDES THE GA AND BALLONA AQUIFERS)
- AQUIFERS IN LAKEWOOD FORMATION (INCLUDES TH ARTESIA, EXPOSITION, GAGE, AND GARDENA AQUIFE
- AQUIFERS IN SAN PEDRO FORMATION (INCLUDES TH HOLLYDALE, JEFFERSON, LYNWOOD, SILVERADO, AN SUNNYSIDE AQUIFERS)
- WATER WELLS
- OIL WELLS
- FAULTS

HORIZONTAL SCALE OF FEET

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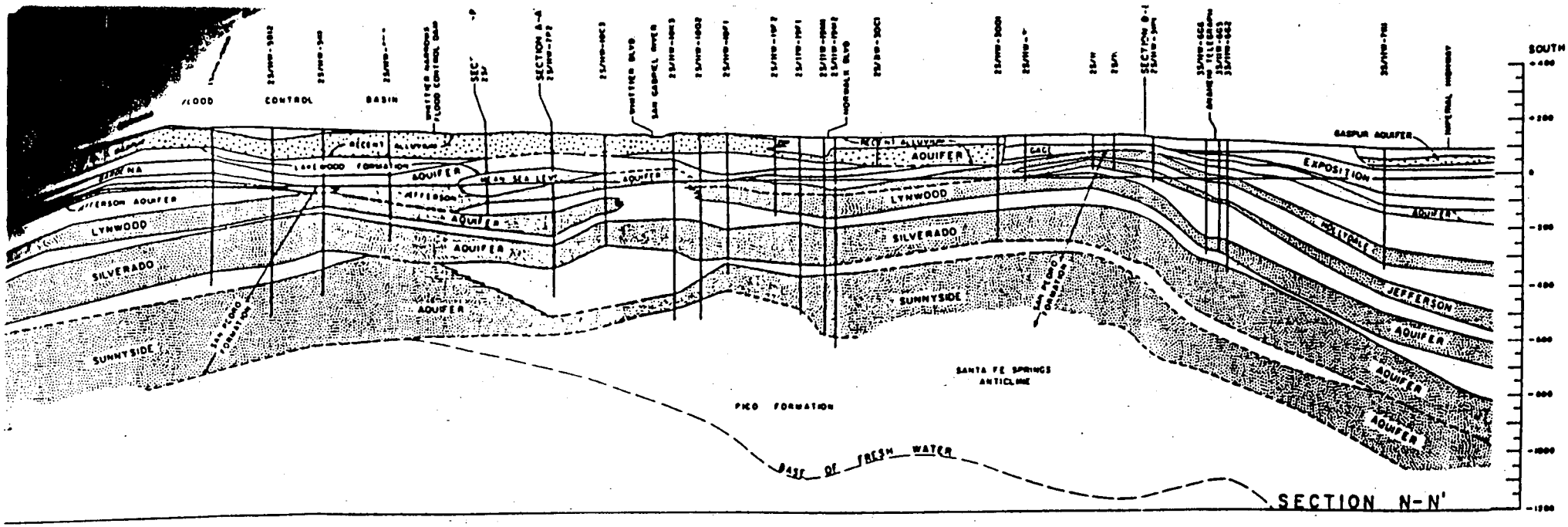
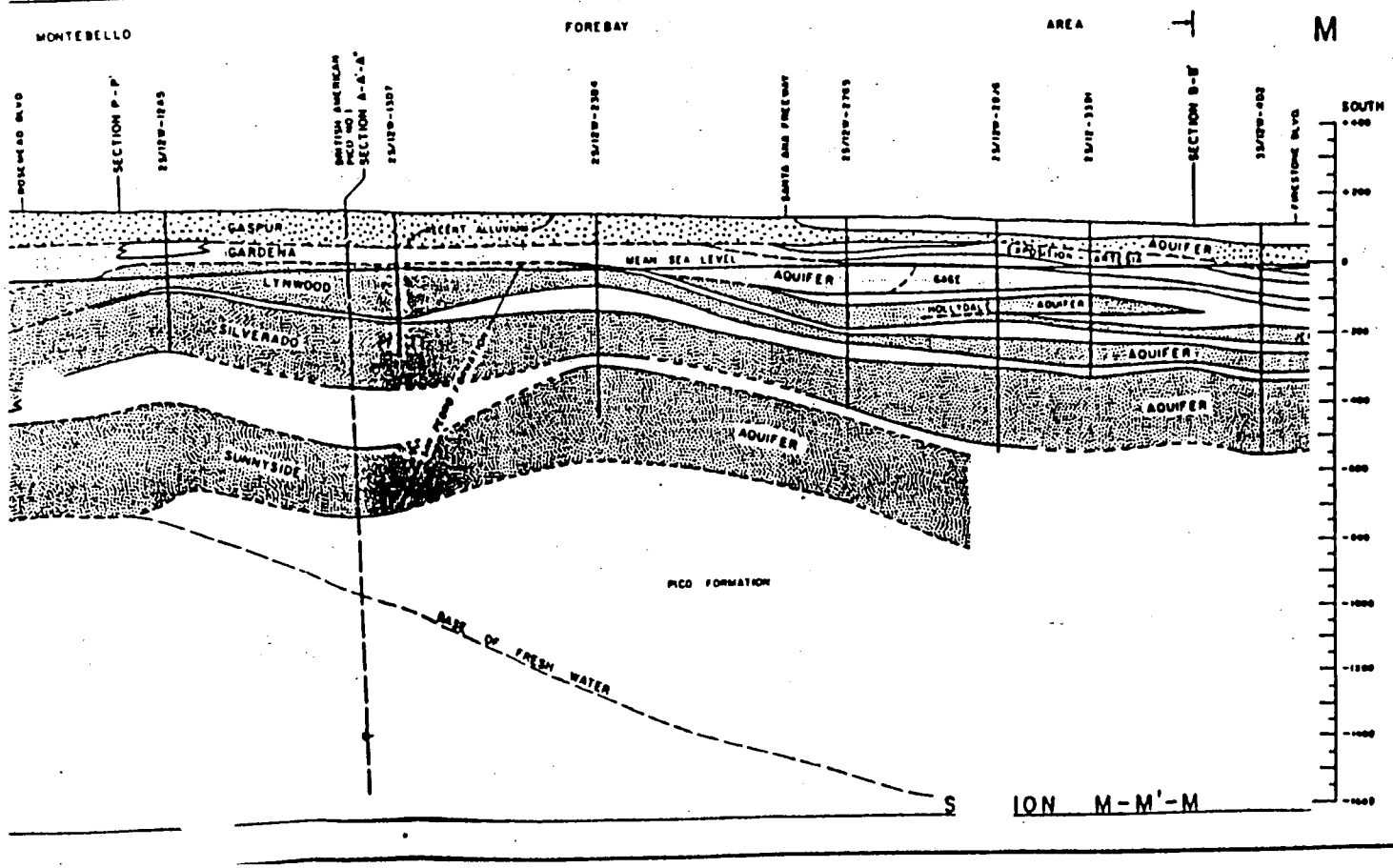
1000

ERT

IDEALIZED CROSS SECTIONS
taken from
California Department of Water Res
Bu in 104

DRAWN BY:	DATE:	PROJECT NO.:
CHK'D BY:	REVISED:	DWG.NO.:





LEGEND

- AQUICLUDES AND DEEPER UNDIFFERENTIATED FORMATIONS
- AQUIFERS IN RECENT ALLUVIUM (INCLUDES THE GASPUR AND GALLONA AQUIFERS)
- AQUIFERS IN LAKEWOOD FORMATION (INCLUDES THE ARTESIA, EXPOSITION, GAGE, AND GARDENA AQUIFERS)
- AQUIFERS IN SAN PEDRO FORMATION (INCLUDES THE HOLLYDALE, JEFFERSON, LYNWOOD, SILVERADO, AND SUNNYSIDE AQUIFERS)
- WATER WELLS
- OIL WELLS
- FAULTS

HORIZONTAL SCALE OF FEET

2000 0 2000 4000 6000

(FEET)

ERT

IDEALIZED CROSS SECTIONS
taken from
California Department of Water Resources
Bulletin 104

DRAWN BY: AM	DATE: 8/29	PROJECT NO.: 6715-0
CHK'D BY:	REVISED:	DWG.NO.: FIGURE

PROP-C-Controlled/Proprietary

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

MEMORANDUM

DATE: May 1, 1995

SUBJECT: Request for a Removal Action at the Omega Chemical site, Whittier, California

FROM: Richard Wm. Martyn, Federal On-Scene Coordinator (H-8-3)

TO: Jeff Zelikson, Director
Hazardous Waste Management Division (H-1)

THRU: Don White, Chief Field Operations Branch (H-8)
Keith Takata, Deputy Director - Superfund

I. PURPOSE

The purpose of this Action Memo is to request and document approval of the proposed removal action described herein for the Omega Chemical site located at 12504 East Whittier Boulevard, Whittier, California.

II. SITE CONDITIONS AND BACKGROUND

Site Status: Non-NPL
Category of Removal: Time-Critical
CERCLIS ID: CAD042245001
Site ID: BC

A. Site Description

1. Removal Site Evaluation

The Omega Chemical Site is located in the City of Whittier, California. Omega Chemical is a California corporation with corporate offices in Whittier, California. The Omega facility is a less than one acre site (40,000 square feet) and was dedicated to spent solvent recycling and treatment operations (primarily chlorinated hydrocarbons and chlorinated fluorocarbons). Omega utilized a variety of chemical, thermal and physical treatment processes to recycle and reduce wastes. Drums and bulk loads of waste solvents and chemicals from various industrial activities were processed to produce commercial products. Waste generated from the treatment activities included, still bottoms, aqueous fractions, and non-recoverable solvents.

Attachment F

Printed on Recycled Paper

The Omega facility operated as an off-site hazardous waste treatment and storage facility under Interim Status designation from 1976 until 1991. Due to chronic non-compliance with Interim Status standards, the Superior Court for the County of Los Angeles, ordered Omega in April 1991 to cease operation, remove all hazardous wastes and close the facility. Omega subsequently filled Chapter 11 bankruptcy in September 1991, however this action was dismissed on September 7, 1993.

On August 27, 1993, at the request of the California EPA, Department of Toxic Substances Control (DTSC), EPA OSC Martyn tasked the Technical Assistance Team (TAT) to conduct an assessment of the facility in order to evaluate the condition of over 2900 drums of unprocessed hazardous waste remaining on-site. During the August 27th evaluation TAT observed approximately 2900 drums of hazardous wastes on-site that took up virtually all available storage space on the site. The drums were situated on pallets, sometimes three high, in rows across the site. Many of the drums were weathered from years of outside storage, however, only a few of the drums during that inspection displayed signs of gross deterioration or leaking. The DTSC focus at that time was to oversee the implementation of the drum removal by the owner/operator and the site restoration activities.

One of the issues raised during the 1993 assessment was the standard practice that Omega used to identify drums. Omega routinely removed the generator hazardous waste mark from incoming manifested shipments and applied its own Omega mark. Therefore there is no record of the generator, associated manifest document number and accumulation start date available on each drum. This makes any kind of generator reconciliation through physical drum inventory impossible.

The conclusion reached by the FOSC from the 1993 TAT assessment was that although Omega represented a significant waste management problem, the State was working with the owner/operator, and the site should remain State lead.

Since that 1993 assessment, the state of California DTSC and EPA's RCRA program have been actively pursuing the owner/operator to perform a cleanup of the property, however no cleanup has taken place.

In January, 1995 DTSC again requested EPA assistance in reevaluating the conditions of the facility. That preliminary assessment was conducted on January 19, 1995 and the following conditions were observed at the facility:

* Over 3,000 drums were observed stacked three high, some without pallets between them;

* a large majority of the drums appeared to be extremely corroded;

* numerous drums were observed leaking onto other drums and onto

the concrete pad; and

* numerous spills were observed leading away from the drums to other parts of the property.

The preliminary assessment, mentioned above, concluded that the materials at the site, as well as the number of containers and their deteriorated condition, posed a potential threat to public health, welfare or the environment.

Of particular concern, is the potential for a spill or fire involving halogenated solvents that could cause the release of poisonous gases or cause groundwater pollution. Other potential problems identified were fire/explosion hazards associated with over a dozen unmarked/unknown compressed gas cylinders, treatment tanks, thermal destruction units and chemical reaction vessels, bulging drums and liquid and crystalline solids, improper storage of hazardous substances, soil contamination, groundwater contamination and inadequate security.

2. Physical Location

The site is located in the City of Whittier and is situated in a mix of industrial, commercial and residential property. Whittier is a community of approximately 77,000 people. The area is zoned heavy industrial M-1 by the city of Whittier, however there is a public roller skating rink located adjacent to the east of the Omega facility and a Kaiser Hospital to the west. Residential areas are located across the street to the south. There are three elementary schools and two high schools within one mile of the facility. There are several additional elementary schools, public parks, and Whittier College located between one and two miles from the facility.

3. Site Characteristics

The site is approximately 40,000 square feet. There are two buildings located on the site, a warehouse building (150 by 160 feet) and an administrative building (80 by 30 feet), surrounded by a service yard. Waste management units located at the facility include drum storage areas, storage tanks, and distillation towers. The two drum storage areas contain approximately 3,000 55-gallon storage drums that contain wastes, supported on wooden pallets and stacked in rows three drums high. There are five above ground 5,000-gallon storage tanks, allegedly containing residual process sludge that are located in the western portion of the property. The tanks sit on a concrete pad and are surrounded by low walls. In addition, partially dismantled process equipment, and numerous cylinders of various sizes and other treatment units are located throughout the property.

The service yard appears to be paved with concrete. The drum

storage areas consist of two large concrete pads. Prior to 1989, it is alleged that the storage areas were unpaved or paved with asphalt that was not impervious to hazardous waste migration. Ground beneath the tank storage area in the southwest corner of the facility was noted as having a deteriorating asphalt base during an April 1985 DHS inspection for Interim Status Document Compliance. At the present the concrete is cracked in some areas and has saw-cut joints for expansion. There are sumps located on the facility which may have served as points of collection for surface runoff. The west, east, and south boundaries of the property are enclosed with a concrete block wall approximately 2 feet high. The concrete and interior faces of the containment walls are not protected with chemical-resistant coating. The facility's fence is only 4 feet high along the north east boundary and would allow easy access to outsiders.

4. Releases or threatened release into the environment of a hazardous substance, or pollutant or contaminant

DRUMS

There are currently over 3,113 55-gallon drums stored onsite. The generator's original waste codes were removed by Omega upon receipt of the drums at the Whittier facility. During the overpacking conducted by IT Corporation under authority by Omega Chemical, the drums were initially hazard categorized to better determine their contents. This hazcating revealed the materials to be characteristic of ignitability and corrosivity. Halogenated compounds were also detected in the drums. There is a comprehensive description of the potential hazardous wastes handled at the Omega facility in the Corrective Action Order on Consent (Docket No. RCRA 09-91-005) dated October 17, 1991, which was signed by Omega Chemical. In its original RCRA Part A permit application dated October 7, 1980, its revised RCRA Part A application dated October 8, 1987 and its revised Notification of Hazardous Waste activity dated September 24, 1990, Respondent identified itself as handling the following hazardous wastes at the Facility:

> Hazardous wastes exhibiting the characteristics of ignitability, corrosivity, reactivity, or toxicity identified at 40 CFR 261.20-261.24: D001 through D029, D035, D037, D038, D039, D040, and D043.
>
> Hazardous waste from non-specific sources identified at 40 CFR 261.31 and having the following EPA Hazardous Waste Numbers: F001, F002, F003, F004, F005, F007, F008, F009, F010, F011, F020, F022, F027, and F028.
>
> Hazardous waste from specific sources identified at 40 CFR 261.32 and having the following EPA Hazardous Waste Numbers: K001 through K043, K048 through K052, K062, K083 through K086, K094 through K098, K101, K103, K104, and K105.
>
> Discarded commercial chemical products, manufacturing chemical

intermediates, off-specification commercial products, or manufacturing chemical intermediates having the following EPA Hazardous Waste Numbers: P001 through P122 (all P-series wastes).

Discarded commercial chemical products, manufacturing chemical intermediates, off-specification commercial products, or manufacturing chemical intermediates having the following EPA Hazardous Waste Numbers: U001 through U249 (all U-series wastes).

The waste categories that may be encountered at the Omega site could include, but not be limited, to the following:

* Flammable and ignitable wastes
* Halogenated wastes
* Fuel wastes
* Aqueous wastes
* Solid wastes

TREATMENT UNITS ON-SITE

Along with the drums are the hazardous waste process units that have been identified at the facility, these include the following items:

* 600 gallons storage tank (unknown contents)
* 20 gallons per hour incinerator
* 2000 gallons per day pH modification chemical treatment unit
* 2000 gallons per day organic compounds reaction chemical treatment unit
* 0.5 ton per hour thermal treatment unit
* 20,000 gallons per day low temperature oxidation chemical treatment unit
* 2000 gallons per day dewatering/drying physical treatment unit
* 9000 gallons per day distillation physical treatment unit
* 3000 gallons per day evaporation physical treatment unit
* 2000 gallons per day solidification/stabilization physical treatment unit

* 50 tons per day fuel production unit

* 200,000 gallons storage tank

SOIL AND GROUNDWATER

The recycling and treatment facility had been operating for approximately twenty years when Omega concreted the entire site. Leaks and spills of various wastes have occurred at the facility, resulting in documented contamination of soil and groundwater media. Existing data (ENSR, Report on Site Assessment Investigations at the Omega Recovery facility, October 1988) indicate that groundwater contaminant concentrations exceed Removal Action levels for drinking water for methylene chloride, 1,1-dichloroethylene, 1,1,1-trichloroethane, trichloroethylene, and tetrachloroethylene. This report identifies significant concentrations of chlorinated hydrocarbons in all of the soil samples and the concentrations appeared to increase with depth. As identified in the report the subsurface investigation and analytical results from the soil and groundwater samples suggest that the soil and groundwater contamination are directly related.

Deep aquifers in this vicinity are used for drinking water, and the upper and lower aquifers may be hydraulically connected. According to the facility's Part B application, the depth to the Jefferson aquifer beneath the site is 300 feet and the depth to the Lynwood aquifer is over 400 feet.

SURFACE WATER

Numerous containers had ongoing releases to the ground at the facility during the January assessment by TAT. These spills were being washed across the property by the heavy January rains in the Los Angeles area. Uncontained surface water drainage from the Facility could enter the storm drain system and flow through the Sorensen Avenue drain to the North Fork of Coyote Creek flowing to Coyote Creek.

SITE SECURITY

As previously mentioned, site security is inadequate. Because of the instability of the vast number of containers exposed to the open environment and subjected to rains and increasing summer heat, the site should have 24 hour security and daily inspections should be in place immediately. The owner appears to be financially incapable to perform these tasks, nor the ability to make the necessary corrections to prevent or control an incident.

5. NPL Status
This site has received a HRS score of **46.6**.

6. Maps, pictures and other graphic representations

See appendices to this Action Memo.

B. Other Actions to Date

1. Previous Actions

Omega Chemical entered into an Administrative Order on Consent, U.S. EPA Docket No. RCRA-09-91-0005 which was signed by EPA on October 17, 1991. This Corrective Action Order required Omega Chemical to implement a RCRA Facility Investigation and Interim Measures such as inspection of hazardous waste drums for leakage, repacking as required and disposal offsite. Omega Chemical has not complied with this order.

At a meeting held by the DTSC on February 1, 1995, written Notice of Federal Interest was issued to the property owner/operator and to a group of PRPs consisting of sixty companies and represented by a steering committee of four members. The owner/operator of the property stated that it was his intent to clean the property, but was not sure if he had the resources to perform all the work that was deemed necessary by the State and EPA. The owner stated that he would begin to develop a work plan for removing the containers and that while he was preparing the workplan he would provide for 24 hour security and contract with an environmental company to begin to overpack the leaking containers and begin daily inspections of the containers to assure no further leaks were left unattended. Since that meeting the owner/operator hired an environmental contractor, overpacked 83 leaking 55-gallon drums and submitted a workplan for the removal of the containers to the State and EPA for review and comment. The State and EPA found the plan to be deficient in many aspects, and EPA sent comments by letter dated March 22, 1995. EPA informed the owner/operator that if the deficiencies were not addressed within three working days, including obtaining the necessary financial assurance to implement the work, that either U.S. EPA or the State would take appropriate measures to implement the work at the Site. In March 27, 1995 letter, the attorney representing the owner/operator indicated that the owner/operator did not have the financial ability to implement the work in compliance with EPA's comments within the time frame indicated in EPA's letter.

2. Current Actions

The Technical Assistance Team (TAT) has been performing inspections along with the owner's contractor. These inspections were being carried out daily, however they are now only being done one a week or every two to three weeks. This inspection schedule does not follow the OSC's direction expressed in the Notice of Federal Interest issued to the owner on February 1, 1995.

C. <u>State and Local Authorities' Role</u>

1. State and local actions to date

There is a long history of regulatory compliance actions taken against this facility by both the State of California and EPA RCRA

program since 1980.

In 1991, the State of California brought an action against Mr. O'Meara and Omega in the Superior Court for Los Angeles County, which resulted in the Court ordering Omega to cease operations, remove all hazardous waste and close the facility. In September of the same year, Omega filed a Chapter 11 bankruptcy, however this action was dismissed on September 7, 1993. In January 1995, the Superior Court found Mr. O'Meara and Omega in contempt of its orders and ordered Mr. O'Meara and Omega to cease all operations at the site and to cooperate fully in all efforts to investigate and implement appropriate remedial action at the site. The State brought criminal action against Mr. O'Meara, and at the end of March 1995, Mr. O'Meara plead guilty to two felony counts of illegal storage and disposal.

DTSC notified approximately 160 parties of their potential liability and held an initial meeting with them on October 25, 1994. These notified parties sent more than 10 tons of hazardous waste to the site between January 1988 and January 1992. On February 1, 1995, DTSC and EPA held a meeting with the PRP committee members at which time EPA gave them a notice of federal interest in the Site. DTSC negotiated with these parties until late March 1995 but was unable to reach an agreement with these parties.

2. Potential for continued State/local response

On March 29, 1995, the State of California Department of Toxic Substances Control (DTSC), formally requested that the EPA take the lead for this site. DTSC stated that negotiations with the owner and the PRP group had broken down and that they were unable to have a consent order signed. The letter also stated that based on the present condition of the site that the State believed that any further delay in the removal of the waste will increase the probability of a release and/or accident at the site.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

There is a considerable amount of hazardous waste improperly stored and managed at the facility with very little action being taken to correct this by the owner. The primary waste constituents are highly toxic and flammable and pose grave potential danger to the nearby public and businesses if there were to be a release or fire at this facility. There have already been releases at the facility as mentioned above, and the deteriorated condition of the containers on-site indicate that more releases are imminent. Security at the facility is faulty and access by the public or vandals is readily available.

1. Actual or potential exposure to hazardous substances or pollutants or contaminants by nearby populations or the food chain

The most serious threat is the potential for an uncontrolled reaction between highly incompatible and acutely toxic chemicals. Large quantities of waste chlorinated solvents in deteriorating drums along with numerous other hazardous wastes at the facility lie in close proximity to each other. There is a significant risk of failure of the drums, which would cause a subsequent release. A fire involving the chlorinated solvents could cause a poison gas release that would be a major public health threat in this populated area.

2. Actual or potential contamination of drinking water supplies

Soil and groundwater samples taken by Omega in 1988 reveal the presence of hazardous contaminants in concentrations that exceed established health-based criteria. The subsurface investigation and analytical results from the soil and ground water samples suggest that the soil and ground water contamination are directly related.

3. Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release

There are over 3,000 drums, and numerous tanks, compressed gas cylinders and hazardous waste treatment units currently located on this property. These containers have been stored at the facility for many years and are in very poor condition. Over 80 drums have already failed and there are many highly corroded drums where failure is imminent. An unabated release of these materials into the environment may pose a significant threat to the local community.

4. High levels of hazardous substances or pollutants or contaminants in soils at or near the surface, that may migrate

As previously stated in this Action Memo, soil contamination has been detected directly below the drum storage area and the subsurface investigation and analytical results from the soil and ground water samples suggest that the soil and ground water contamination are directly related.

5. Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released

The weather conditions at the site have greatly affected the integrity of the drums and other containers at the facility. Many of the drums have either failed or are about to fail based on the severe corroding occurring. As the material is released from their containers, wind and rain have spread these materials on to other containers and across the site where they could be discharged to the surrounding streets and then into the storm sewers and eventually into the local creeks and streams.

6. Threat of fire and explosion

The materials present on the site are highly flammable and given the deteriorated condition of the containers, the lack of adequate security and the dense population of commercial, industrial and residential properties surrounding the site, there is a significant threat of fire and explosion.

7. Availability of other appropriate Federal or State response mechanisms to respond to the release

The State DTSC has formally transferred this site to the Emergency Response Section. The State does not possess the resources to conduct site stabilization or any other response at this site.

B. Threats to the Environment

The primary threat is to public health. The threat that could most adversely effect the environment is the release of contaminants to the soils, and the further degradation of ground water resources.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

The overall objective of the removal action will be to identify all situations which pose imminent and substantial endangerments to the public and the environment, and mitigate them in a cost effective manner consistent with NCP criteria.

1. Proposed action description

The major anticipated tasks that will be involved in the proposed response are as follows:

a. provide an interim security program prior to mobilization. The OSC will request that the Whittier Police Department and Fire Department routinely patrol the area and perform periodic site inspections.

b. provide security during removal operations.

c. sample and characterize all hazardous materials.

d. perform air monitoring and sampling in accordance with OSHA requirements during all phases of the removal action, especially when there is a potential for airborne releases of toxic air contaminants. Operational controls such as dust suppression will be used to abate fugitive dust emissions.

e. Remove or stockpile non-hazardous vehicles, equipment, and debris to provide adequate space for response operations.

f. Prepare all hazardous substances for proper transportation for disposal, or where feasible, alternative treatment or reuse/recycle options. The above may include bulking of compatible waste streams, direct shipment of materials appropriate for reuse, recontainerization of materials into DOT specification containers, lab packing small containers, solidification of liquid wastes, and neutralization or other on-site treatment of wastes.

g. Remove grossly contaminated equipment, structures and debris for proper disposal. An attempt will be made to decontaminate structures to non-hazardous levels and minimize the volume of hazardous wastes. The buildings may have to be partially, or totally, demolished in order to access areas of contamination.

h. Conduct surface and subsurface soil sampling and groundwater sampling to determine the nature and extent of contamination.

i. Dispose, stabilize or treat grossly contaminated concrete, asphalt and/or soils found at or near the surface.

j. Grade, cap and fence areas where contamination remains in soils.

2. Contribution to remedial performance

<u>The long-term cleanup plan for the site:</u>

It is anticipated that a long term remedial action will be required for this site based on the observed subsurface soil and ground water contamination. The proposed removal action will mitigate the most urgent threats and at the completion of the removal action, an orderly transition from the removal to remedial activities will be accomplished. The transition will be coordinated with EPA and State remedial programs.

<u>Threats that will require attention prior to the start of the long-term cleanup:</u>

The immediate threats that have been identified in the Action Memorandum will be addressed by the proposed removal action.

<u>The extent to which the removal will go to ensure that threats are adequately abated:</u>

The removal action will mitigate the most immediate hazards, however residual contamination may remain on-site. The intent of the removal is to stabilize, secure and minimize potential exposures by removing hazardous substances, treating or removing soil contamination "hotspots", controlling drainage and dust emissions, and improving site security measures. Additional measures may have to be taken to contain or remove contamination

that has migrated onto adjacent properties.

Consistency with the long-term remedy:

The removal action will be consistent, and will not interfere with any needed future remedial alternatives. In fact, the removal action will provide a suitable foundation for any, and all future remedial work, if required, by removing hazardous substances, providing safe access, and collecting environmental data.

3. Description of alternative technologies

Alternative cleanup technologies will be considered for use in the removal action as the situations arise.

4. Applicable or relevant and appropriate requirements (ARARs)

In accordance with 40 CFR 300.415(i), this removal shall, to the extent practicable considering the exigencies of the situation, attain applicable or relevant and appropriate requirements under federal and state environmental laws.

ARARs include RCRA standards as implemented through California's federally authorized RCRA program and RCRA Land Disposal Restrictions as set forth at 22 CCR Chapter 12-18. All waste handling, storage, packaging, transportation and disposal will be conducted in accordance with RCRA. All offsite disposal will adhere to the CERCLA Off-Site Rule as set forth in Section 300.440 of the NCP. The OSC has requested that DTSC provide EPA with potential State ARARs.

5. Project Schedule

The estimated length of time needed for the characterization of the drums and containers on site and their ultimate disposal is six months. The investigation into the subsurface soils and groundwater and the subsequent remediation is, at present, indeterminate.

B. Estimated Costs

Cost Projection Summary

Contractor Personnel	$ 250,000
Contractor Equipment	200,000
Unit rate Materials	40,000
Subcontractors	100.000
Waste Transportation & Disposal	2,036,000
Cleanup Contractor Subtotal	$ 2,626,000
Federal and State Agencies	$ 100,000
Extramural Subtotal	$ 2,726,000

Extramural Contingency (20%)	545,200
Extramural Subtotal	$ 3,271,200
TAT Personnel	$ 250,000
TAT Analytical	50,000
Total TAT Costs	$ 300,000
Extramural Subtotal	$ 3,571,200
Project Contingency (15%)	535,680
Total Extramural Costs	$ 4,106,880
EPA Regional Personnel	$ 98,000
EPA Indirect	$ 25,000
EPA Total	$ 123,000
Project Total	$ 4,229,880

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

The "worst-case" scenario should no action be taken would be that the drums would rupture causing a vapor release and subsequent fire that would engulf the halogenated containers and compressed chlorinated fluorocarbon (CFC) refrigerants causing the formation of poisonous gases. A release of this nature is expected to be life-threatening to the adjacent residences and businesses.

The containers are in poor condition. The facility may attract children and arson or vandalism is a real threat. These events coupled with inadequate security and maintenance heightens the possibility of a catastrophic release.

VII. OUTSTANDING POLICY ISSUES

The removal action will require the opening, sampling, pumping off and bulking of large volumes of toxic and reactive chemicals. This action will also involve the opening and sampling of the unknown compressed gas cylinders and storage and treatment tanks. Due to the inherent risks associated with this type of operation, especially in a populated area, the OSC will coordinate contingency planning with the DTSC and the various City of Whittier agencies.

VIII. ENFORCEMENT

The Enforcement Addendum to this Action Memo contains confidential enforcement information.

IX. RECOMMENDATION

This decision document represents the selected removal action for the Omega Chemical site, in Whittier, California developed in accordance with CERCLA as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the site.

Conditions at the site meet the NCP section 300.415(b)(2) criteria for a removal and I recommend your approval of the proposed removal action. The total project ceiling if approved will be $4,229,880. of this, an estimated $4,106,880 comes from the Regional removal allowance.

Keith Takata for JC — 5-3-95

Approval Signature — Date

Disapproval Signature — Date

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street

San Francisco, CA 94105-3901

IN THE MATTER OF: Omega Chemical Corporation 12504 E. Whittier Boulevard Whittier, CA 90602 RESPONDENTS: Listed in Appendices A & B	Order No. 95-15 ADMINISTRATIVE ORDER PURSUANT TO SECTION 106 OF THE COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT OF 1980 as amended, 42 U.S.C. Section 9606(a)

PREAMBLE

This Administrative Order (Order) is issued on this date to the Respondents, pursuant to the authority vested in the President of the United States by Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. Section 9606(a), as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. L. 99-499 (CERCLA), delegated to the Administrator of the United States Environmental Protection Agency ("U.S. EPA") by Executive Order No. 12580, January 23, 1987, 52 Federal Register 2923, further delegated to the EPA Regional Administrators by U.S. EPA Delegation Nos. 14-14-A and 14-14-B, and further redelegated to the Director, Hazardous Waste Management Division by Region IX Delegations 1290.41 and 1290.42.

The State of California has been notified of the issuance of this Order as required by Section 106(a) of CERCLA, 42 U.S.C. Section 9606(a).

Attachment G

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Printed on Recycled Paper

This Order pertains to the Omega Chemical Corporation Site property located at 12504 E. Whittier Boulevard, Whittier, California ("the Site"). This Order requires the Respondents to undertake and complete removal activities to abate an imminent and substantial endangerment to the public health and welfare or the environment that may be presented by the actual or threatened release of hazardous substances at or from the Site.

PARTIES BOUND

This Order applies to and is binding upon Respondents and Respondents' heirs, receivers, trustees, successors and assigns. Any change in ownership or corporate status of Respondents including, but not limited to, any transfer of assets or real or personal property shall not alter such Respondents responsibilities under this Order. Respondents are jointly and severally liable for carrying out all activities required by this Order. Compliance or noncompliance by one or more Respondents with any provision of this Order shall not excuse or justify noncompliance by any other Respondent. Respondents shall ensure that their contractors, subcontractors, and representatives comply with this Order. Respondents shall be responsible for any noncompliance.

FINDINGS OF FACT

Based on available information, including the Administrative Record in this matter, U.S. EPA hereby finds:

1. Site Description/Location

The Omega Chemical Corporation Site is located at 12504 E. Whittier Boulevard, Whittier, California. Omega Chemical Corporation is a spent solvent recycling and treatment facility (primarily chlorinated hydrocarbons and chlorinated fluorocarbons) which operated from 1976 until at least 1991. Omega utilized a variety of chemicals, thermal and physical treatment processes to recycle and reduce wastes. Drums and bulk loads of waste solvents and chemicals from various industrial activities were processed to produce commercial products. Waste generated from the treatment activities included still bottoms, aqueous fractions, and non-recoverable solvents.

The Site is approximately 40,000 square feet and is comprised of two buildings, a warehouse (150 by 160 feet) and an administrative building (80 by 30 feet) surrounded by a service yard. Waste management units located at the facility include drum storage areas, storage tanks, and distribution towers. The two drum storage areas contain approximately 3,000, 55-gallon drums that contain wastes and are supported on wooden pallets and stacked in rows three drums high. There are five, 5,000 gallon above ground storage tanks, allegedly containing

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residual process sludge located in the western portion of the property. The tanks sit on a concrete pad and are surrounded by low walls. In addition, partially dismantled process equipment, and numerous cylinders of various sizes and other treatment units are located throughout the Site.

The service yard appears to be paved with concrete. The drums storage areas consist of two large concrete pads. Prior to 1989, it is alleged that the storage areas were unpaved or paved with asphalt that was not impervious to hazardous waste migration. Ground beneath the tank storage area in the southwest corner of the facility was noted as having a deteriorating asphalt base during an April 1985 California Department of Health Services ("DHS") inspection for Interim Status Document Compliance. At the present, the concrete is cracked in some areas and has saw-cut joints for expansion. There are sumps located at the facility which may have served as points of collection for surface runoff. The west, east, and south boundaries of the property are enclosed with a concrete block wall approximately 2 feet high. The concrete and interior fences of the containment walls are not protected with chemical-resistant coating. The facility's fence is only 4 feet high along the northeast boundary and allows easy access to teenagers and other persons who congregate at numerous public facilities in the area.

The Site is located in the City of Whittier, a community of approximately 77,000 people. The Site comprises a mix of industrial, commercial, and residential property. The area is zoned heavy industrial M-1; however, there is a public skating rink located adjacent to the east of the Site and Kaiser Hospital to the west. Residential areas are located across the street to the south and there are three elementary schools and two high schools within a one-mile radius of the facility. There are several additional elementary schools, public parks, and Whittier College located between one and two miles from the Site.

2. <u>Respondents</u>

Respondent Omega Chemical Corporation is a corporation incorporated under the laws of California. Respondent Omega Chemical Corporation holds title to the property located at 12504 E. Whittier Boulevard, Whittier, California. Omega Chemical Corporation operated the Site from in or about the years from 1976 to at least 1991.

Respondent Dennis O'Omeara is an individual who resides in the State of Nevada. Mr. O'Omeara is the President of Omega Chemical Corporation and operated the Site in or about the years from 1976 to at least 1991.

Based on California Department of Toxic Substance Control's ("DTSC") computer database for hazardous waste manifests, in or about the years from 1988 to 1991, the Respondents identified in Appendix A arranged for disposal or treatment, or arranged with a transporter for transport for disposal or treatment of greater than ten (10) tons of hazardous waste to the Omega Chemical Corporation Site.

3. Incident/Release Characteristics

The Omega facility operated as an off-site hazardous waste treatment and storage facility under Interim Status designation from 1976 until 1991. The facility's contractors detected releases of RCRA wastes to soil and groundwater in a 1983 study. The Omega Chemical Corporation entered into an Administrative Order on Consent, U.S. EPA Docket No. RCRA-09-91-0005 ("RCRA Order") to implement a RCRA facility investigation and interim measures which was signed by EPA on October 17, 1991. In 1991, the State of California brought a civil action against Omega Chemical Corporation and Mr. Dennis O'Meara; the President of Omega Chemical Corporation, in the Superior Court for Los Angeles County, which resulted in the Court ordering Omega to cease operations, remove all hazardous waste and close the facility.

On August 27, 1993, at the request of the DTSC, EPA Federal On-Scene Coordinator, Richard Martyn, tasked the Technical Assistance Team ("TAT") to conduct a site assessment at the Omega Site. During the assessment, TAT observed approximately 2900 drums of hazardous wastes that entirely filled all available storage space at the Site. The drums were situated on pallets, sometimes three high and stacked in rows across the Site. Many of the drums were weathered from years of outside storage; however, only a few of the drums inspected displayed any signs of gross deterioration or were leaking. The DTSC concern at this time was to oversee implementation of a drum removal action and site restoration activities. The conclusion reached from the 1993 TAT assessment was that Omega represented a significant waste management problem, however the State was working with the owner/operator, and the Site should remain State lead. Since that 1993 assessment, the DTSC and EPA's RCRA program have been actively pursuing the owner/operator to perform a cleanup of the property. The State of California brought a contempt action against Omega Chemical Corporation and Mr. O'Meara, and in January 1995, the Superior Court found Mr. O'Meara and Omega in contempt of its orders and ordered that Mr. O'Meara and Omega cease all operations at the Site and cooperate fully in all efforts to investigate and implement appropriate action at the site. The State brought a criminal action against Mr. O'Meara, and at the end of March 1995, Mr. O'Meara plead guilty to two felony counts of illegal storage and disposal.

In January 1995, DTSC again requested that EPA provide assistance in reevaluating conditions at the Site. Another preliminary assessment was conducted on January 19, 1995, and the following conditions were observed at the facility: 1) over 3,000 drums were observed stacked three high, some without pallets between them; 2) a large majority of the drums appeared to be extremely corroded; 3) numerous drums were observed leaking onto other drums and onto the concrete pad; and 4) numerous spills were observed leading away from the drums to other parts of the property.

At a meeting held by the DTSC on February 1, 1995, written notice of Federal Interest was issued to the owner and operator and to a group of companies that sent waste to the site. Since that meeting the owner/operator hired an environmental contractor, overpacked 83 leaking 55-gallon drums and submitted a workplan for the removal of the containers to the State and EPA for comment. The State and EPA found the plan to be deficient and sent comments to the owner/operator. On March 27, 1995, the attorney representing the owner/operator indicated that the owner/operator did not have the financial ability to implement the work in compliance with EPA comments within the time frame required by EPA's letter.

4. <u>Quantities and Types of Substances Present</u>

There are currently approximately 3,000 55-gallon drums stored at the Site which contain hazardous waste. During the overpacking conducted by Omega's contractor, IT Corporation, the drums were initially hazcategorized to better document their contents. Hazcatting revealed halogenated compounds and hazardous waste characteristic of ignitability and corrosivity in the drums. There is a comprehensive description of the potential hazardous wastes handled at the Omega facility in the Administrative Order on Consent (Docket No. RCRA 09-91-005) which was signed by Omega Chemical. In its original RCRA Part A permit application dated October 7, 1980, its revised RCRA Part A application dated October 8, 1987 and its revised Notification of Hazardous Waste activity dated September 24, 1990, Respondent identified itself as handling the following hazardous wastes at the Facility:

> Hazardous wastes exhibiting the characteristics of ignitability, corrosivity, reactivity, or toxicity identified at 40 CFR 261.261.24: D001 through D029, D035, D037, D038, D039, D040, and D043.
>
> Hazardous waste from non-specific sources identified at 40 CFR 261.31 and having the following EPA Hazardous Waste Numbers: F001, F002, F003, F004, F005, F007, F008, F008, F010, F011, F020, F022, F027, and F028

Hazardous waste from specific sources identified at 40 CFR 261.32 and having the following RCRA Hazardous Waste Numbers: K001 through K043, K048 through K052, K062, K083 through K086, K094 through K098, K101, K103, K104 and K105.

Discarded commercial chemical products, manufacturing chemical intermediates, off-specification commercial products, or manufacturing chemical intermediates having the following EPA Hazardous Waste Numbers: P001 through P122 (all P-series wastes).

Discarded commercial chemical products, manufacturing chemical intermediates, off-specification commercial products, or manufacturing chemical intermediates having the following EPA Hazardous Waste Numbers: U001 through U249 (all U-series wastes).

Hazardous waste process units that have been identified at the Site, include the following items:

- 600 gallon storage tank (unknown contents)
- 20 gallons per hour incinerator
- 2,000 gallons per day pH modification chemical treatment unit
- 2,000 gallons per day organic compounds reaction chemical treatment unit
- 0.5 ton per hour thermal treatment unit
- 20,000 gallons per day low temperature oxidation chemical treatment unit
- 2,000 gallons per day dewatering/drying physical treatment unit
- 2,000 gallons per day distillation physical treatment unit
- 3,000 gallons per day evaporation physical treatment unit
- 2,000 gallons per day solidification/stabilization physical treatment unit
- 200,000 gallon storage tank

5. Threats to the Public Health, Welfare, and Environment

There is the potential for a spill or fire involving halogenated solvents that could cause the release of poisonous gases or cause groundwater pollution. There are fire/explosion hazards associated with over a dozen unmarked/unknown compressed gas cylinders, treatment tanks, thermal destruction units and chemical reaction vessels, bulging drums, liquid and crystalline solids, improper storage of hazardous substances, and potential soil and groundwater contamination. There is the potential for human endangerment due to inadequate site security if the Site walls or fences are breached.

Leaks and spills of various wastes have occurred at the Omega facilitly resulting in documented contamination of the soil and groundwater. Existing data from Omega's contractor (ENSR, Report on Site Assessment Investigations at the Omega facility, October 1988) indicate that groundwater contaminant concentrations exceed removal action levels for drinking water for methylene chloride, 1,1- dichloroethylene, 1,1,1-trichloroethane, trichloroethylene, and tetrachloroethylene. This report identifies significant concentrations of chlorinated hydrocarbons in all the soil samples and the concentrations appeared to increase with depth. As identified in the report, the subsurface investigation and analytical results from the soil and groundwater samples suggest that the soil and groundwater contamination are directly related.

Methylene chloride is a suspected human carcinogen (American Conference of Governmental Industrial Hygienists 1988-1990).

Tetrachloroethylene ("PCE") is a classified as a human carcinogen. The Maximum Contaminant level (MCL) for drinking water is 5 micrograms per liter. Up to 1030 micrograms per liter of PCE was found in groundwater beneath the Site.

Trichloroethylene ("TCE") is classified as a probable human carcinogen. The MCL for TCE is 5 micrograms per liter. Up to 258 micrograms per liter of TCE was detected in groundwater beneath the Site.

1,1-Dichloroethylene ("DCE") is classified as a possible human carcinogen. The MCL for DCE is 6 micrograms per liter. Upt to 1080 micrograms per liter of DCE was detected in groundwater beneath the Site.

Chloroform is a suspected human carcinogen. Up to 24 micrograms per liter were found in groundwater below the site.

1,1,1-Trichloroethane ("Methyl chloroform") is classified as a probable human carcinogen. The MCL for methyl chloroform is 200 micrograms per liter. Up to 2080 micrograms per liter were detected in groundwater beneath the Site.

CONCLUSIONS OF LAW

Based on the foregoing Findings of Fact and the Administrative Record supporting this removal action, U.S. EPA has concluded that:

6. The property on which Omega Chemical Corporation is located at 12504 E. Whittier Boulevard, Whittier, California, is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. Section 9601(9).

7. Each Respondent is a "person" as defined by Section 101(21) of CERCLA, 42 U.S.C. Section 9601(21).

8. Respondent Mr. Dennis O'Meara is either a person who at the time of disposal of any hazardous substances owned or operated the Site within the meaning of Section 107(a)(2) of CERCLA, 42 U.S.C. Section 107(a)(2) or who arranged for disposal of hazardous substances at the Site within the meaning of Section 107(a)(3) of CERCLA, 42 U.S.C. Section 9607(a)(3).

9. Respondent Omega Chemical Corporation is the current "owner" of the Site as defined by Section 101(20) of CERCLA, 42 U.S.C. Section 9601(20) and owned or operated the Site within the meaning of Section 107(a)(2) of CERCLA, 42 U.S.C. Section 107(a)(2).

10. Each Respondent identified in Appendix A arranged for disposal or treatment, or arranged for transport for disposal or treatment of hazardous substances at the Omega Chemical Corporation facility within the meaning of Section 107(a)(3) of CERCLA, 42 U.S.C. Section 9607(a)(3).

11. Each Respondent is therefore a liable person under Section 107(a) of CERCLA, 42 U.S.C. Section 9607.

12. Methylene chloride, Tetrachloroethylene ("PCE"), Trichloroethylene ("TCE"), 1,1-Dichloroethylene ("DCE"), 1,1,1-Trichloroethane ("Methyl chloroform"), characteristic hazardous waste are hazardous substances as defined by Section 101(14) of CERCLA, 42 U.S.C. Section 9601(14), and Section 302.4 of the National Contingency Plan (NCP), 40 CFR Part 300.

13. The presence of hazardous waste in deteriorating drums and the presence of Methylene chloride, Tetrachloroethylene ("PCE"), Trichloroethylene ("TCE"), 1,1-Dichloroethylene ("DCE"), and 1,1,1-Trichloroethane ("Methyl chloroform") in the soil and

groundwater constitutes an actual or threatened "release" as that term is defined in Section 101(22) of CERCLA, 42 U.S.C. Section 9601(22).

DETERMINATIONS

Based on the above Findings of Fact and Conclusions of Law, the Director, Hazardous Waste Management Division, EPA Region IX, has made the following determinations:

14. The actual or threatened release of hazardous substances from the Facility may present an imminent and substantial endangerment to the public health, welfare, or the environment.

15. The actions required by this Order, if properly performed, are consistent with the National Contingency Plan ("NCP"), 40 CFR Part 300 and CERCLA; and are appropriate to protect the public health, welfare, or the environment.

16. The conditions present at the Site constitute a threat to public health, welfare, or the environment based upon consideration of the factors set forth in the NCP at 40 CFR Section 300.415(b). These factors include, but are not limited to, the following:

a. Actual or potential exposure to hazardous substances by nearby populations, animals, or food chain

A serious threat is the potential for an uncontrolled reaction between highly incompatible and acutely toxic chemicals. Large quantities of waste chlorinated solvents in deteriorating drums along with numerous other hazardous wastes at the Site lie in close proximity to each other. There is a significant risk of failure of the drums, which would cause a subsequent release. A fire involving the chlorinated solvents could cause a poisonous gas release that would be a major public health threat to the surrounding populated area.

b. Weather conditions that may cause hazardous substances to migrate or be released

The weather conditions at the Site have greatly affected the integrity of the drums and other containers. Many of the drums have either failed or are about to fail based on the severe corroding occurring. As the material is released from their containers, wind and rain have spread these materials onto other containers and across the Site where they could be discharged into the surrounding streets, adjacent storm sewers, and eventually into the local creeks and streams.

c. Actual or potential contamination of drinking water supplies

Soil and groundwater samples taken by Omega's contractor in 1988 reveal the presence of hazardous contaminants in concentrations that exceed established health-based criteria. The subsurface investigation and analytical results from the soil and groundwater samples suggest that the soil and groundwater contamination are directly related. Deeper aquifers in the vicinity are used for drinking water. The upper and lower aquifers may be hydraulically connected. The city of Santa Fe Springs operates three wells within three miles of the Site.

d. The unavailability of other appropriate Federal or State response mechanisms to respond to the release

The California Department of Toxic Substances has formally transferred this Site to the United States Environmental Protection Agency. The State does not possess the necessary resources to conduct site stabilization and further removal activities at this time.

e. Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release

There are over 3,000 drums, numerous tanks, compressed gas cylinders and hazardous waste treatment units currently located at the Site. These containers have been stored at the Omega for many years and are in very poor condition. Over 80 drums were discovered leaking and required overpacking during February and March of 1995, and there are many highly corroded drums where failure is imminent. An unabated release of these materials into the environment may pose a significant threat to the local community.

f. High levels of hazardous substances or pollutants or contaminants in soils at or near the surface, that may migrate

Soil contamination has been detected directly below the drum storage area and it is suspected that this is related to the contamination of the groundwater.

g. Threat of fire and explosion

The materials present on the Site are highly flammable and given the deteriorated condition of the containers, the lack of adequate security and the dense population of surrounding area, there is a significant threat of fire and explosion.

ORDER

Based upon the foregoing Findings, Conclusions, and Determinations, and pursuant to Section 106(a) of CERCLA, 42 U.S.C. Section 9606(a), it is hereby Ordered that the Respondents undertake the following actions under the direction of EPA's On-Scene Coordinator.

17. Respondents shall notify EPA in writing by June 1, 1995 stating their irrevocable intent to comply with this Order, except for the activities set forth in paragraphs 21(h-i). Respondents shall notify EPA in writing by September 1, 1995 stating their irrevocable intent to comply with the removal activities set forth in paragraphs 21(h-i) ("Phase II Work") of this Order. In the event any Respondent fails to provide such notice, that Respondent shall be deemed not to have complied with the terms of this Order.

18. Within seven (7) calendar days after the effective date of this Order, the Respondents shall submit to U.S. EPA for approval, a Phase I Work Plan for the removal activities set forth in Paragraph 21 (a-g) below. Within three (3) months after the effective date of this Order, the Respondents shall submit to U.S. EPA for approval, a Phase II Work Plan for the removal activities set forth in Paragraph 21 (h-i). The Phase I and Phase II Work Plans shall provide a concise description of the activities to be conducted to comply with the requirements of this Order, and shall include a proposed schedule for implementing and completing the activities. The Phase I and Phase II Work Plans shall be reviewed by U.S. EPA, which may approve, disapprove, require revisions to, or modify the Work Plans. The Respondents shall implement the Phase I and Phase II Work Plans as finally approved by U.S. EPA. Once approved, the Phase I and Phase II Work Plans shall be deemed to be incorporated into and made a fully enforceable part of this Order.

19. The Phase I and Phase II Work Plans shall contain a site safety and health plan, a transportation and disposal plan, and a schedule of the work to be performed. The site safety and health plan shall be prepared in accordance with EPA's Standard Operating Safety Guide, dated November, 1984, and updated July, 1988, and with the Occupational Safety and Health Administration (OSHA) regulations applicable to Hazardous Waste Operations and Emergency Response, 29 CFR Part 120.

20. The Respondents shall retain an environmental contractor qualified to undertake and complete the requirements of this Order, and shall notify U.S. EPA of the name of such contractor within five (5) days of the receipt of this Order. U.S. EPA retains the right to disapprove of any, or all, of the contractors and/or subcontractors retained by the Respondents.

In the event U.S. EPA disapproves of a selected contractor, the Respondents shall retain a different contractor to perform the work, and such selection shall be made within two (2) business days following U.S. EPA's disapproval.

21. Within three (3) calendar days after U.S. EPA approval of the Phase I Work Plan, the Respondents shall commence implementation of the Work Plan as approved or modified by U.S. EPA. Within three (3) calendar days after U.S. EPA approval of the Phase II Work Plan, the Respondents shall commence implementation of the Phase II Work Plan as approved or modified by U.S. EPA. Failure of any Respondent to properly implement all aspects of the Phase I or Phase II Work Plan shall be deemed to be a violation of the terms of this Order. The Phase I Work Plan shall require the Respondents to perform, and complete within sixty (60) calendar days after approval, at a minimum, the removal activities identified in paragraphs (a-g). The Phase II Work Plan shall require the Respondents to perform, and complete within ninety (90) calendar days after approval, at a minimum, the activities identified in paragraphs (h-i):

a. Immediately provide security and restrict access to the Site and prevent any materials, equipment or any other item from being removed from the Site without prior EPA approval.

b. Provide security during removal operations.

c. Sample and characterize all drums, containers and hazardous materials.

d. Perform air monitoring and sampling in accordance with OSHA requirements during all phases of the removal action, especially when there is a potential for airborne releases of toxic air contaminants. Operational controls such as dust suppression will be used to abate fugitive dust emissions.

e. Remove or stockpile non-hazardous vehicles, equipment, and debris to provide adequate space for response operations.

f. Prepare all hazardous substances for proper transportation for disposal, or where feasible, alternative treatment or reuse/recycle options. The above may include bulking of compatible waste streams, direct shipment of materials appropriate for reuse, recontainerization of materials into DOT specification containers, lab packing small containers, solidification of liquid wastes, and neutralization or other on-site treatment of wastes.

g. Remove grossly contaminated equipment, structures and debris for proper disposal in compliance with state and federal regulations. Decontaminate structures pursuant to applicable state and federal regulations and laws.

h. Conduct surface and subsurface soil sampling and groundwater sampling to determine the nature and extent of contamination.

i. Dispose, stabilize or treat grossly contaminated concrete, asphalt and/or soils found at or near the surface at the direction of the OSC.

22. The Respondents shall provide EPA with written weekly summary reports. These reports should contain a summary of the previous week's activities and up-coming activities.

23. Respondents shall inform EPA at least forty-eight (48) hours prior to commencement of on-Site work.

24. All sampling and analysis shall be consistent with the "Quality Assurance/Quality Control Guidance for Removal Activities": "Sampling QA/QC Plan and Data Validation Procedures," EPA OSWER Directive 9360.4-01, dated April, 1990.

25. Any hazardous substance, pollutant, or contaminant transferred off-Site as a result of this Order must be taken to a facility acceptable under the EPA Off-Site Disposal Policy (OSWER Directive 9834.11, November 13, 1987) in accordance with CERCLA Section 121(d)(3), 42 U.S.C. §9621(d)(3).

26. With five (5) days of receipt of this Order, the Respondents shall designate a Project Coordinator. To the greatest extent possible, the Project Coordinator shall be present on site or readily available during site work. The U.S. EPA has designated Richard Martyn as its On-Scene Coordinator. The On-Scene Coordinator and the Project Coordinator shall be responsible for overseeing the implementation of this Order. To the maximum extent possible, communication between the Respondents and the U.S. EPA, and all documents, reports, and all other correspondence concerning the activities relevant to this Order, shall be directed through the On-Scene Coordinator and the Project Coordinator.

27. The U.S. EPA and the Respondents shall each have the right to change their respective designated On-Scene Coordinator or Project Coordinator. U.S. EPA shall notify the Respondents, and Respondents shall notify U.S. EPA, as early as possible before such a change is made, but in no case less then 24 hours before such a change. Notification may initially be verbal, but shall promptly be reduced to writing.

28. The U.S. EPA On-Scene Coordinator shall have the authority vested in an On-Scene Coordinator by the NCP, 40 CFR Part 300, as amended, including the authority to halt, conduct, or direct any work required by this Order, or to direct any other response action undertaken by U.S. EPA or the Respondents.

29. No extensions to the above time frames shall be granted without sufficient cause. All extensions must be requested in writing, and shall not be deemed accepted unless approved in writing, by U.S. EPA.

30. All instructions by the U.S. EPA On-Scene Coordinator or his designated alternate shall be binding upon the Respondents as long as those instructions are not clearly irconsistent with the National Contingency Plan.

31. To the extent that the Facility, or other areas where work under this Order is to be performed is owned by, or in possession of, someone other than the Respondents, the Respondents shall obtain all necessary access agreements. In the event that after using their best efforts any Respondent is unable to obtain such agreements, the Respondent shall immediately notify U.S. EPA.

32. Respondents, Omega Chemical Corporation and Dennis O'Meara, shall provide access to the Site and participate and cooperate with the Respondents for the performance of the work under this Order. The Respondents shall provide access to the Site to U.S. EPA employees, contractors, agents, and consultants at reasonable times, and shall permit such persons to be present and move freely in the area in order to conduct inspections, including taking photographs and videotapes of the Site, to do cleanup/stabilization work, to take samples, to monitor the work under this Order, and to conduct other activities which the U.S. EPA determines to be necessary.

33. Nothing contained herein shall be construed to prevent U.S. EPA from seeking legal or equitable relief to enforce the terms of this Order, or from taking other legal or equitable action as it deems appropriate and necessary, or from requiring the Respondents in the future to perform additional activities pursuant to CERCLA, 42 U.S.C. Section 9601, et seq., or any other applicable law.

34. The provisions of this Order and the directions of the On-Scene Coordinator shall be binding on the employees, agents, successors, and assigns of the Respondents.

35. The Respondents shall retain copies of all records and files relating to hazardous substances found on the site for six (6) years following completion of the activities required by

this Order and shall make them available to the U.S. EPA prior to the termination of the removal activities under this Order.

36. The Respondents shall submit a final report summarizing the actions taken to comply with this Order. The report shall contain, at a minimum: identification of the facility, a description of the locations and types of hazardous substances encountered at the facility upon the initiation of work performed under this Order, a chronology and description of the actions performed, a discussion of how all problems were resolved, a listing of quantities and types of materials removed from the facility, a discussion of removal and disposal options considered for any such materials, a listing of the ultimate destination of those materials, and a presentation of the analytical results of all sampling and analysis performed and accompanying appendices containing all relevant paperwork prepared during the action (e.g., manifests, invoices, bills, contracts, permits). The final report shall also include the total cleanup costs incurred for all removal activities and an affidavit from a person who supervised or directed the preparation of that report. The affidavit shall certify under penalty of law that based on personal knowledge and appropriate inquiries of all other persons involved in preparation of the report, the information submitted is true, accurate, and complete to the best of the affiant's knowledge and belief. The report shall be submitted within thirty (30) days of completion of the work required by this Order.

37. All notices, reports, and requests for extensions submitted under the terms of this Order shall be sent by certified mail, return receipt requested, and addressed to the following:

one copy to: Richard Martyn
On-Scene Coordinator (H-8-3)
U.S. EPA
75 Hawthorne Street
San Francisco, CA 94105
(415) 744-2288

one copy to: John Jaros
Enforcement Officer (H-8-4))
U.S. EPA
75 Hawthorne Street
San Francisco, CA 94105
(415) 744-2316

38. If any provision of this Order is deemed invalid or unenforceable, the balance of this Order shall remain in full force and effect.

REIMBURSEMENT OF COSTS

39. Respondents shall reimburse EPA, upon written demand, for all response costs incurred by the United States in overseeing Respondents' implementation of the requirements of this Order. EPA may submit to Respondents on a periodic basis a bill for all response costs incurred by the United States with respect to this Order. EPA's itemized Cost Summary, or such other summary as certified by EPA, shall serve as the basis for payment.

40. Respondents shall, within 30 days of receipt of the bill, remit a cashier's or certified check for the amount of those costs made payable to the "Hazardous Substance Superfund" to the following address:

U.S. Environmental Protection Agency
Superfund Accounting
P.O. Box 360863M
Pittsburgh, PA 15251

41. Respondents shall simultaneously transmit a copy of the check to the Deputy Director, Hazardous Waste Management Division, U.S. EPA Region 9. Payments shall be designated as Response Costs - Omega Chemical Site and shall reference the payor's name and address, the EPA Site identification number and the docket number of this Order.

42. Interest at a rate established by the Department of the Treasury pursuant to 31 U.S.C. Section 3717 and 4 CFR Section 102.13 shall begin to accrue on the unpaid balance from the day after the expiration of the 30 day period notwithstanding any dispute or an objection to any portion of the costs.

MODIFICATIONS

43. Modifications to any plan or schedule may be made in writing by the OSC or at the OSC's oral direction. If the OSC makes an oral modification, it will be memorialized in writing within 5 days; provided, however, that the effective date of the modification shall be the date of the OSC's oral direction.

44. The rest of the Order, or any other portion of the Order may only be modified in writing by signature of the Director of the Hazardous Waste Management Division. If Respondents seek permission to deviate from any approved plan or schedule, Respondents' Project Coordinator shall submit a written request to EPA for approval outlining the proposed modification and its basis.

45. No informal advice, guidance, suggestion, or comment by EPA regarding reports, plans, specifications,

schedules, or any other writing submitted by the Respondents shall relieve the Respondents of their obligations to obtain such approval as may be required by this Order, and to comply with all requirements of this Order unless it is formally modified.

ACCESS TO ADMINISTRATIVE RECORD

46. The Administrative Record supporting the selection of the response action for this site is available for review on normal business days between the hours of 9:00 a.m. and 5:00 p.m. in the Office of Regional Counsel, United States Environmental Protection Agency, Region IX, 75 Hawthorne Street, 16th Floor, San Francisco, California. If additional information becomes available, EPA will revise the Administrative Record to reflect such material. To review the Administrative Record contact Jan Carlson at (415) 744-1395. A draft Index to the Administrative Record is enclosed with the Order.

OPPORTUNITY TO CONFER

47. With respect to the actions required above, the Respondents may have a conference with EPA at 10:00 am, May 24, 1995 at the following location:

Long Beach Public Library
101 Pacific Avenue
Long Beach, California
(310) 570-7500

Respondents may appear in person or be represented by an attorney or other representative. Respondents may present any information regarding this Order. Regardless of whether a conference is held, Respondents may submit any information arguments or comments in writing to EPA within 2 business days following the conference, or within 7 business days of issuance of the Order if no conference is requested. This conference is not an evidentiary hearing, does not constitute a proceeding to challenge this Order, and does not give Respondents a right to seek review of this Order.

48. The Respondents are hereby notified that U.S. EPA will take any action which may be necessary in the determination of U.S. EPA for the protection of public health and welfare and the environment, and Respondents may be liable under Section 107(a) of CERCLA, 42 U.S.C. Section 9607(a), for all past and future costs of these government actions.

PENALTIES FOR NONCOMPLIANCE

49. The Respondents are advised pursuant to Section 106(b) of CERCLA, 42 U.S.C. Section 9606(b), that willful

violation or subsequent failure or refusal to comply with this Order, or any portion thereof, may subject each noncomplying Respondents to a civil penalty of up to $25,000 per day for each day in which such violation occurs, or such failure to comply continues. Failure to comply with this Order, or any portion thereof, without sufficient cause may also subject the Respondents to liability for punitive damages in an amount three times the amount of any cost incurred by the government as a result of the failure of the Respondents to take proper action, pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. Section 9607(c)(3).

COMPLIANCE WITH OTHER LAWS

50. The Respondents shall comply with all applicable federal, state, and local laws and regulations in carrying out the terms of this Order. As indicated above, all hazardous substances removed from the Site must be handled in accordance with the Resource Conservation and Recovery Act of 1976, 42 U.S.C. Section 6921, et seq., the regulations promulgated under that Act, and Section 121(d)(3) of CERCLA, 42 U.S.C. Section 9621(d)(3).

ENDANGERMENT DURING IMPLEMENTATION

51. The Director, Hazardous Waste Management Division, EPA Region IX, may determine that acts or circumstances (whether related to or unrelated to this Order) may endanger human health, welfare, or the environment, and as a result of this determination, may order the Respondents to stop further implementation of this Order until the endangerment is abated.

GOVERNMENT NOT LIABLE

52. The United States Government and its employees and other representatives shall not be liable for any injuries or damages to persons or property resulting from the acts or omissions of the Respondents, their employees, contractors, or other representatives caused by carrying out this Order. The United States Government is not a party to any contract with the Respondents.

EFFECTIVE DATE

53. The effective date of this Order is June 1, 1995 unless modified in writing by EPA.

THIS ORDER IS ISSUED on this 9th day of May, 1995.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

By: Keith Takata

~~Jeff~~ Zelikson, Director
Hazardous Waste Management Division
United States Environmental Protection Agency
Region IX

Contacts:

Richard Martyn
On Scene Coordinator
Emergency Response Section (H-8-3)
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105
(415) 744-2288

John P. Jaros
Enforcement Officer
Removal Response Section (H-8-4)
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105
(415) 744-2316

Janet R. Carlson
Assistant Regional Counsel (RC-3-1)
Office of Regional Counsel
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105
(415) 744-1395

APPENDIX A

PRP GENERATOR LIST

ABEX Aerospace Division
c/o Kilpatrick & Cody
Attn: Christopher Lyman
700 13th St. NW, Suite 800
Washington, D.C. 20005

ACC Casting Company
11126 Greenstone Avenue
Santa Fe Springs, CA 90670

AAD Distribution & Dry Cleaning
Attn: Harry Pourat
2306 E. 38th Street
Vernon, CA 90058

Air Products & Chemicals, Inc.
Attn: Todd Solodar
7201 Hamilton Blvd.
Allentown, PA 18195-1501

Alcoa Electronic Packaging, Inc.
c/o Leboeuf, Lamb, Green, & McRae
Attn: Patricia A. Shaw
601 Grant Street
Pittsburgh, PA 15219-1819

Alpha Therapuetic
Attn: Edward McQueeney
5555 Valley Blvd.
Los Angeles, CA 90032

Amcast Aerospace
11000 Jersey Blvd
Rancho Cucamonga, CA 91730

ANJA Engineering Corporation
c/o Scripto Tokai Corporation
Attn: Fred Ashley
11591 Etiwanda Ave.
Fontana, CA 92335

Applied Air Engineering Ind., Inc.
Attn: Dennis H. Larkin
13217 Barton Circle
Whittier, CA 90605-3255

Applied Magnetics Corp.
Attn: Don W. Nelson
75 Robin Hill Road
Goleta, CA 93117

Applied Micro Circuits Corp.
Attn: Joel O. Holliday
6195 Lusk Blvd.
San Diego, CA 92121-2793

Applied Micro Circuits Corp.
5502 Oberlin Drive
San Diego, CA 92121

Appropriate Technologies II, Inc.
Attn: Thomas C. Vernon
5964 LaPlace Court, Ste 150
Carlsbad, CA 92008

Appropriate Technologies II, Inc.
1700 Maxwell Road
Chula Vista, CA 92011

Appropriate Technologies II, Inc.
750 Design Court, # 105
Chula Vista, CA 91911

Arlon, Inc.,Adhesives/Film Div.
Attn: Gary V. Taylor
2811 South Harbor Blvd.
Santa Ana, CA 92704-5805

Armor All Products Corp.
4030 W. Chandler Ave.
Santa Ana, CA 92704

Artesia Manufacturing Co.
350 W. Manville
Compton, CA 90220

Avery Dennison
Attn: Robert Hamilton
1616 South California Ave.
Monrovia, CA 91016-4622

BASF Structural Materials, Inc.
1440 N. Kraemer Blvd.
Anaheim, CA 92806

Baxter/Bentley Lab, Inc.
c/o Latham & Watkins
Attn: Robin Hulshizer
633 West 5th Street
Los Angeles, CA 90071-2007

Bio Science Enterprises
c/o SmithKline Beecham Corporation
Attn: Paul Noll
One Franklin Plaza (FP 2225)
200 North 16th Street
Philadelphia, PA 19102

Bonneville Pacific Corp.
Attn: Todd L. Witwer
50 West 300 South, Ste 600
Salt Lake City, UT 84101

Bonneville Pacific Corp.
7325 South Hanson Way, P.O. Box 5699
Santa Maria, CA 93456

Bonanza Aluminum Corp.
11711 Pacific Ave.
Fontana, CA 92335

Bonanza Aluminum Corp.
1420 South Bon View
Ontario, CA 92335

Broadway
Attn: Lon B. Novatt, Senior Counsel
3880 North Mission Road
Los Angeles, CA 90031

Brown, Burr
Attn: Gary C. Tucker, General Counsel
P.O. Box 11400
Tucson, AZ 85734

Brown, Burr
6730 South Tucson Blvd.
Tucson, AZ 85607

Cabrillo Boat
Attn: Mr. Holland
Berth 41
San Pedro, CA 90731

California Mart
Attn: Rick McNeil
840 Newport Center Dr., Ste 500
Newport Beach, CA 92660-6324

California Mart
110 East 9th Street, Suite #A-727
Los Angeles, CA 90079

CAL TRANS
Attn: Gerald Costello
865 S. Figueroa, Ste 400
Los Angeles, CA 90017

CAL TRANS
Attn: Gary Winters
650 Howe Avenue, Suite 400
Sacramento, CA 95825

Celite Corp. (Lompoc Plant)
c/o Manville Corp.
Attn: Bruce Ray
717 17th Street
P.O. Box 5108
Denver, CO 80202

Central Heating Plant
301 North Broadway
Los Angeles, CA

Century Laminators
Attn: Shelly Davis
1225 Knollwood Circle
Anaheim, CA 92801

Century Laminators
Attn: Shelly Davis
1182 Knollwood Circle
Anaheim, CA 92801

Chatsworth Plating Co.
8865 Canoga Ave.
Canoga Park, CA 91304

Chem Waste Manager
Attn: P.B. Walker,
Senior Environmental Counsel
2400 W. Union Ave., Ste 200
Englewood, CO 80110

Chem Waste Management
c/o Waste Management Inc.
Attn: Steve Richtel
3900 S. Wadsworth Blvd., Ste. 800
Lakewood, CO 80235

Cherokee International, Inc.
c/o Obrien, Gazin, & Peterson
Attn: Tom Peterson
611 Anton Blvd. Ste. 120
Costa Mesa, CA 92626

City of Santa Maria
City Attoney's Office
Attn: Wendy Stockton
204 East Cook Street
Santa Maria, CA 93454-5190

Coast to Coast Analytical Services
Attn: A.G. Baker
Safety and Loss Control
1704 W. North "A" Street
Tampa, FL. 33606

Coatings Resource Corp.
12236 Cost Drive
Whittier, CA 90601

Columbia Showcase & Cabinet Co.
11034 Sherman Way
Sun Valley, Ca 91352

Computer Coating Co.
15607 New Century Drive
Gardena, CA 90247

Continental Airlines
Attn: Terri Ann Port, Env. H&S
for Plating Shops
15333 John F. Kennedy Blvd., Ste. 212
Houston, TX 77032

Coral Chemicals
Attn: Louis Caldarelli
10109 Shoemaker Ave.
Santa Fe Springs, CA 90670

Crosby & Overton - Plant #1
Attn: Michael Shloub
1610 West 17th Street
Long Beach, CA 90813

Crosby & Overton - Plant #1
Attn: Michael Shloub
1619 West 16th Street
Long Beach, CA 90813

Curtis Technology
11391 Sorrento Valley Road
San Diego, CA 92121

Cytec Industries, Inc.
1440 N. Kraemer Blvd
Anaheim, CA 92806

Datatronics, Inc.
Attn: Mark Robinson
238151 Hwy 74
Romaland, CA 92585

Datatronics, Inc.
P.O. Box 1398
Romoland, CA 92380

Deutsch Co. Electronic Components
c/o Folger & Levin
Attn: Scott Bowen
1900 Ave. of the Stars, Ste. 2800
Los Angeles, CA 90067

Discovision Associates
915 E. 23rd Street
Carson, CA 90745

Discovision Associates
915 E. 230th Street
Carson, CA 90745

Diversey Wyandotte Corp.
Attn: David E. Barr, Esq.
12025 Tech Center Drive
Livonia, MI 48150-2122

Diversey Wyandotte Corp.
P.O. Box 2147
Los Nietos, CA 90610

Dond-Well Adhesives, Inc.
1171 N. Tustin Ave.
Anaheim, CA 92807

Eaton Corp./MSC Products
Attn: Mark Tennison
1640 Monrovia Ave.
Costa Mesa, CA 92627

Eaton Corp./MSC Products
Attn: Scott Allery
1111 Superior Avenue
Cleveland, OH 44114

Federal Envelope Company
c/o CC Industries, Inc.
Attn: Tamara Stewart
222 North LaSalle St., Ste. 1000
Chicago, IL 60601

Film Salvage Co.
4901 Exposition Blvd.
Los Angeles, CA 90016

Film Salvage Co.
P.O. Box 2507
Pomona, CA 91769

Film Salvage Co.
3602 Crenshaw Blvd.
Los Angeles, CA 90016

Forest Products
4315 Dominguez Road
Rockaw, CA 95677

GAF
11800 Industry Ave.
Fontana, CA 92336

Gamma F Corp.
Attn: Philip Yan
3051 Fujita Street
Torrance, CA 90505

Gamma F Corp.
3111 Fujita Street
Torrance, CA 90505

GATX Terminals Corp.
Attn: J. Michael Martin
2000 E. Sepulueda Blvd.
P.O. Box 9007
Long Beach, CA 90810-1937

The Geon Company
Attn: Lee Larson
6100 Oak Tree Blvd.
Independence, OH 44131

George Industries, Inc.
Attn: Claire Gering
4116 Whiteside Street
Los Angeles, CA 90063

Golden West Refining Co.
Attn: Vincent LaPore III
13539 E. Foster Road
Santa Fe Springs, CA 90670

Golf Products USA
7350 E. Compton Blvd
Paramount, CA 90723

Golf Products USA
15125 Garfield Avenue
Paramount, CA 90723

Great Western Chemical Co.
Attn: Lee R. Zimmerli
808 Southwest Fifteen Ave
Portland, OR 97205

GSF Energy, Inc.
Attn: Todd Solodar
7201 Hamilton Blvd.
Allenton, PA 18195-1501

Gulfstream Aerospace Corp.
Attn: William D. Sherrod
500 Gulf-Stream Rd.
P.O. Box 2206, M/S D-02
Savannah, GA 31402-2206

Harpers
2027 Harpers Way
Torrance, CA 90501

Hexfet America
Attn: Jeff Lequia
41915 Business Park Drive
Temecula, CA 92590

Hexfet America
233 Kansas Street
El Segundo, CA 90245

High Voltage Trans Services Co.
Attn: Bernie A. DeKay
360 N. Palm Street
Brea, CA 92621

Hitachi Consumer Products, Inc.
Attn: Matthew Clark, Esq.
3890 Steve Reynolds Blvd.
Norcross, GA 30093

Hitachi Consumer Products, Inc.
901 East South Street
Anaheim, CA 92806

HITCO Materials Division
c/o BP America Inc.
Attn: Jack Litmer
200 Public Square, 39-E
Cleveland, OH 44114-2375

Huck Mfg. Company
Attn: Keith Pettus
6 Thomas
Irvine, CA 92718

Huck Mfg. Company
P.O. Box 5258
Carson, CA 90749

Hughes Missile System
c/o General Dynamics
Attn: Gerry Hardacre
3302 Pacific Highway (MZ 88-2520)
San Diego, CA 92101

Hughes Network Systems
3033 Science Park Drive
San Diego, CA 92121

Hughes Network Systems
4128 Sorrento Valley Blvd.
San Diego, CA 92121

Jan-Kens Enameling Co., Inc.
Attn: Greg Sinatra
715 E. Cypress
Monrovia, CA 91016

Jet Propulsion LabCharles L. Buril
4800 Oak Grove Drive
Pasadena, CA 91109-8099

Johnson Dielectrics, Inc.
P.O. Box 6456
Burbank, CA 91505

KC Photo Engraving
Attn: Michael Curley
2666 E. Nina Street
Pasadena, CA 91107

Kester Solder Company
Attn: Dan Hall
1730 N. Orangethorpe Park
Anaheim, CA 92801

Litton Industries, Inc.
Attn: Raymond F. Kirkman
for Kester Solder Company
360 North Crescent Drive
Beverly Hills, CA 90210-4867

Kimberly Clark Corp.
Attn: Lynn Bailey
2001 East Orangethorpe Ave.
Fullerton, CA 92634

LA Health Services
Attn: Olive View Hospital
7533 Van Nuys Blvd.
Van Nuys, CA 91405

City of Los Angeles Dept. of Airports
Attn: Maurice Z. Laham
Environmental Manager
for L.A. International Airport
7411 World West Way, P.O. Box 92216
Los Angeles, CA 90009-2216

Le Van Specialty Co.
14923 Proctor Ave.
City of Industry, CA 91746

Lear Siegler, Inc.
2910 E. Ana Street
Compton, CA 90221

Luxfer USA Ltd.
c/o Alcan Aluminum Corp.
Attn: John Tillman
100 Erieview Plaza, 17th Floor
Cleveland, OH 44114

Fresno Unified School District
Attn: Lyn Peters
for Maintenance Department
717 South Seventh Street
Fresno, CA 93702

Manufacturing Tech, Inc.
2226 Goodyear Avenue
Ventura, CA 93003

Marvin Electric Mfg. Co., Inc.
c/o Latham & Watkins
Attn: Michael Feeley
633 W. Fifth St., Ste. 4000
Los Angeles, CA 90071-2007

Maxwell Laboratories, Inc.
Attn: Dean Charles
8888 Balboa Ave.
San Diego, CA 92123

May Company Services Center
3447 Grand Ave
Los Angeles, CA 90114

McDonnell Douglas Helicopter Co.
Attn: David Cohen
10775 Business Center Drive
Cypress, CA 90630

MCP Foods (Firmenich)
c/o Dorsey & Whitney, P.L.L.P.
Attn: Jeffrey L. Sikkema
650 Town Center Drive, Ste 1930
Costa Mesa, CA 92626-1925

MCP Foods (Borden)
c/o Sidley & Austin
Attn: Judith Praitis
555 West Fifth St., Ste. 4000
Los Angeles, CA 90013

MD Pharmaceutical, Inc.
Attn: Edward Griffith
3130 S. Harbor Blvd., Ste. 320
Santa Ana, CA 92704

Metropolitan Water District (MWD)
Attn: Jeffery T. DeZellar, P.E.
P. O. Box 54153
Los Angeles, CA 90054-0153

Mica Corp.
3530 Hayden Ave.
Culver City, CA 90230

Mica Corp.
8536 National Blvd.
Culver City, CA 90230

Mico West
c/o Sedgewick, Detert, Moran & Arnold
Attn: Jeffrey Smith
801 S. Figueroa St., 18th Floor
Los Angeles, CA 90017-5556

Microelectronic Packaging Inc.
Attn: David Hinkle
9350 Trade Place
San Diego, CA 92126

Montgomery Tank Lines
Attn: Robert Kasak
3108 Central Drive
Plant City, FL 33567

Montgomery Tank Lines
Attn: Robert Kasak
2900 Lynwood Road
Lynwood, CA 90262

National Broadcasting Co.
Attn: Tracy Rich
3000 West Alameda Ave.
Burbank, CA 91523

AT&T Global Info Solutions Co.
Attn: Kimberly Walsh
for NCR Corp./Eng. & Mfg.
101 W. Schantz Ave.
Dayton, OH 45479

NCR Corp./Eng. & Mfg.
16550 West Bernardo Drive
San Diego, CA 92127

OHLINE, Inc.
Attn: Mario J. Ramos
1930 West 139th Street
Gardena, CA 90249

Pacesetters Systems, Inc.
c/o Siemens Corporation
Attn: Mary Stockel
1301 Ave. of the Americas
New York, NY 10019

Pacific Gas & Electric
Attn: Beverly Z. Alexander, Esq.
P.O. Box 7442
San Francisco, CA 94120

Pacific Gas & Electric
Attn: Victor Furtado
P.O. Box 7640
San Francisco, CA 94120

Pacific Gas & Electric
Attn: John Busterud
P.O. Box 770000, B31A
San Francisco, CA 94177

Pacific Bell
Attn: Irene E. Soto,
Environmental Manager
2600 Camino Ramon, Rm 2E150
San Ramon, CA 94583

Pacific Bell
Attn: Carolyn S. Attkisson, Esq.
2600 Camino Ramon, Rm 2W953
San Ramon, CA 94583

Pacific Telephone and Telegraph
170 North Fair Oaks, #104
Pasadena, CA 91103

Paradise Beacon
5581 Paradise Blvd.
Corte Madera, CA 94925

Para Plate
15910 Shoemaker
Cerritos, CA 90701

Para Plate
3242 East Olympic Blvd.
Los Angeles, CA 90023

Penske Truck Leasing
2901 Sunol Drive
Vernon, CA

Petroleum Testing Services, Inc.
12051 Rivera Road
Santa Fe Springs, CA 90670

Plastic Materials, Inc.
3033 W. Mission Road
Alhambra, CA 91803

Polymer Industries, Inc.
444 Athol Street
San Bernardino, CA 92401

Pope and Talbot
48513 Highway 58
Oakridge, OR 97463

Printed Circuits Unlimited
Attn: Christopher J. Lamb
8786 Industrial Lane
Rancho Cucamonga, CA 91730

Puritan Bennett Corp.
Attn: Beverlee Roper
2200 Faraway Ave.
Carlsbad, CA 92008

Puritan Bennett Corp.
2310 Camino Vida Roble
Carlsbad, CA 92008

Quad Chemical Corp.
c/o Lonza Inc.
Attn: Jim Potvin
20851 South Santa Fe Ave.
P.O. Box 1500
Long Beach, CA 90801

Quality Fabrication, Inc.
Attn: Johnson Boru
21045 Osborne Street
Canoga Park, CA 91304

Raytheon Magnetic Systems Div.
c/o Raytheon Co., Dept. 9210
Attn: Gary R. Cox
6380 Hollister Ave.
Goleta, CA 93117-3197

Reed & Graham, Inc.
Attn: Leonard Lumby
690 Sunol Street, P.O. Box 5940
San Jose, CA 95150

Reichold Chemical, Inc.
c/o Paul, Hastings, Janofsky & Walker
Attn: Keith F. Millhouse
555 S. Flower St., 23rd Floor
Los Angeles, CA 90071

Resinart Corp.
Attn: Gary Uecker
1625 Placentia Ave.
Costa Mesa, CA 92627

Riker Lab, Inc. (3M)
c/o Latham & Watkins
Attn: Michael Feeley
633 W. Fifth St., Ste. 4000
Los Angeles, CA 90071-2007

Robinson Prezioso, Inc.
Attn: George Nichol
10950 Dale Street
Stanton, CA 90680

S & R Sweeps
P.O. Box 2579
Danville, CA 94526

Safety-Kleen Corp.
c/o Latham & Watkins
Attn: Robin Hulshizer
633 W. Fifth St., Ste. 4000
Los Angeles, CA 90071-2007

Southern California RTD
c/o LA Metro Transit Authority
Attn: Ronald Stamm
818 W. 7th Street, 4th Floor
Los Angeles, CA 90017

Shell Oil Company
Attn: Thomas W. Kearns
One Shell Plaza, Rm 4876
P.O. Box 2463
Houston, TX 77252-2463

Shell Oil Company
for Martinez Mfg. Complex
P.O. Box 711
Martinez, CA 94553

Sierracin Corporation
Attn: Patricia Sprouse
12780 San Fernando Road
Sylmar, CA 91342

Signet Armorlite, Inc.
1001 Armorlite Drive
San Marcos, CA 92069

Rodgers Corp.- Soladyne Div.
Attn: Robert F. Lee
One Technology Drive
Rogers, CT 06263

Rodgers Corp.- Soladyne Div.
7447 Convoy Ct.
San Diego, CA 92111

Southern California Edison
Attn: Dawn L. Wilson
2244 Walnut Grove Avenue
P.O. Box 800
Rosemead, CA 91770

Southern Pacific Transportation Co.
Attn: David W. Long, Esq.
One Market Plaza
San Francisco, CA 94105

Honeywell, Inc.
Attn: Stacy L. Bogart
for Sperry Aerospace & Marine Group
Honeywell Plaza (MN12-8251)
2701 4th Ave. South
Minneapolis, MN 55408-1792

Structural Composities Industries
c/o Taylor-Wharton Gas Equipment
Attn: Frank Henderson
2004 US 92 East
P.O. Drawer "A"
Plant City, FL 33566

Supracote, Inc.
Attn: John Koenig, Environmental Manager
11200 Arrow Route
Rancho Cucamonga, CA 91730-4805

Swedlow, Inc.
Attn: Charles E. Whisonant, Esq.
1201 Dove Street, Ste 370
Newport Beach, CA 92660

Swedlow, Inc.
12122 South Western Avenue
Garden Grove, CA 92642

Teledyne, Inc.
Attn: Marney Buchanan, Esq.
1901 Avenue of the Stars, Ste 1800
Los Angeles, CA 90067-6046

Texaco Research Lab
c/o Texaco, Inc.
Attn: Gordon Turl
10 Universal City Plaza, Room 710
Universal City, CA 91608-1097

Todd Pacific Shipyards
Attn: Allen Rainsberger
1801 16th Ave., SW
Seattle, WA 98124

Transamerican Plastics Corp.
Attn: Shashank Patel
5601 East Santa Ana Street
Ontario, CA 91761

Treasure Chest Advertising, Inc.
Attn: Harry Jones
3440 Brownsmill Road, SE
Atlanta, GA 30354

Chem Tech Systems
Attn: Jaqualyn D. Forres:
for Triple J. Pacification Facility
3650 East 26th Street
Los Angeles, CA 90023

Troy Lighting, Inc. - Tiffany Div.
16815 Johnson Drive
City of Industry, CA 91744

Troy Lighting, Inc. - Tiffany Div.
14625 East Clark Avenue
City of Industry, CA 91746

Tubing Seal & Cap
Attn: John A. Draxler
601 South Vincent Ave.
Azusa, CA 91702

Unocal Corporation-Santa Maria Refinery
Attn: Rajeev Sane
1201 West 5th Street
Los Angeles, CA 90051

United Parcel Services
c/o Morrison & Foerster
Attn: Kimberly Bick
19900 MacArthur Blvd.
Irvine, CA 92715-2443

Universal City Studios, Inc.
c/o Gilchrist & Rutter
Attn: Donald Nanney
1299 Ocean Ave., Ste. 900
Santa Monica, CA 90401

University of California -
Irvine, Los Angeles, San Diego
c/o Regents of University of California
Office of General Counsel
Attn: Elyse Axell
300 Lakeside Drive, 7th Floor
Oakland, CA 94612-3565

Urethane Industries
550 W. Crowther Avenue
Placentia, CA 92670

Van Waters & Rogers
Attn: Allan Bakalian
6100 Carillon Point
Kirkland, WA 98033

Velie Circuits, Inc.
1267 Logan Avenue
Costa Mesa, CA 92626

Ventura Towne House
Attn: Frank J. Drabickas
4900 Telegraph Road
Ventura, CA 93003

W & B Marketing-Alumiframe
Attn: Ken Klein
12730 Raymar Street
North Hollywood, CA 91605

Walt Disney Co.
Attn: Robert A. Antonoplis
500 South Buena Vista Street
Burbank, CA 91521

Weber Aircraft
c/o Thelen, Marrin, Johnson & Bridges
Attn: Shea Lukacsko
333 South Grand Ave., Ste. 3400
Los Angeles, CA 90071

Western Metal Decorating Co.
Attn: Scott Brotzman
8875 Industrial Lane
Rancho Cucamonga, CA 91730

Whittier City Yard
Attn: Tom Mauk
13230 Penn Street
Whittier, CA 90602

APPENDIX B

OMEGA CHEMICAL CORPORATION
AND
DENNIS O'MEARA

Omega Chemical Corporation
12504 East Whittier Blvd.
Whittier, CA 90602

Dennis O'Meara
12504 East Whittier Blvd.
Whittier, CA 90602

OMEGA CHEMICAL CORPORATION
Superfund Removal Site
Whittier, California
*** Draft Administrative Record Index ***

DOC #	OU	AR #	DATE yy/mm/dd	AUTHOR	ADDRESSEE	SUBJECT
1110-00012	RV1	00-0001	81/06/29	Leon Directo Los Angeles County - Sanitation Districts	Clyde Haight City of Whittier	Ltr: Industrial wastewater discharge permit #8513, 1981 & 1987 amendments & analysis, w/attchs & TL to K Lawrence fr D O'Meara 2/8/95 (faxed 2/8/95)
1110-00002	RV1	00-0002	81/10/06	Harvey Collins CA Dept of Health Services	Omega Chemical Corp	Interim status document (attch A)
1110-00003	RV1	00-0003	85/06/26	Brian Villalobes LeRoy Crandall & Assoc	Steve Simpson Omega Chemical Corp	Ltr: Investigation of subsurface soil contamination at tank farm at site, w/map, boring log & sampling & analysis data
1110-00005	RV1	00-0004	87/08/26	David Lloyd Leighton & Assoc, Inc	Paul Hendricks Darling, Wold & Agee	Ltr: Results of lab analysis performed on soil samples collected after removal of underground tank on Fred R Rippy Trust property, w/maps & apps A & B
1110-00006	RV1	00-0005	87/10/08	Dennis O'Meara Omega Chemical Corp	Environmental Protection Agency - Region 9	Hazardous waste permit applications, w/supplements
1110-00007	RV1	00-0006	88/02/02	Charles Keller Environmental Research & Technology, Inc	Michael Ashby Thomson & Nelson	Ltr: Rpt on soil vapor survey of Fred R Rippy Trust real property, w/maps & soil gas survey results (draft)
1110-00009	RV1	00-0007	88/10/00	Paul Miller ENSR Consulting & Engineering	Thomson & Nelson	Rpt on site assessment investigations
1110-00008	RV1	00-0008	91/10/03	Jeff Zelikson Environmental Protection Agency - Region 9	Omega Chemical Corp	Administrative order on consent in matter of Omega Chemical Corporation, respondent, w/table of contents & attchs 1-5
1110-00029	RV1	00-0009	92/01/01	CA Environmental Protection Agency - Dept of Toxic Substances Control		List of generators with contributions more than 10 tons between 1/1/88 & 1/1/92, w/TL to J Jaros fr S Amirebrahimi 2/2/95 (faxed 2/2/95)
1110-00018	RV1	00-0010	92/01/05	Dennis O'Meara Omega Chemical Corp	Environmental Protection Agency - Region 9	Interim measures workplan, w/inspection plan of 10/29/90 (appendix E)

OMEGA CHEMICAL CORPORATION
Superfund Removal Site
Whittier, California
*** Draft Administrative Record Index ***

DOC #	OU	AR #	DATE yy/mm/dd	AUTHOR	ADDRESSEE	SUBJECT
				Inc		health & safety plan & section 13-blank site-specific health & safety plan summary, w/TL to K Lawrence fr M Soft (faxed)
1110-00026	RV1	00-0023	95/02/08	International Technology Corp	Omega Chemical Corp	Corrected workplan for drum storage stabilization & 2 pp for health & safety plan, w/TL to K Lawrence fr J Stapleton (faxed)
1110-90007	RV1	00-0024	95/02/08	Mike Schwennesen Ecology & Environment, Inc	Kathryn Lawrence Environmental Protection Agency - Region 9	Memo: Review of drum storage stabilization health & safety plan (faxed)
1110-90008	RV1	00-0025	95/02/08	Dennis O'Meara Omega Chemical Corp	Kathryn Lawrence Environmental Protection Agency - Region 9	Ltr: Omega has on-site personnel to maintain security & integrity of site on 24-hour basis 7 days a week & will respond to emergency (faxed)
1110-90011	RV1	00-0026	95/02/08	Kathryn Lawrence Environmental Protection Agency - Region 9	Dennis O'Meara Omega Chemical Corp	Ltr: Review & acceptance of revised final workplan & health & safety plan section IT Corp submitted 2/8/95, w/stipulation agreement signature page
1110-90012	RV1	00-0027	95/02/08	International Technology Corp		Corrected workplan, w/TL to K Lawrence fr J Stapleton (faxed)
1110-90014	RV1	00-0028	95/02/08	Kathryn Lawrence Environmental Protection Agency - Region 9	Dennis O'Meara Omega Chemical Corp	Ltr: Review of revised draft workplan & health & safety plan sections submitted 2/8/95, issues not addressed, revise & resubmit by 2/8/95
1110-90015	RV1	00-0029	95/02/08	Kathryn Lawrence Environmental Protection Agency - Region 9	Dennis O'Meara Omega Chemical Corp	Ltr: Review of workplan submitted 2/8/95 for stabilization work, issues not addressed, w/marginalia
1110-00013	RV1	00-0030	95/02/09	Kathleen Yokota CA Dept of Health Services - Toxic Substances Control Div	Sayareh Amirebrahimi CA Dept of Health Services - Toxic Substances Control Div	Memo: Review of health & safety plan, w/TL to K Lawrence fr K Yokota & attchs (draft) (faxed)
1110-90009	RV1	00-0031	95/02/09	Nancy Nadel Environmental Protection Agency - Region 9	Dennis O'Meara Omega Chemical Corp	Ltr: Financial assurance for compliance with order, 1/95 rpt due in 10 days of receipt this ltr, w/p 33 of order & w/o cert mail receipt

OMEGA CHEMICAL CORPORATION
Superfund Removal Site
Whittier, California
*** Draft Administrative Record Index ***

DOC #	OU	AR #	DATE yy/mm/dd	AUTHOR	ADDRESSEE	SUBJECT
					Agency - Region 9	Department of Toxic Substances Control (faxed)
1110-90019	RV1	00-0042	95/03/07	Mike Schwennesen Ecology & Environment, Inc	Richard Martyn Environmental Protection Agency - Region 9	Handwritten note re EPA codes have been checked & are acceptable, w/HAZCAT list of codes per each drum (faxed)
1110-00022	RV1	00-0043	95/03/10	Ecology & Environment, Inc		HAZCAT info of partial inventory obtained in process of IT Corp drum overpacking, w/TL to R Martyn fr M Schwennesen & marginalia (faxed)
1110-00023	RV1	00-0044	95/03/22	Janet Carlson Environmental Protection Agency - Region 9	Daniel Coffey Law Office of Daniel Wayne Coffey	Ltr: Interim measures & removal action workplan of 3/3/95 fails to properly carry out drum removal action, options for cleanup, w/attchs
1110-00024	RV1	00-0045	95/03/22	Daniel Coffey Law Office of Daniel Wayne Coffey	Janet Carlson Environmental Protection Agency - Region 9	Ltr: Questions re interim measures & removal action workplan 3/3/95, clarification of points, w/TL to J Carlson & N Nadel fr D Coffey (faxed 3/23/95)
1110-90020	RV1	00-0046	95/03/29	Hamid Saebfar CA Dept of Health Services - Toxic Substances Control Div	Donald White Environmental Protection Agency - Region 9	Ltr: Site referral fr CA Department of Toxic Substances Control to US EPA
1110-90021	RV1	00-0047	95/04/05	Janet Carlson Environmental Protection Agency - Region 9	Daniel Coffey Law Office of Daniel Wayne Coffey	Ltr: EPA will take over primary responsibility for removal action fr CA Department of Toxic Substances Control, request for access, w/access agreement
1110-90032	RV1	00-0048	95/04/28	Sandy Farber Environmental Protection Agency - Region 9		Memo: Other documents considered or relied upon for site administrative record
1110-90033	RV1	00-0049	95/04/28	Environmental Protection Agency - Region 9		List of US EPA guidance documents consulted during development & selection of response action for site
1110-00031	RV1	00-0050	95/05/01	Richard Martyn Environmental Protection	Jeff Zelikson Environmental Protection	Action memo: Request for removal action, w/w/o appendices &

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

APR 5 1995

Daniel Wayne Coffey
1710 Esplanade, No. H
Redondo Beach, California 90277

Re: Omega Chemical
Request for Access

Dear Mr. Coffey:

On March 22, 1995, U.S. EPA sent you comments on the Interim Measures and Removal Action Workplan (IM/RA Plan) dated March 3, 1995 submitted by Mr. O'Meara to address the drums, tanks and other containers at the Omega Chemical Corporation Site located at 12504 East Whittier Blvd, Whittier, California. In this letter EPA stated that if Mr. O'Meara failed to resolve the deficiencies in the IM/RA Plan by March 27, 1995, including obtaining the necessary financial assurance, either U.S. EPA or the California Department of Toxic Substances Control would take appropriate measures to implement the work at the Site.

EPA has received your letters dated March 22, 1995 and March 27, 1995 in response to EPA's letter. In your letters, you state that Mr. O'Meara does not have the financial ability to implement the work in compliance with EPA's comments within the time frame indicated in EPA's letter.

U.S. EPA will take over primary responsibility for a removal action at the Omega Chemical Site from the California Department of Toxic Substances Control under the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. Section 9601 et seq. (CERCLA). Necessary removal work at the Site may include but not be limited to the following: removal of drums, tanks and all other containers, investigation of soil and groundwater, and cleanup of soil and groundwater. These activities are necessary to respond to the release or potential release of hazardous substances in the soil and groundwater, and drums, tanks and other containers at the site. Leaks and spills of various wastes have occurred at the facility, resulting in documented contamination of soil and groundwater. Existing data indicate that the soil and groundwater have been contaminated with methylene chloride, 1,1-dichloroethylene, 1,1,1-trichloroethane, trichloroethylene, tetrachloroethylene, and acetone. U.S. EPA will either issue an order to responsible parties to conduct the work or EPA will begin site removal activities when funds are internally approved for that purpose.

Attachment H

Printed on Recycled Paper

Please find enclosed an access agreement whereby Mr. O'Meara would agree to allow the U.S. EPA and it's contractors and/or Respondents to an Order to conduct the removal action at the site. Please have Mr. O'Meara return an executed access agreement to Jan Carlson by Tuesday, April 10, 1995.

The Administrative Order on Consent, U.S. EPA Docket No. RCRA-09-91-0005 ("RCRA Order") signed by Mr. O'Meara remains in effect, however, to avoid duplication of work at the site, EPA will notify Mr. O'Meara of remaining corrective action requirements under the RCRA Order upon completion of the removal action. At this time, Mr. O'Meara need not resubmit a revised RFI Workplan. EPA reserves all rights to pursue Mr. O'Meara for violations of the RCRA Order or to issue any CERCLA orders to Mr. O'Meara. As noted in past correspondence, the IM/RA Plan submitted by Mr. O'Meara failed to comply with the Interim Measures requirements in the RCRA Order. On April 10, 1992, Mr. O'Meara submitted a RCRA Facility Investigation (RFI) Work Plan, after being granted a 30 day extension to the submission deadline. EPA submitted comments on this plan on April 13, 1992 finding it incomplete and asking that it be revised as required under the supervision of a professional engineer or geologist with experience in hazardous waste site clean-up, as specified in the RCRA Order signed by Dennis O'Meara. To date U.S. EPA has not received a revised RFI Workplan plan to address these comments. Omega Chemical failed to submit monthly reports to U.S. EPA from April 1992 to December 1994. Omega Chemical failed to notify U.S. EPA when its bankruptcy was resolved.

If you have any technical questions concerning this Site please contact Richard Martyn, Federal On-Scene Coordinator at (415) 744-2288. If you have any legal questions, please contact Jan Carlson at (415) 744-1395.

Sincerely,

Janet R. Carlson
Assistant Regional Counsel

Richard Martyn
Federal On-Scene Coordinator

NAME: _____

ADDRESS OF PROPERTY: _____

_____

My signature below acknowledges that I agree that the United States Environmental Protection Agency (EPA), their officers, employees or representatives or Respondents who are issued an Order by EPA and Respondents' representatives, may enter my property to conduct the activities specified below:

1. The taking of such soil, water, and air samples as may be determined to be necessary;

2. The sampling of any solids or liquids stored or disposed of on site;

3. The drilling of holes and installation of monitoring wells for subsurface investigation;

4. Other actions related to the investigation of surface or subsurface contamination;

5. The taking of other response actions including establishing site security, preparing and implementing a site Health and Safety Plan, characterizing and isolating all hazardous substances presently stored within drums, tanks or other containers at the facility, disposing of all hazardous substances at appropriate off-site disposal facilities, decontaminating all process equipment including thermal treatment units, above ground tanks, reaction vessels, evaportaion/solidification/dewatering and other treatment units and any other action necessary to protect human health and the environment.

I realize that these actions by EPA are undertaken pursuant to its enforcement responsibilities under the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. Section 9601.

This written permission is given by me voluntarily with knowledge of my right to refuse and without threats or promises of any kind.

_____ _____

Date Signature

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Daniel W. Coffey, Esq. Bar # 132897
Attorney at Law
1710 Esplanade
Redondo Beach, California 90277
(310) 791 0197

Attorney for RESPONDENTS
Omega Chemical Corporation, &
Dennis O'Meara.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 HAWTHORNE STREET
SAN FRANCISCO, CALIFORNIA 94105-3901

IN THE MATTER OF:

Omega Chemical Corporation 12504 East Whittier Boulevard Whittier, CA 90602;	ORDER NO. 95-15: OBJECTIONS TO ADMINISTRATIVE ORDER PURSUANT TO SECTION 106 OF THE COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT OF 1980 as amended, 42 USC Section 9606(a); COMMENTS & STATEMENT RE: INTENTION TO COMPLY.
RESPONDENTS: Listed in Appendices A & B	EFFECTIVE: JUNE 1, 1995

Absent a prescribed form of response, the RESPONDENTS, DENNIS O'MEARA and OMEGA CHEMICAL CORPORATION, and each of them, hereby raise and reserves all objections available to them, and each of them, object without limitation to the form of ORDER 95-15 and its factual findings and conclusions of law[1].

[1] Objections are hereby filed in accordance with the directions and instructions of Richard Martyn, OSC, and Counsel for the United State Environmental Protection Agency, Jan Carlson, and as presented at the May 24, 1995 meeting of Respondents held in Long Beach, California, with counsel for Respondents herein, present.

Attachment I

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RESPONDENTS, DENNIS O'MEARA and OMEGA CHEMICAL CORPORATION hereby notify the UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (hereinafter "EPA") of their intent to comply with those parts of the order which are within their physical and financial ability to comply, and raise and reserve the right to object to those portions of the ORDER which are beyond or in excess of the legal authority of the agency or, with sufficient cause, are incapable of compliance because they are beyond the physical or financial ability of Respondents.

It is a legal predicate for EPA's issuance of ORDER 95-15 (HEREINAFTER "ORDER") that Respondents herein are financially unable to meet the financial demands of the EPA within the shortened time frames as set forth in correspondence with EPA. EPA contends that this is a fact upon which the ORDER is based and forms a critical legal underpinning for its issuance. Without such a determination by EPA, ORDER 95-15 could not have been issued.

Respondents object on the following basis: a statement that compliance cannot be achieved within an unreasonable time frame or based upon excessive demands is not a general determination that Respondents are financially unable under any set of circumstances to perform what is needed at the site. The assertion that it was counsel for Respondents statements of opinion is not sufficient, absent an independent finding of fact by the agency, to support the issuance of this ORDER.

Respondents take the position that the sole basis for EPA's determination was its own determination that Respondents were financially unable to perform in a time frame satisfactory to the Agency and was based solely on its own position, and could not legally be based upon assertions of opinion about the cash flow capabilities of the Respondents, absent facts independently ascertained by the Agency that the Respondents were not able to perform. Based on statements of opinion about the time required and the sums of money mandated to comply with EPA's excessive requirements, it is Respondent's position that EPA erroneously determined that a 106 ORDER was justified. Respondents object on this basis to the issuance of the ORDER.

Further, it is impermissible to for the Agency to demand financial performance by Respondents based on what is, by EPA's own definition, legally and factually impossible, and at the same time asset that such ORDER will be legally enforceable at a later time.

However, reserving all objections to the characterization of the ability of Respondents to timely perform, Respondents object on the basis of an impermissible and incorrect interpretation of a response to excessive demands for financial assurance. Respondents further object on the basis that a similar standard for financial assurance was not sought in the ORDER and note for the record, that the same standard of financial assurance has not been sought in this ORDER from any Respondent.

Respondents contend that the requirements placed upon it were, in fact, unreasonable, and intended to justify the issuance of a 106 ORDER, and object on that basis.

OMEGA CHEMICAL CORPORATION HAS BEEN AND WILL CONTINUE TO PROVIDE SITE SECURITY. THE FORM OF THAT SECURITY WILL BE CONSISTENT WITH WHAT HAS ALREADY BEEN APPROVED FOR THE SITE AND PROVIDED THUS FAR.

RETENTION OF CONSULTANTS

Respondents were informed at the May 24, 1995, conference that the officially constituted Omega PRP Group has retained the services of a consultant for the purposes of complying with Order 95 05. Respondents are informed and believes, and on that basis allege, that the identity of the Consultant is HLA or Harding Lawson and Associates.

Respondents were informed by Ms. Praitis, Counsel for the "Omega PRP Group, on May

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24, 1995, and took as definitive based on repeated assertions in writing, orally and to other governmental agencies, including the California Department of Toxic Substances Control (DTSC), and the EPA, that under no circumstances can or will the members of the Omega PRP Group, as constituted, enter into any arrangement with DENNIS O'MEARA or OMEGA CHEMICAL COMPANY.

Further, Ms. Praitis, Counsel for the "Omega PRP Group, on May 24, 1995, made clear that the Omega PRP Group invited all other Respondents to engage with and become a member of the Omega PRP Group, but DENNIS O'MEARA and OMEGA CHEMICAL COMPANY were specifically excluded for all time and under all circumstances.

Upon inquiry if more than one consultant could be dispatched to the site and a division of the work undertaken by both of the competing Groups present at the May 24, 1995, meeting represented respectively by Mr. John Lorman of the law firm of Cary, Grey, et al, and Ms. Praitis of Sidley and Austin, the EPA On-Scene Coordinator, Richard Martyn, and Counsel, Jan Carlson, stated after due consideration that under no circumstances would EPA allow more than one consultant on-site.

This position was made a firm position of EPA and thereafter discussed and definitely set forth as the basis for administering the operations conducted subject to the Order. On that basis, Respondents, DENNIS O'MEARA and OMEGA CHEMICAL COMPANY have concluded that it would be a practical impossibility to have a consultant on-site engaged in removal activities in competition with the members of the Omega PRP Group.

HEARING UNDER THE US APA

Although not specifically provided for in this ORDER, Respondents request a further hearing pursuant to the United States Administrative Procedures Act to present evidence and take testimony in this matter and hereby make a formal request for discovery in this matter in excess of the administrative record relied upon herein: specifically, Respondents seek an opportunity to review and inspect all records held by EPA and the DTSC with respect to Respondents herein.

ADDITIONAL BASES FOR OBJECTION AND CLARIFICATION

The legal basis for this administrative Order are five fold. (1) actual or threatened release of hazardous substances; (2) release of threat of release from the facility; (3) existence of a "possible imminent and substantial endangerment; (4) Notice to the affected state; and (5) a determination by EPA "based upon evidence that, because of a release of threat of a release, an imminent and substantial endangerment may exist.

Based upon the record presented in conjunction with the ORDER, Respondents object on the basis that there is no substantial endangerment based on the evidence in the Administrative Record included herein, and if such exists it is insufficient to justify the actions order and the time frames set forth in the ORDER.

FACTUAL CORRECTIONS AND COMMENTS: SITE DESCRIPTION

As an initial comment, and without sufficient time to review or confirm each and every fact relied upon by EPA in the ORDER, there are several basic comments which must be made about the description of the site and in particular the equipment present.

The text of the ORDER is as follows:

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Hazardous waste process units that have been identified at the Site, include the following items:

- 600 gallon storage tank (unknown contents)
- 20 gallons per hour incinerator
- 2,000 gallons per day pH modification chemical treatment unit
- 2,000 gallons per day organic compounds reaction chemical treatment unit
- 0.5 ton per hour thermal treatment unit
- 20,000 gallons per day low temperature oxidation chemical treatment unit
- 2,000 gallons per day dewatering/drying physical treatment unit
- 2,000 gallons per day distillation physical treatment unit
- 3,000 gallons per day evaporation physical treatment unit
- 2,000 gallons per day solidification/stabilization physical treatment unit
- 200,000 gallon storage tank

With the possible exception of the ambiguously described 600 gallon storage tank, it can be said with virtual certainty that **NONE OF THE EQUIPMENT DESCRIBED IS OR HAS EVER BEEN ON-SITE**. The information contained in the ORDER, Respondents believe, came from information contained in one or more of the several Part B Permit Applications which the DTSC (DHS) never responded to or acted upon. These applications, and especially those involving any thermal treatment units or incinerators, derive from a pre-1988 application. Since they were never acted upon, the equipment was never purchased nor installed and was not previously on the site.

Those items which are highlighted are particularly troubling. To Respondents' knowledge these units do not exist at the site. The source of this information, though not yet confirmed, is the existence of a Part A application or some other permit related document which identifies these units. This source of error, it is believed, comes from a permit application made in 1985 or thereabout. This application sought to install this equipment, but absent a permit, it was not installed.

With respect to the 200,000 gallon tank. On its face, the dimensions of such a vessel would be approximately 25,938 cubic feet, approximately 30 feet on a side, or stand 10 feet high by 30 feet wide by 90 feet long. It would weigh, if full of water, approximately 830 tons; if full of a fluid with a specific gravity of three (3), approximately 2490 tons. Given that a full grown elephant weighs approximately 14 tons, this would be equal to about 60 full grown elephants roaming the facility. No such an object has been spotted on the site.

With respect to the other units, it is reasonably clear to Respondents that these units, as described, are not present at the site. While there are units present, these are not they. Further inquiry would be required for this to be ascertained.

SITE BOUNDARIES AND DESCRIPTION

The site is not sufficiently described to make specific objections but such objections are generally raised without limitation.

GROUNDWATER

Respondents believe that the ENSR report from 1988 is ambiguous with respect to whether groundwater contamination exists. The term groundwater is not sufficiently

described to make specific objections but such objections are generally raised without limitation. Respondents object on the basis that it is impermissible under the imminent and substantial endangerment language of 42 USC 9606 to investigate groundwater where it is well understood that there are many sources of groundwater contamination in the area and that there is no clear evidence to indicate that the site in question is a source of such contamination, and object on that basis.

SOIL CONTAMINATION

To the best of Respondents current knowledge, the extent of soil contamination is relatively small in scope, and based on the ENSR report and at least one 175 deep well was placed without encountering an area of contiguous groundwater used for drinking, Respondents believe that the imminent and substantial endangerment language of 42 USC 9606 is inappropriate for such contamination and especially at the concentrations listed in the ORDER itself. Respondents, without limitation, object on that basis.

CONCRETE AND JOINTS

To the best of Respondents knowledge, the concrete on the smaller portion of the storage area is believed to be have been an asphaltic type material. In 1987 this material was replaced with a sealed, double L jointed concrete to allow expansion but not migration. Prior to any placement of any drums on the Larger portion of the site, the same double "L" jointed concrete was place throughout the site and a sealant placed in the joint system. The reports for this are being collected, and with more time could have been included herein.

With respect to that portion of the ORDER which relates to threats to the public health, the ORDER states:

> 5. <u>Threats to the Public Health, Welfare, and Environment</u>
>
> There is the potential for a spill or fire involving halogenated solvents that could cause the release of poisonous gases or cause groundwater pollution. There are fire/explosion hazards associated with over a dozen unmarked/unknown compressed gas cylinders, treatment tanks, thermal destruction units and chemical reaction vessels, bulging drums, liquid and crystalline solids, improper storage of hazardous substances, and potential soil and groundwater contamination. There is the potential for human endangerment due to inadequate site security if the Site walls or fences are breached.

This is apparently based upon some tests which were performed at the site. Respondents believe that much or all of the equipment described in this ORDER relating to thermal destruction units is in error. Further, without debating the issue of flammability, Respondents believe that the "unmarked" compressed gas cylinders referred to contain CFCs, which are notoriously non-toxic, non-flammable, and thermally stable - and designed to be.

Since Respondents cannot find the basis for the claims with respect to the other items listed, it is not possible, at this time, to address these matters. However, some or all of the waste in drums on-site are solids, and non-flammable, and do not present a fire hazard. The drums which were alleged to pose the most serious risk have been over packed for some time and this fact is known to EPA.

With respect to the materials on-site, the ORDER states,

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4. Quantities and Types of Substances Present

There are currently approximately 3,000 55-gallon drums stored at the Site which contain hazardous waste. During the overpacking conducted by Omega's contractor, IT Corporation, the drums were initially hazcategorized to better document their contents. Hazcatting revealed halogenated compounds and hazardous waste characteristic of ignitability and corrosivity in the drums. There is a comprehensive description of the potential hazardous wastes handled at the Omega facility in the Administrative Order on Consent (Docket No. RCRA 09-91-005) which was signed by Omega Chemical. In its original RCRA Part A permit application dated October 7, 1980, its revised RCRA Part A application dated october 8, 1987 and its revised Notification of Hazardous Waste activity dated September 24, 1990, Respondent identified itself as handling the following hazardous wastes at the Facility:

Hazardous wastes exhibiting the characteristics of ignitability, corrosivity, reactivity, or toxicity identified at 40 CFR 261,261.24: D001 through D029, D035, D037, D038, D039, D040, and D043.

Hazardous waste from non specific sources identified at 40 CFR 261.31 and having the following EPA Hazardous Waste Numbers: F001, F002, F003, F004, F005, F007, F008, F009, F010, F011, F020, F022, F027, and F028

Hazardous waste from specific sources identified at 40 CFR 261.32 and having the following RCRA Hazardous Waste Numbers: K001 through K043, K048 through K052, K067, K083 through K086, K094 through K098, K101, K103, K104 and K105.

Discarded commercial chemical products, manufacturing chemical intermediates, of f-specification commercial products, or manufacturing chemical intermediates having the following EPA Hazardous Waste Numbers: P001 through P122 fail P-series wastes).

Discarded commercial chemical products manufacturing chemical intermediates, of f-specification commercial products, or manufacturing chemical intermediates having the following EPA Hazardous Waste Numbers: U001 through U249 fail U-series wastes).

This enormous list of RCRA regulated materials comes from a Part B Application which was never acted upon or, Respondents believe, reviewed, by the DTSC (DHS). This application would most probably been submitted in 1985-1987. To the best of Respondents knowledge, the majority if not all of the wastes which were actually accepted at the site conformed to the general descriptions of:

D001, F001, FOO3, FOO5 AND POSSIBLY, DOO2, though there is some

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debate on this point Respondents are informed and believes, and on that basis allege, that since the corrosivity of a material is typically dependent upon its water content, and a RCRA D002 waste must be over 12.5 or under 2 on the normal pH scale to qualify as a RCRA D002 waste, that such materials were not regularly present at the facility and may appear as a result of some other natural processes. A full review of the records has not been possible to date in order to determine whether materials of this latter description (D002) were accepted in the regular course of business.

The rest of the materials were not accepted to the best of Respondents knowledge, but permission was sought via a Permit Application which was not approved. For this reason, Respondents believe that this portion of the ORDER is in error.

Respondents believe that the Respondent OMEGA CHEMICAL CORPORATION DID NOT identify itself as handling these materials, but merely made an application for a permit to handle these materials. The revised Part A from 1987 was part of a Part A/Part B permit application, and on this basis object and, without waiving any objections herein, seeks to present, at the appropriate time, evidence to correct the Administrative record in this regard. Respondents object on this basis.

CONCLUSIONS OF LAW

The ORDER states:

> "7. Each Respondent is a "person" as defined by section 101(21) of CERCLA, 42 U.S.C. Section 9601(21).
>
> 8. Respondent Mr. Dennis O'Meara is either a person who at the time of disposal of any hazardous substances owned or operated the Site within the meaning of Section 107(a)(2) of CERCLA, 42 U.S.C. Section 107(a)(2) or who arranged for disposal of hazardous substances at the Site within the meaning of Section 107(a)(3) of CERCLA, 42 U.S.C. Section 9607(a)(3).
>
> 9. Respondent Omega chemical corporation is the Current "owner" of the Site as defined by Section 101(20) Of CERCLA, 42 U.S.C. Section 9601(20) and owned or operated the Site within the meaning of Section 107(a) (2) of CERCLA, 42 U.S.C. Section 107(a)(2)."

Respondents believe that Dennis O'Meara, as an individual, has not owned the site, and therefore does not meet the definition of a "person" as defined by section 101(21) of CERCLA, 42 U.S.C. Section 9601(21), object on that basis, and reserve all other objections.

Plaintiff is informed and believes, and on that basis allege, that Respondents assert that Dennis O'Meara, as an individual, has not operated the site, and therefore does not meet the definition of a "person" as defined by section 101(21) of CERCLA, 42 U.S.C. Section 9601(21), object on that basis, and reserve all other objections.

Respondents reserve all rights to further object on behalf of Omega Chemical Corporation.

The ORDER refers to tasks which are to be performed:

> 21. Within three (3) calendar days after U.S. EPA

approval of the Phase I Work Plan, the Respondents shall commence implementation of the Work Plan as approved or modified by U.S. EPA. Within three (3) calendar days after U.S. EPA approval of the Phase II Work Plan, the Respondents shall commence implementation of the Phase II Work Plan as approved or modified by U.S. EPA. Failure of any Respondent to properly implement all aspects of the Phase I or Phase II Work Plan shall be deemed to be a violation of the terms of this Order. The Phase I Work Plan shall require the Respondents to perform, and complete within sixty (60) calendar days after approval, at a minimum, the removal activities identified in paragraphs (a-g). The Phase II Work Plan shall require the Respondents to perform, and complete within ninety (90) calendar days after approval, at a minimum, the activities identified in paragraphs (h-i).

a. Immediately provide security and restrict access to the Site and prevent any materials, equipment or any other item from being removed from the Site without prior EPA approval.

b. Provide security during removal operations.

c. Sample and characterize all drums, containers and hazardous materials.

d. Perform air monitoring and sampling in accordance with OSHA requirements during all phases of the removal action, especially when there is a potential for airborne releases of toxic air contaminants. Operational controls such as dust suppression will be used to abate fugitive dust emissions.

e. Remove or stockpile non-hazardous vehicles, equipment, and debris to provide adequate space for response operations.

f. Prepare all hazardous substances for proper transportation for disposal, or where feasible, alternative treatment or reuse/recycle options. The above may include bulking of compatible waste Streams, direct shipment of materials appropriate for reuse, recontainerization of materials into DOT specification containers, lab packing small containers, solidification of liquid wastes, and neutralization or other on-site treatment of wastes.

7. Remove grossly contaminated equipment, structures and debris for proper disposal in compliance with state and federal regulations. Decontaminate structures pursuant to applicable state and federal regulations and laws.

h. Conduct surface and subsurface soil sampling and

groundwater sampling to determine the nature and extent of contamination.

3. Dispose, stabilize or treat grossly contaminated concrete, asphalt and/or soils found at or near the surface at the direction of the OSC.

It was stated at the May 24, 1995, conference that the scope of work prepared or to be prepared by the Omega PRP Group is inclusive of the above tasks, except for site access which was offered by Omega Chemical Company and Dennis O'meara, discussed, and accepted as appropriate by the Omega PRP Group representatives. Thus, with that narrow exception, Respondents are precluded from any action inconsistent with the present designation of a Project Coordinator under the ORDER.

The ORDER further provides:

22. The Respondents shall provide EPA with written weekly summary reports. These reports should contain a summary of the previous week's activities and up coming activities.

23. Respondents shall inform EPA at least forty-eight (48) hours prior to commencement of on Site work.

24. All sampling and analysis shall be consistent with the "Quality Assurance/Quality Control Guidance for Removal Activities": "sampling QA/QC Plan and Data validation Procedures," EPA OWSER Directive 9360.4-01, dated April, 1990.

25. Any hazardous substance, pollutant, or contaminant transferred off-Site as a result of this Order must be taken to a facility acceptable under the EPA Off-Site Disposal Policy (OWSER Directive 9834.11, November 13, 1987) in accordance with CERCLA section 121(d)(3), 42 u.s.c. 9601(d)(3).

26. With five (5) days of receipt of this Order, the Respondents shall designate a Project Coordinator. To the greatest extent possible, the Project Coordinator shall be present on site or readily available during site work. The U.S. EPA has designated Richard Martyn as its On-Scene Coordinator. The On-Scene Coordinator and the Project Coordinator shall be responsible for overseeing the implementation of this Order. To the maximum extent possible, communication between the Respondents and the U.S. EPA, and all documents, reports, and all other correspondence concerning the activities relevant to this Order, shall be directed through the On Scene Coordinator and the Project Coordinator.

27. The U.S. EPA and the Respondents shall each have the right to change their respective designated On-Scene# Coordinator or Project Coordinator. U.S. EPA shall notify the Respondents, and Respondents shall notify U.S. EPA, as early as

> possible before such a change is made, but in no case less then 24 hours before such a change. Notification may initially# be verbal, but shall promptly be reduced to writing.

It was stated at the May 24, 1995 meeting that the scope of work prepared or to be prepared by the Omega PRP Group is inclusive of the above tasks and thus are preclusive of any action by Respondents herein which are inconsistent with the exclusive designation of a Project Coordinator. Therefore actions by Respondent with respect to these issues is impermissible under the ORDER. Subject to the constraints presently imposed upon Respondents, each will cooperate with the OSC and Project Coordinator for the applicable periods and to the extent possible and appropriate.

PROJECT COORDINATOR

Respondents have been informed that the Omega PRP Group has been selected by EPA as the Project Coordinator and they have designated themselves as the exclusive contact for actions at the site, precluding Appendix B Respondents, herein. On that basis, the DESIGNATED CONTACT person for Appendix B Respondents is Daniel Coffey, Attorney at Law.

THE EPA ON-SCENE COORDINATOR

Based on information recently available to Appendix B Respondents, concerns have been raised about the currently designated OSC, and on that basis, objection is raised and not waived.

SITE ACCESS

With respect to site access, the ORDER provides:

> 31. To the extent that the Facility, or other areas where work under this Order is to be performed is owned by, or in possession of, someone other than the Respondents, the Respondents shall obtain all necessary access agreements. In the event that after using their best efforts any Respondent is unable to obtain such agreements, the Respondent shall immediately notify U.S. EPA.
>
> 32. Respondents, Omega Chemical Corporation and Dennis O'Meara, shall provide access to the Site and participate and cooperate with the Respondents for the performance of the work under this Order. The Respondents shall provide access to the Site, to U.S. EPA employees, contractors, agents, and consultants at reasonable times, and shall permit such persons to be present and move freely in the area in order to conduct inspections, including taking photographs and videotapes of the Site, to do cleanup/stabilization work, to take samples, to monitor the work under this Order, and to conduct other activities which the U.S. EPA determines to be necessary.

OBJECTION: Without waiving any objections with respect to un-consented to searches under the 4th Amendment of the United States Constitution, and without granting

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consent herein, the ORDER will be complied with so long as such information is not used in the prosecution of any action against any Respondent or otherwise. Inasmuch as this is an order to comply under an imminent and substantial endangerment, Respondents believe it is prudent and necessary to cooperate without waiving such statutory and constitutional rights as they may have.

Respondents will provide access consistent with and subject to the ORDER, saving all objections as stated above.

THIRD PARTY OBJECTIONS

Respondents herein reserve the right to raise any objections which may be raised by any party not subject to this order but whose rights may be affected, and preserve such objections herein.

THE ADMINISTRATIVE RECORD

Respondents herein have ordered a copy of the present Administrative Record and expect to be in receipt of same shortly. Respondents herein reserve the right to supplement the Administrative Record with additional information as it becomes available and as issues arise which are not now present or apparent. This would include, at a minimum, any court filings or subsequent judicial determinations which may modify or any document used as the basis for this ORDER. Such rights as may exist under the US APA are preserved and any objections to the record, supplementing the record, and amending the record are hereby preserved to Respondents herein.

With respect to certain items which are in error, note specifically that the Order issued by Judge Williams in the California Superior Court, that Order was signed by Judge Williams and became effective on January 26, 1995, not December 5, 1994. The record should reflect this fact. (See Page 2, Administrative Record Cumulative Index).

With respect to the October 8, 1987 permit application mentioned, that application was never processed or reviewed by the DTSC (DHS) so far as Respondents are aware, and the equipment for which a permit was sought was not brought on the site based on the fact the permit was not issued. Based on information available to Respondents it appears that the Supplements were also not reviewed by DTSC and therefore may not represent anything except a request to bring equipment on the site, not a declaration that the equipment was on the site. (See Page 1, Administrative Record Cumulative Index).

Respondents herein reserve the right to supplement the Administrative record and incorporate by reference those items which are now deemed appropriate and as they become apparent. Respondents reserve the right to object to the entry into evidence of any of the records mentioned or referred to as the basis for the ORDER, on the basis of irrelevancy or on the basis of any other legal objection which might otherwise be raised now or in the future.

RESPONDENTS SUFFICIENT CAUSE FOR NON-COMPLIANCE

Based upon information now available to Respondents, it is the belief of respondent that actions by the Government of the United States and the State of California may have prevented or significantly hindered Respondents from performing those matters which are the subject of this ORDER. This is based upon Respondent's enforced inability to obtain and thereby provide sufficient and timely financial means to meet the demands of the DTSC and EPA, and in order to sufficiently comply with governmental demands. Specifically, Respondent refers, without limitation, to events arising out of an importation of CFC's from Europe during the period of July 1994 to the present.

Without elaboration, Respondents reserve the right to present evidence of these circumstance, and to supplement such evidence as it becomes available, but Respondents

believe that such evidence is currently in the possession of the United States Government and is available to them upon request from the State of California. Respondents hereby raise this matter by way of defense, by objection, and as a basis for sufficient cause for non-compliance.

SUBMITTED BY APPENDIX B RESPONDENTS,
DENNIS O'MEARA and
OMEGA CHEMICAL CORPORATION

DANIEL COFFEY,
ATTORNEY FOR RESPONDENTS

Entry & Access

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN - 5 1987

OFFICE OF
ENFORCEMENT AND
COMPLIANCE MONITORING

MEMORANDUM

SUBJECT: Entry and Continued Access Under CERCLA

FROM: Thomas L. Adams, Jr.
Assistant Administrator

TO: Regional Administrators I-X
Regional Counsels I-X

I. INTRODUCTION

This memorandum sets forth EPA's policy on entry and continued access to facilities by EPA officers, employees, and representatives for the purposes of response and civil enforcement activities under CERCLA. 1/ In short, the policy recommends that EPA should, in the first instance, seek to obtain access through consent. Entry on consent is preferable across the full range of onsite activities. If consent is denied, EPA should use judicial process or an administrative order to gain access. The appropriate type of judicial process varies depending on the nature of the onsite activity. When entry is needed for short-term and non-intrusive activities, an ex parte, judicial warrant should be sought. In situations involving long-term or intrusive access, EPA should generally file suit to obtain a court order.

The memorandum's first section addresses the recently amended access provision in CERCLA. The memorandum then sets forth EPA policy on obtaining entry and the procedures which should be used to implement this policy, including separate discussions on consent, warrants, court orders, and administrative orders.

1/ This policy does not address information requests under Section 104(e)(2).

Attachment-J

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II. STATUTORY AUTHORITY

EPA needs access to private property to conduct investigations, studies, and cleanups. The Superfund Amendments and Reauthorization Act of 1986 (SARA) explicitly grants EPA 2/ the authority to enter property for each of these purposes. Section 104(e)(1) provides that entry is permitted for "determining the need for response, or choosing or taking any response action under this title, or otherwise enforcing the provisions of this title."

SARA also establishes a standard for when access may be sought and defines what property may be entered. EPA may exercise its entry authority "if there is a reasonable basis to believe there may be a release or threat of a release of a hazardous substance or pollutant or contaminant." § 104(e)(1). SARA, however, does not require that there be a release or threatened release on the property to be entered. 3/ Places and properties subject to entry under Section 104(e) include any place any hazardous substance may be or has been generated, stored, treated, disposed of, or transported from; any place a hazardous substance has or may have been released; any place which is or may be threatened by the release of a hazardous substance; or any place where entry is needed to determine the need for response or the appropriate response, or to effectuate a response action under CERCLA. § 104(e)(3). EPA is also authorized to enter any place or property adjacent to the places and properties described in the previous sentence. § 104(e)(1).

EPA is granted explicit power to enforce its entry authority in Section 104(e)(5). Under that provision EPA may either issue an administrative order directing compliance with an entry request or proceed immediately to federal district court for injunctive relief. Orders may be issued where consent to entry is denied. Prior to the effective date of the order, EPA must provide such notice and opportunity for consultation as is reasonably appropriate under the circumstances. If EPA issues an order, the order can be enforced in court. Where there is a "reasonable basis to believe there may be a release or threat of a release of a hazardous substance or pollutant or contaminant," courts are instructed to enforce an EPA request or order unless the EPA

2/ Although CERCLA and SARA confer authority upon the President that authority has been delegated to the EPA Administrator. Exec. Order No. 12580, § 2(g) and (i), 52 Fed. Reg. 1923 (1987).

3/ The House Energy and Commerce bill at one point contained this limitation. H.R. Rep. No. 99-253 Part 1, 99th Cong,. 1st Sess., 158 (1985). This limitation, however, was dropped prior to introduction of the bill for floor debate. See H.R. 2817, 99th Cong., 1st Sess., 131 Cong. Rec. H10857 (December 4, 1985).

"demand for entry or inspection is arbitrary and capricious, an abuse of discretion, or otherwise not in accordance with law." § 104(e)(5). The legislative history makes clear that courts should enforce an EPA demand or order for entry if EPA's finding that there is a reasonable basis to believe there may be a release or threat of release is not arbitrary and capricious. 132 Cong. Rec. S14929 (October 3, 1986) (Statement of Sen. Thurmond); 132 Cong. Rec. H9582 (October 8, 1986) (Statement of Rep. Glickman). See United States v. Standard Equipment, Inc., No. C83-252M (W.D. Wash. November 3, 1986). In addition, a penalty not to exceed $25,000/day may be assessed by the court for failure to comply with an EPA order or the provisions of subsection (e).

Finally, Section 104(e)(6) contains a savings provision which preserves EPA's power to secure access in "any lawful manner." This broad savings provision is significant coming in the wake of the Supreme Court's holding that:

> When Congress invests an agency with enforcement and investigatory authority, it is not necessary to identify explicitly each and every technique that may be used in the course of executing the statutory mission.
>
> . . . Regulatory or enforcement authority generally carries with it all the modes of inquiry and investigation traditionally employed or useful to execute the authority granted.

Dow Chemical Co. v. United States, 90 L.Ed. 2d 226, 234 (1986). 4/ One lawful means of gaining access covered by this paragraph is use of judicially-issued warrants. See S. Rep. No. 99-11, 99th Cong. 1st Sess. 26 (1985).

In numerous instances prior to the passage of SARA, EPA obtained court rulings affirming its authority to enter property to conduct CERCLA activities. 5/ Following enactment of SARA,

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4/ See also, Mobil Oil Corp. v. EPA, 716 F.2d 1187, 1189 (7th Cir. 1983), cert. denied, 466 U.S. 980 (1984) (EPA authority to sample effluent under Section 308 of the Clean Water Act broadly construed); CEDs, Inc. v. EPA, 745 F.2d 1092 (7th Cir. 1984), cert. denied, 471 U.S. 1015 (1985).

5/ United States v. Pepper Steel and Alloy, Inc., No. 83-1717-CIV-EPS (S.D. Fla. October 10, 1986); Bunker Limited Partnership v. United States, No. 85-3133 (D. Idaho October 21, 1985); United States v. Coleman Evans Wood Preserving Co., No. 85-211-CIV-J-16 (M.D. Fla. June 10, 1985); United States v. Baird & McGuire Co. No. 83-3002-Y (D. Mass. May 2, 1985); United States v. United Nuclear Corp., 22 ERC 1791, 15 ELR 20443 (D.N.M. April 18, 1985).

several courts have ordered siteowners to permit EPA access. United States v. Long, No. C-1-87-167 (S.D. Ohio May 13, 1987); United States v. Dickerson, No. 84-76-VAL (M.D. Ga. May 4, 1987); United States v. Standard Equipment, Inc., No. C83-252M (W.D. Wash. Nov. 3, 1986). Further, the one adverse ruling on EPA's right of access has been vacated by the Supreme Court. Outboard Marine Corp. v. Thomas, 773 F.2d 883 (7th Cir. 1985), vacated, 93 L. Ed. 2d 695 (1986).

III. EPA ACCESS POLICY

EPA needs access to sites for several types of activities, including:

- preliminary site investigations;
- removal actions;
- RI/FSs; and
- remedial actions.

Within each of these categories, the scope of the work and the time needed to complete that work may vary substantially. This memorandum sets Agency policy on what means should be used to gain access over the range of these various activities.

EPA may seek access through consent, warrant, administrative order, or court order. Consent is the preferred means of gaining access for all activities because it is consistent with EPA policy of seeking voluntary cooperation from responsible parties and the public. In certain circumstances, however, the Region should consider obtaining judicial authorization or issuing an administrative order in addition to obtaining consent. For example, where uncertainty exists whether a siteowner will continue to permit access over an extended period, reliance on consent alone may result in a substantial delay if that consent is withdrawn.

When consent is denied, EPA should seek judicial authorization or should issue an administrative order. If the judicial route is chosen, EPA may seek an ex parte warrant or a court order. Warrants are traditionally granted for short-term entries. Generally, warrants should not be used when the EPA access will involve long-term occupation or highly intrusive activities. Clearly, warrants are appropriate for preliminary site investigations. On the other hand, because of the long, involved nature of remedial actions, access for such projects should be sought through a request for a court order. Neither removals nor RI/FSs, however, can be rigidly matched with a given judicial access procedure. Depending on the activities to be undertaken and the circumstances at the site, either a warrant or a court order may be appropriate.

In deciding whether to use a warrant or a court order when access is needed for a removal or to conduct a RI/FS, the following general principles should be considered. First, if the activity will take longer than 60 days a court order normally is appropriate. Second, even if the activity will take less than 60 days, when the entry involves removal of large quantities of soil or destruction of permanent fixtures, a court order may again be appropriate. Finally, warrants should not be used if EPA action will substantially interfere with the operation of onsite business activities. These issues must be resolved on a case-by-case basis.

If EPA needs to gain access for a responsible party who has agreed to undertake cleanup activities under an administrative order or judicial decree, EPA may, in appropriate circumstances, designate the responsible party as EPA's authorized representative solely for the purpose of access, and exercise the authorities contained in Section 104(e) on behalf of the responsible party. Such a procedure may only be used where the responsible party demonstrates to EPA's satisfaction that it has made best efforts to obtain access. A further condition on the use of this procedure is that the responsible party agree to indemnify and hold harmless EPA and the United States for all claims related to injuries and damages caused by acts or omissions of the responsible party. The responsible party should also be advised that the expenses incurred by the government in gaining access for the responsible party are response costs for which the responsible party is liable. Before designating any responsible party as an authorized representative, the Region should consult with the Office of Enforcement and Compliance Monitoring.

IV. ACCESS PROCEDURES

A. Entry on Consent

1. General Procedures

The following procedures should be observed in seeking consent:

Initial Contact. Prior to visiting a site, EPA personnel 6/ should consider contacting the siteowner to determine if consent will be forthcoming. EPA personnel should use this opportunity to explain EPA's access authority, the purpose for which entry is needed, and the activities which will be conducted.

6/ As used in this guidance, the term "EPA personnel" includes contractors acting as EPA's authorized representatives.

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Arrival. EPA personnel should arrive at the site at a reasonable time of day under the circumstances. In most instances this will mean during normal working hours. When there is a demonstrable need to enter a site at other times, however, arrival need not be limited to this timeframe. Entry must be reasonable given the exigencies of the situation.

Identification. EPA personnel should show proper identification upon arrival.

Request for Entry. In asking for consent, EPA personnel should state the purpose for which entry is sought and describe the activities to be conducted. EPA personnel should also present a date-stamped written request to the owner or person-in-charge. A copy of this request should be retained by EPA. Consent to entry must be sought from the owner 7/ or the person-in-charge at that time.

If practicable under the circumstances, consent to entry should be memorialized in writing. A sample consent form is attached. Although oral consents are routinely approved by the courts, a signed consent form protects the Agency by serving as a permanent record of a transaction which may be raised as a defense or in a claim for damages many years later. If a site-owner is unwilling to sign a consent form but nonetheless orally agrees to allow access, EPA should document this oral consent by a follow-up letter confirming the consent.

Since EPA contractors often are involved in gaining access in the first instance, the Regions should ensure that their contractors are acquainted with these procedures.

2. Denial of Entry

If consent is denied, EPA personnel or contractors, before leaving, should attempt to determine the grounds for the denial. EPA personnel, however, should not threaten the siteowner with penalties or other monetary liability or make any other remarks which could be construed as threatening. EPA personnel may explain EPA's statutory access authority, the grounds upon which this authority may be exercised, and that the authority may be enforced in court.

7/ If EPA's planned site activities will not have a physical effect on the property, EPA generally need not seek consent from the owner of leased property where the lessee is in possession. The proper person in those circumstances is the lessee. But where EPA entry will have a substantial physical effect on the property, both the lessee and the property-owner should be contacted since in this instance interests of both will be involved.

3. Conditions Upon Entry

Persons on whose property EPA wishes to enter often attempt to place conditions upon entry. EPA personnel should not agree to conditions which restrict or impede the manner or extent of an inspection or response action, impose indemnity or compensatory obligations on EPA, or operate as a release of liability. The imposition of conditions of this nature on entry should be treated as denial of consent and a warrant or order should be obtained. See U.S. EPA, General Counsel Opinions, "Visitors' Release and Hold Harmless Agreements as a Condition to Entry of EPA Employees on Industrial Facilities," Gen'l and Admin. at 125 (11/8/72). If persons are concerned about confidentiality, they should be made aware that business secrets are protected by the statute and Agency regulations. 42 U.S.C. § 9604(e); 40 C.F.R. § 2.203(b). EPA personnel should enter into no further agreements regarding confidentiality.

B. Warrants

1. General Procedures

To secure a warrant, the following procedures should be observed:

Contact Regional Counsel. EPA personnel should discuss with Regional Counsel the facts regarding the denial of consent or other factors justifying a warrant and the circumstances which give rise to the need for entry.

Contact Department of Justice. If after consultation with Regional Counsel a decision is made to seek a warrant, the Regional Counsel must contact directly the Environmental Enforcement Section in the Land and Natural Resources Division at the Department of Justice. 8/ The person to call at the Department is the Assistant Chief in the Environmental Enforcement Section assigned to the Region. The Assistant Chief will then arrange, in a timely manner, for the matter to be handled by either an Environmental Enforcement Section attorney or a U.S. Attorney. The Region must send to the Environmental Enforcement Section, by Magnafax or other

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8/ This procedure is necessary to comply with internal Department of Justice delegations of authority. Referral to a local U.S. Attorney's office is not sufficient for CERCLA warrants. The Environmental Enforcement Section of the Department of Justice must approve all warrant applications. (See Memorandum from David T. Buente, Jr. to All Environmental Enforcement Attorneys, "Procedures for Authorizing Applications for Civil Search Warrants Under CERCLA" (4/3/87) attached).

expedited means, a draft warrant application and a short memorandum concisely stating why the warrant is needed.

Prepare Warrant Application. The warrant application must contain the following:

1) a statement of EPA's authority to inspect; (see § II, supra)

2) a clear identification of the name and location of the site and, if known, the name(s) of the owner and operator of the site;

3) a statement explaining the grounds for a finding of a reasonable basis for entry (i.e., a reasonable basis to believe that there may be a release or threatened release of a hazardous substance or pollutant or contaminant) and the purpose for entry (i.e., determining the need for response, or choosing or taking any response action, or otherwise enforcing CERCLA);

4) affidavits supporting the asserted reasonable basis for entry and describing any attempts to gain access on consent, if applicable; and

5) a specific description of the extent, nature, and timing of the inspection;

Following preparation of the warrant application, the Justice Department attorney will file the application with the local U.S. Magistrate.

EPA may ask the Justice Department attorney to seek the assistance of the United States Marshals Service in executing the warrant where EPA perceives a danger to the personnel executing the warrant or where there is the possibility that evidence will be destroyed.

2. Reasonable Basis for Entry

A warrant for access on a civil matter may be obtained upon a showing of a reasonable basis for entry. This reasonable basis may be established either by presenting specific evidence relating to the facility to be entered or by demonstrating that the entry is part of a neutral administrative inspection plan.

A specific evidence standard is incorporated in SARA as a condition on EPA's exercise of its access authority: EPA must have "a reasonable basis to believe there may be a release or

threat of a release of a hazardous substance or pollutant or contaminant." § 104(e)(1). SARA's express specific evidence standard is consistent with how courts have formulated the specific evidence test in the absence of statutory guidance. E.g., West Point-Pepperell, Inc. v. Donovan, 689 F. 2d 950, 958 (11th Cir. 1982) (there must be a "showing of specific evidence sufficient to support a reasonable suspicion of a violation").

In drafting a warrant application, conclusory allegations regarding the specific evidence standard under subsection 104(e) will not suffice. Courts generally have refused to approve warrants where the application contains mere boilerplate assertions of statutory violations. Warrant applications have been granted, on the other hand, where the application contained detailed attestations by government officials or third-party complaints which have some indicia of reliability. Ideally, EPA warrant applications should contain an affidavit of a person who has personally observed conditions which indicate that there may be a release or threat of a release of a hazardous substance. If they are available, sampling results, although not required, should also be attached. Warrant applications based on citizen, employee, or competitor complaints should include details that establish the complainant's credibility. 9/

C. Court Orders

The provisions in CERCLA authorizing EPA access may be enforced by court order. To obtain a court order for entry, the Region should follow the normal referral process. If only access is required, the referral package can obviously be much abbreviated. If timing is critical, EPA HQ will move expeditiously and will refer the case orally if necessary. The Regions, however, should attempt to anticipate the sites at which access may prove problematic and should allow sufficient lead time for the referral process and the operation of the courts. The Regions should also not enter lengthy negotiations with landowners over access. EPA and DOJ are prepared to litigate aggressively to establish EPA's right of access.

9/ If information gathered in a civil investigation suggests that a criminal violation may have occurred, EPA personnel should consult the guidance on parallel proceedings. (Memorandum from Courtney Price to Assistant Administrators et al., "Policy and Procedures on Parallel Proceedings at the Environmental Protection Agency" (1/23/84)). Use of CERCLA's information-gathering authority in criminal investigations is addressed in separate guidance. (Memorandum from Courtney M. Price to Assistant Administrators et al., "The Use of Administrative Discovery Devices in the Development of Cases Assigned to the Office of Criminal Investigations" (2/16/84)).

Prior to seeking a court order, EPA should request access, generally in writing, and assemble the record related to access. The showing necessary to obtain a court order is the same as for obtaining a warrant: EPA must show a reasonable basis to believe that there may be a release or a threat of a release of a hazardous substance or pollutant or contaminant. An EPA finding on whether there is reason to believe a release has occurred or is about to occur must be reviewed on the arbitrary and capricious standard. § 104(e)(5) (B)(i). If the matter is not already in court, EPA must file a complaint seeking injunctive and declaratory relief. Simultaneous to filing the complaint, EPA may, if necessary, file a motion, supported by affidavits documenting the release or threatened release, requesting an immediate order in aid of access. If the matter is already in litigation, EPA may proceed by motion to seek an order granting access. 10/

In a memorandum supporting EPA's request for relief it should be made clear that by invoking judicial process, EPA is not inviting judicial review of its decision to undertake response. action or of any administrative determinations with regard to the response action. Section 113(h) of SARA bars judicial review of removal or remedial action except in five enumerated circumstances. A judicial action to compel access is not one of the exceptions. Statements on the floor of the House and the Senate confirm that EPA enforcement of its access authority does not provide an opportunity for judicial review of response decisions. Senator Thurmond, chairman of the Judiciary Committee, remarked that when EPA requests a court to compel access "there is no jurisdiction at that time to review any response action . . .

10/ Parenthetically, it should be noted that the broad equitable power granted to courts in Section 106 can also be relied on to obtain a court order. An additional source of authority for courts in this regard is the All Writs Act, 28 U.S.C. § 1651. The Act authorizes federal courts to "issue all writs necessary or appropriate in aid of their respective jurisdictions . . . ." 28 U.S.C. § 1651. This authority "extends under appropriate circumstances, to persons who, though not parties to the original action or engaged in wrongdoing are in a position to frustrate the implementation of a court order . . . ." United States v. New York Telephone Co., 434 U.S. 159, 174 (1977). Thus, the All Writs Act may prove useful as a means of compelling persons not a party to a consent decree to cooperate with EPA and other settling parties in execution of the decree. The use of the All Writs Act, however, may be limited in light of the Supreme Court's interpretation of the Act in Pennsylvania Bureau of Correction v. United States Marshal Service, 88 L. Ed. 2d 189 (1985).

[T]he court may only review whether the Agency's conclusion that there is a release or threatened release of hazardous substances is arbitrary or capricious." 132 Cong. Rec. S14929 (October 3, 1986) (Statement of Sen. Thurmond); 132 Cong. Rec. 119582 (October 8, 1986) (Statement of Rep. Glickman); see United States v. Standard Equipment, Inc., No. C83-252M (W.D. Wash. Nov. 3, 1986).

D. Administrative Orders

If a siteowner denies an EPA request for access, EPA may issue an adminstrative order directing compliance with the request. § 104(e)(5)(A). Each administrative order must include a finding by the Regional Administrator that there exists a reasonable belief that there may be a release or threat of release of a hazardous substance and a description of the purpose for the entry and of the activities to be conducted and their probable duration. The order should indicate the nature of the prior request for access. Further, the order should advise the respondent that the administrative record upon which the order was issued is available for review and that an EPA officer or employee will be available to confer with respondent prior to the effective date of the order. The length of the time period during which such a conferences may be requested should be reasonable under the circumstances. In deciding what is a reasonable time period, consideration should be given to the interference access will cause with onsite operations, the threat to human health and the environment posed by the site, and the extent of prior contacts with the respondent. The order should advise the respondent that penalties of up to $25,000 per day may be assessed by a court against any party who unreasonably fails to comply with an order. § 104(e)(5). Following the time period for the conference and any conference, the issuing official should send a document to the respondent summarizing any conference, EPA's resolution of any objections, and stating the effective date of the order.

If, following issuance of an administrative order, the siteowner continues to refuse access to EPA, the order may be enforced in federal court. EPA should not use self-help to execute orders. Courts are required to enforce administrative orders where there is a reasonable basis to believe that there may be a release or threat of a release of a hazardous substance. EPA's determination in this regard must be upheld unless it is arbitrary and capricious. § 104(e)(5)(B)(i). EPA will seek penalties from those parties who unreasonably fail to comply with orders.

All administrative orders for access must be concurred on by the Office of Enforcement and Compliance Monitoring prior to issuance.

DISCLAIMER

The policies and procedures established in this document are intended solely for the guidance of government personnel. They are not intended, and cannot be relied upon to create any rights, substantive or procedural, enforceable by any party in litigation with the United States. The Agency reserves the right to act at variance with these policies and procedures and to change them at any time without public notice.

Attachments

CONSENT FOR ACCESS TO PROPERTY

Name: _____

Address of Property: _____

_____

I consent to officers, employees, and authorized representatives of the United States Environmental Protection Agency (EPA) entering and having continued access to my property for the following purposes:

[the taking of such soil, water, and air samples as may be determined to be necessary;]

[the sampling of any solids or liquids stored or disposed of on site;]

[the drilling of holes and installation of monitoring wells for subsurface investigation;]

[other actions related to the investigation of surface or subsurface contamination;]

[the taking of a response action including . . . .]

I realize that these actions by EPA are undertaken pursuant to its response and enforcement responsibilities under the Comprehensive Environmental Response, Compensation and Liability Act (Superfund), 42 U.S.C. § 9601 et seq.

This written permission is given by me voluntarily with knowlege of my right to refuse and without threats or promises of any kind.

_____ Date

_____ Signature

Subject

Procedures for Authorizing Application for Civil Search Warrants Under CERCLA

Date

April 3, 1987

To

All EES Attorneys

From

David T. Buente, Jr.
Chief, Environmental Enforcement Section

Under § 104(e) of CERCLA, as amended by SARA, the United States may seek access by warrant, administrative order, or court order. If access is obtained by administrative order, the appropriate documents are issued by relevant client agencies. If access is to be obtained by court order, then the Assistant Attorney General of the Land and Natural Resources Division must approve the complaint, upon referral from the relevant client agency according to ordinary procedures. For access to be sought through application on a civil CERCLA warrant,[1] the instant memorandum will confirm the procedures to be used by the Department of Justice.

Under ¶5.320-A-2 of the U.S. Attorney's Manual, application for warrant under CERCLA may not be handled unilaterally by the U.S. Attorneys. Applications for such warrants must be coordinated through the Environmental Enforcement Section.

Clearance through the Environmental Enforcement Section is important for a variety of reasons. First, the nature of the governmental activities involved under CERCLA civil warrants may be much broader and last considerably longer than an inspection under the other federal environmental regulatory statutes. Typically the latter require only a few days or weeks to conduct routine environmental sampling. Under CERCLA, access may be sought under a warrant for not only sampling, but even simple

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[1] The memorandum does not cover procedures for seeking a <u>criminal</u> search warrant where a CERCLA violation may be involved. All such matters are to be referred to the Director, Environmental Crimes Unit, EES.

removal-type activity, e.g., security/fencing, limited drum removal. The greater relative complexity of the governmental activity involved can be expected to provoke more challenges to CERCLA civil warrants than those under other statutes and the issues raised by CERCLA warrants may be much more complex. Second, this is a relatively new and vital area of the law. We must ensure that maximum efforts are made to develop this critical area of the law in an excellent manner. EES lawyers must make all reasonable efforts to ensure that exercises of the civil warrant authority under CERCLA will be vindicated by the federal courts, through proper presentation of facts and legal arguments by Departmental attorneys with experience in this area. Finally, since our experience has shown that judicial challenges to civil CERCLA warrants tend to move very rapidly, sometimes on an emergency motion basis, EES needs to work closely with client agencies on these matters so that the Division's Appellate Section is advised and prepared with sufficient lead time to expeditiously address appellate proceedings.

Coordinating these warrant applications through EES must be done on an expedited basis so that client agencies' program objectives are achieved. Moreover, our resources must not be consumed by duplicative work. Balancing the needs for careful warrant application preparations with that for expeditious handling of these matters, we will use the following procedures:

1. The client agency will telephonically notify the relevant EES Assistant Chief or Senior Lawyer when the Agency plans to seek a civil warrant.

2. The client agency will follow-up the request by expeditiously transmitting a short memorandum concisely explaining why the warrant is needed with a draft copy of the warrant application and supporting affidavits.

3. Upon receipt of the telephonic notification or written request, whichever first occurs, the EES Assistant Chief or Sr. Lawyer will arrange for either an EES staff attorney or an AUSA to handle the review and prosecution of the application. Unless a dispute develops between EES/AUSA personnel and the client agency, the EES Assistant Chief or Sr. Lawyer may approve the application. If such a dispute develops, it must be brought to the attention of the Chief or Deputy Chief, EES for resolution.

4. Handling of these matters is to be afforded priority on our docket. Moreover, the Chief or Assistant Chief of the Appellate Section shall be advised of each application request by the EES Assistant Chief or Sr. Lawyer as soon as possible after notification by the client agency, so that Appellate can be prepared to handle expeditiously appeal matters.

5. All civil actions to enforce civil CERCLA warrants, by way of application for civil contempt or other judicial orders, shall be authorized in writing by the Assistant Attorney General. Such actions shall be afforded highest priority on the docket.

For general advice/guidance on handling CERCLA civil warrant matters, contact John Fleuchaus, ORCM-Waste, 382-3109.

Attachment

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

JUN 1 6 1995

Mr. Daniel Wayne Coffey
Attorney at Law
1710 Esplanade, No. H
Redondo Beach, California 90277

Re: Site Access - Omega Chemical Services Site

Dear Mr. Coffey:

On April 5, 1995, EPA sent you a request for consentual access to the Omega Chemical Services Site with an enclosed access agreement. You declined to recommend that your client sign the agreement expressing reservations that an Action Memorandum and Order had not been issued for the work identified in the Agreement.

EPA signed an Action Memorandum and issued a Unilateral Order dated May 9, 1995 to Respondents, including Mr. O'Meara and Omega Chemical Services, to perform the work identified in the Action Memorandum. The Order included an access provision directing Omega Chemical Corporation and Dennis O'Meara to provide access to EPA and the Respondents for performance of the work under the Order. You submitted a response to the Order dated June 1, 1995 whereby you indicated that Mr. O'Meara and Omega Chemical Services would comply with the access provision of the Order, however access to the site was not consentual and access would be provided only if the information was not used in the prosecution of an action against the Respondent and if you could retain objections to un-consented to searches under the 4th Amendment of the U.S. Constitution.

These conditions on access are unacceptable to EPA. During the last few days, we have discussed EPA's need for consentual access at the site. I have again enclosed a <u>consentual</u> access agreement. If EPA does not receive a FAX of an executed copy of the enclosed access agreement by COB, Thursday, June 15, 1995, EPA will assume that Mr. O'Meara and Omega Chemical Services do not consent to unconditional access to the Omega Chemical Services Site for the removal action.

Attachment K

Printed on Recycled Paper

If you have any questions, please call me at (415) 744-1395.

Sincerely,

Janet R. Carlson

Janet R. Carlson
Assistant Regional Counsel

CONSENT FOR ACCESS TO PROPERTY

Dennis O'Meara, Omega Chemical Corporation and Omega Refrigerant hereby consent to and grant the United States Environmental Protection Agency (EPA), their officers, employees or representatives and the Omega Chemical Site Organized PRP Group and its agents, including, but not limited to Harding-Lawson Associates (their subcontractors, if any), and the Group's project manager, access to the Omega Chemical Corporation site, located at 12504 East Whittier Boulevard, Whittier, California for the purpose of performing the work required by EPA in the Order No. 95-15.

I realize that these actions by EPA are undertaken pursuant to its enforcement responsibilities under the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. Section 9601.

This written permission is given by me voluntarily with knowledge of my right to refuse and without promises of any kind.

_____ _____

Date Signature

Daniel Wayne Coffey
Attorney at Law
1710 Esplanade, No. H
Redondo Beach, California 90277

(310) 791-0197 Phone | Committed to a Better Environment Since 1980 | Facsimile (310) 378-2541

Tuesday, June 13, 1995 3:50 pm

SENT BY FAX

Janet R. Carlson
Assistant Regional Counsel
EPA Region IX
75 Hawthorne
San Francisco, CA 94105

Re: Referral of Matter to the US Attorney for issuance of a search warrant & Nancy Nadel statement

Dear Ms. Carlson:

From your call to me this morning at approximately 9:00 am, I gathered that you have some legal question about my response to the 106 Order 95-15 issued by EPA and pursuant to which we are now operating and acting.

As I explained this morning, I think the PRP Group has over analyzed this situation and may be premising expected delays on the fact that they are concerned about some language in my response to the issuance of the 106 Order. I realize from your comments that you have had many conversations with them recently about my response and the alleged problems it raises for them. Frankly, I don't understand what the flap is about. EPA issued an essentially non-reviewable 106 Order. I responded in the only way I knew how under the prevailing circumstances, and now everyone is upset. We are acting consistent with the Order and plan to do so in the future. We are acting subject to the Order, and based on our response that should be clear. Now everyone is indicating that there is some sort of agreement which is needed for me to grant access to the site. That is covered in the Order.

Let's stop wasting time posturing. If someone can explain to me the allegedly masterful maneuver I have executed by raising objections to the Order, please do so. If not, we should move forward subject to the Order and take the appropriate steps to remedy this situation.

When we last spoke you indicated that I should consider this matter more carefully and indicated that you would discuss it with me later in the afternoon. Upon my return, I reviewed your message in which you indicate that based on our earlier conversation you feel "concerns" and therefore have decided to refer this matter over to the US Attorney's office for issuance of a criminal search warrant. I have long since ceased to understand the intricate designs, plans and efforts of the EPA and the PRP's. You all certainly have a lot of meetings without our inclusion and much is made of our actions and objections, but I don't understand the value of all this and now consider it a time waster. We will be waiting on Monday morning for the PRP Group to arrive. We have said repeatedly that we are reacting to the Presidential 106 Order based on a determination by EPA of a substantial and imminent endangerment and look forward to this entire matter resolving itself in the near future. What more can you possibly want?

Other than that, between you and the attorneys for the PRP Group discussing this matter in detail, I now suspect there is something I am missing, but so far I don't see the legal posture which requires the issuance of a federal search warrant. You apparently have considered this matter far more closely than I. The Appendix B Respondents have been cooperating fully, react to everything as it comes to their attention, and are wishing

this situation and its many facets would come to a rapid completion. Had no one ever raised this issue about access it would have never been a problem for Omega and therefore everything would have resolved itself smoothly and rapidly. I assume that is what everyone wants.

At any rate, we await your next step and remind you only that there are real people with rights involved who have been as cooperative as could possibly be expected under the circumstances. They have added as much information as possible and assisted wherever possible. If that behavior suggests to you that you need a search warrant, so be it. I can't stop you from seeking such a warrant nor would I try to dissuade you from what you think is an appropriate legal approach to this situation. Frankly, I do think it is a little overkill.

As to the more mundane, you should know that the first time we knew anything about the fence as a problem was on Friday, June 9, 1995, when the PRP Group informed us that they had taken the matter to a competitive bid and had a contractor in place to install the fence which Rich Martyn had demanded of them at some indeterminate time in the past. We hadn't heard about it before Friday since no one in EPA has spoken to us in many days. We are now taking steps to place what we understand is desired by Mr. Martyn.

As for the letters which are circulating about the many complex issues surrounding this site. Call me thick, but I thought the 106 Order took care of all those issues.

As a last item, I apologize for not sending a confirming letter earlier concerning my conversation with Ms. Nadel back around May 21, 1995, in which she contacted me and indicated to me that she was not going to supply copies of her RCRA records and also volunteered to me that she knew nothing of the importation of CFCs by Omega Refrigerant Reclamation Corporation or otherwise. In due course I will be asking for a complete copy of the RCRA and CERCLA administrative files when the CERCLA administrative file is complete. I believe that I am entitled to the current version of both and have asked repeatedly for a copy of the CERCLA documents which form the basis for the 106 Order and which are listed in the index attached to the Order. Mr. Jaros indicated that I was denied access to the CERCLA documents based on the fact that those documents are not complete and therefore for some reason, I am now informed, I cannot get a complete copy until it has been amended and made final, some time in July or August, 1995.

I look forward to reviewing those documents when they become available and would like to get the basis for the denial in writing.

Thank you for your attention to this matter.

Very truly yours,

Daniel Coffey

cc:

Daniel Wayne Coffey
Attorney at Law
1710 Esplanade, No. H
Redondo Beach, California 90277

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Wednesday, June 14, 1995 12:12 pm

SENT BY FAX

Mr. Keith Millhouse
Attorney at Law
Paul, Hastings, Janofsky and Walker
Twenty Third Floor
555 South Flower Street
Los Angeles, CA 90071-2371

Re: Site Access and Discussions with PRP Group Friday afternoon.

Dear Mr. Millhouse:

I have briefly reviewed your letter dated Wednesday, June 14, 1995, faxed to me at 11:32 am, concerning the 106 Order 95-15 re: Omega Chemical Corporation, Dennis O'Meara and site access.

The text of paragraph 32 of the Order reads as follows:

"21 32. Respondents, Omega Chemical Corporation and Dennis
22. O'Meara, shall provide access to the Site and participate and
23 cooperate with the Respondents for the performance of the work
24 under this Order. The Respondents shall provide access to the
25 Site. to U.S. EPA employees, contractors, agents, and consultants
26 at reasonable times, and shall permit such persons to be present
27 and move freely in the area in order to conduct inspections, ...
30 under this Order, and to conduct other activities which the U.S.
31 EPA determines to be necessary." [emphasis added]

We are all operating subject to the 106 Order which, by its terms, provides site access, and with respect to which each of us have expressed and reserved our objections. What more could you want than the authority provided in the language of the Order? As you are aware, our concerns cannot be reviewed until a later time, and thus we are compelled to cooperate with the GROUP and are doing so.

Based on your strongly phrased letter I will take the time to reconsider your position, however, as described to me by Ms. Praitis, my concerns are still strong. I personally think that we should all plan to move forward on schedule, and refrain from erecting artificial barriers to progress. As you mentioned, we will be expecting you on Monday, June 19, 1995. It is clear from the tone of EPA's communications that removal of the drums is a high priority.

My concerns with respect to who is common counsel run to issues whether I am directing my comments to authorized fiduciaries for the Group or for counsel of a particular client who is acting on behalf of the Group. It was really just a matter of clarification, and you have provided it. Thank you.

Thank you for your attention to this matter.

Very Truly Yours,

Daniel Coffey

LAW OFFICES OF
PAUL, HASTINGS, JANOFSKY & WALKER
A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS

TWENTY-THIRD FLOOR
555 SOUTH FLOWER STREET
LOS ANGELES, CALIFORNIA 90071-2371
TELEPHONE (213) 683-6000
TWX 910-321-4065
FACSIMILE (213) 627-0705

COUNSEL
LEE O. PAUL
ROBERT P. HASTINGS
LEONARD S. JANOFSKY
CHARLES M. WALKER

ORANGE COUNTY OFFICE
695 TOWN CENTER DRIVE
COSTA MESA, CALIFORNIA 92626-1924
TELEPHONE (714) 668-6200

WEST LOS ANGELES OFFICE
1299 OCEAN AVENUE
SANTA MONICA, CALIFORNIA 90401-1076
TELEPHONE (310) 319-3300

TOKYO OFFICE
TORANOMON OHTORI BUILDING
4-3, TORANOMON 1-CHOME
MINATO-KU, TOKYO 105
TELEPHONE (03) 3507-0730

ATLANTA OFFICE
GEORGIA-PACIFIC CENTER
133 PEACHTREE STREET, N.E.
ATLANTA, GEORGIA 30303-1840
TELEPHONE (404) 586-9900

CONNECTICUT OFFICE
1055 WASHINGTON BOULEVARD
STAMFORD, CONNECTICUT 06901-2217
TELEPHONE (203) 961-7400

NEW YORK OFFICE
399 PARK AVENUE
NEW YORK, NEW YORK 10022-4697
TELEPHONE (212) 318-6000

WASHINGTON, D.C. OFFICE
1299 PENNSYLVANIA AVENUE, N.W.
WASHINGTON, D.C. 20004-2400
TELEPHONE (202) 508-9500

June 14, 1995

WRITER'S DIRECT DIAL NUMBER

(213) 683-6244

OUR FILE NO.

08811.61600

Via Facsimile

Daniel Coffey, Esq.
1710 Esplanade, #H
Redondo Beach, California 90277

Re: **Omega Chemical Site--Access Agreement**

Dear Dan:

Thank you for your prompt letter of June 14 in response to my prior letter of that date. Unfortunately, I have not been able to get back to you this afternoon so will fax this response in the evening so that if you are working late you will have it. Alternatively, you will get a chance to read it in the morning on Thursday, June 15.

Your letter asks the somewhat rhetorical question of "What more could you want than the authority provided in the language of the Order [regarding access]?". The language in the Order that you cite says unequivocally that O'Meara and Omega "**shall** provide access to the Site..." It is the Group's position that Omega's purported grant of access with multiple pages of conditions, objections and reservations does not constitute access or compliance with the Order. We simply want your clients to comply with the Order by giving the Group clear, unconditional access to do the work ordered by EPA and set forth in Order 95-15.

You contend that the Order gives the Group access. As noted above, the language you cite does not say that. It says your clients are required to give the Group access. The Group has legitimate concerns about its ability to proceed to come onto your client's property and perform the work when your client refuses to grant a simple right of access,

PAUL, HASTINGS, JANOFSKY & WALKER

especially in light of a clear unambiguous Order to do so. In light of the above, we hardly consider the Group's position to be an "artificial barrier to progress".

The Group has a contractor ready, willing and able to begin work once the Workplan is approved. The only thing holding the Group up is Omega's refusal to grant us access on the simple terms previously requested. Omega's strained reading of the Order in an attempt to justify its position changes nothing.

Next, the Group understands that EPA still has concerns regarding the issue of the installation of the fence, which installation Omega had said it would perform since the issue of access has not been resolved. Once the Group gets access to the Site we are prepared to immediately proceed with that work if Omega fails to satisfy the EPA in the interim.

Finally, we hope that you will take the time to reconsider your position as stated in your letter of earlier today. The reconsideration must take place immediately in light of the deadlines set in the Order.

Very truly yours,

Keith F. Millhouse
Omega Steering Committee

KFM:ck
Enclosure

cc: Janet Carlson, Esq., EPA
John Jaros, EPA
Richard Martyn, EPA

Daniel Wayne Coffey
Attorney at Law
1710 Esplanade, No. H
Redondo Beach, California 90277

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Thursday, June 15, 1995 12:59 pm

SENT BY FAX

Janet R. Carlson
Assistant Regional Counsel
EPA Region IX
75 Hawthorne
San Francisco, CA 94105

Re: Access, Fence and City

Dear Ms. Carlson:

I have just received your fax of June 15, 1995 sent at 12:33 pm, regarding consensual access to the site. I repeat: access is addressed in Paragraph 32 of the Order 95-15 and Respondents will act consistent with the Order. Consensual access is not something that EPA may coerce independent of the authorities vested in EPA under the Presidential Order 95-15, any more than you can gain consensual access through the powers vested in a search warrant. Such attempts at coercion shall in the future be considered as such. In the event that this matter is to be addressed any further in the future, please let me know. Otherwise, your attempts at reframing my objections to the Order 95-15 so as to preserve objections to unlawful searches and seizures is, in my opinion, a coercive and an unlawful use of the authority vested in EPA under the 106 Order, and may rise to civil rights violation is pursued any further.

We will provide access as directed by Order 95-15.

Based on the records which I have reviewed to date and the actions of certain EPA staff with respect to this situation generally, and especially with respect to those matters which I presented to you on June 1, 1995, this coercive behavior is consistent with a pattern which must stop immediately. Threats have no place in this context!

The issue of the fence is, as usual, not as simple as it appears. However, based on Mr. Martyn's direct order to construct a fence around an approximately one-acre location which apparently does not comply with local ordinances and requirements, steps are now under way to follow that direction, consistent with and subject to the Order. A copy of Mr. Martyn's Order is attached for clarity.

As you are aware, Omega Chemical is following these Orders based on the untested premise that Mr. Martyn is acting with proper authority to direct such action and he believes these orders to be lawful and correct as represented. If EPA holds any doubts as to the validity of these actions or the Order, please let us know immediately.

We note that the site is accessible to the PRP Group as well, and the fact that they demand a Site Access Agreement before they will enter the property or construct a fence in compliance with the Order, is only a convenience for delay. This posture presents a problem in that we are attempting to act subject to the Order and see no reason to add a consensual layer beyond which the Respondents are lawfully ordered to comply. Except to ally the ambiguous concerns of the PRP Group, we see no reason to supplement the terms of the

Order, and any resistance on the PRP Group's part to taking action is an attempt to shift the burden based upon a belief that without consensual access, they will not be protected by the Order.

That said, we are forced by circumstances to believe that the Order addresses these issues and we intend on complying with Mr. Martyn's direct orders pursuant to the 106 Order 95-15 to the best of our ability.

Thank you for your attention to this matter.

Very truly yours,

Daniel Coffey

cc:

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Daniel Wayne Coffey

Attorney at Law
1710 Esplanade, No. H
Redondo Beach, California 90277

(310) 791-0197 Phone | Committed to a Better Environment Since 1980 | Facsimile (310) 378-2541

Thursday, June 15, 1995 6:24 am

SENT BY FAX

Mr. Keith Millhouse
Attorney at Law
Paul, Hastings, Janofsky and Walker
Twenty Third Floor
555 South Flower Street
Los Angeles, CA 90071-2371

Re: Site Access and Discussions with PRP Group Friday afternoon.

Dear Mr. Millhouse:

I have briefly reviewed your letter dated Wednesday, June 14, 1995, faxed to me at 7:41 pm, concerning the 106 Order 95-15 re: Omega Chemical Corporation, Dennis O'Meara and site access.

As you correctly point out the text of paragraph 32 of the Order reads as follows:

"21 32. Respondents, Omega Chemical Corporation and Dennis
22. O'Meara, **shall provide access to the Site and participate** and
23 **cooperate with the Respondents** for the performance of the work
24 **under this Order. The Respondents shall provide access** to the
25 Site, to U.S. EPA employees, contractors, agents, and consultants
26 at reasonable times, and shall permit such persons to be present
27 and move freely in the area in order to conduct inspections, ...
30 under this Order, and to conduct other activities which the U.S.
31 EPA determines to be necessary." [emphasis added]

We are all operating subject to the 106 Order which, by its terms, provides site access, and with respect to which each of us have expressed and reserved our objections.

On Monday morning, as directed in the Order, your contractor will be able to access the site. There is nothing ambiguous about that? As I stated in my June 14, 1995 letter, we will be expecting you on Monday, June 19, 1995. We look forward to working closely with your Group now and in the future to resolve our common concerns.

Since I have not sent my letters to EPA they may have a slightly distorted impression of this dialogue. I hope that this letter will make everything clear. I might also suggest that we meet some time this afternoon in order to discuss this issue further and to finalize the plans for actions at the site. I have time available for that purpose after 2:00 pm and would sincerely like to get these matters completed.

Thank you for your attention to this matter.

Very Truly Yours,

Daniel Coffey

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LAW OFFICES OF
PAUL, HASTINGS, JANOFSKY & WALKER
A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS
TWENTY-THIRD FLOOR
555 SOUTH FLOWER STREET
LOS ANGELES, CALIFORNIA 90071-2371
TELEPHONE (213) 683-6000
TWX 910-321-4066
FACSIMILE (213) 627-0705

COUNSEL
LEE G. PAUL
ROBERT P. HASTINGS
LEONARD B. JANOFSKY
CHARLES N. WALKER

ORANGE COUNTY OFFICE
695 TOWN CENTER DRIVE
COSTA MESA, CALIFORNIA 92626-1924
TELEPHONE (714) 966-5200

WEST LOS ANGELES OFFICE
1299 OCEAN AVENUE
SANTA MONICA, CALIFORNIA 90401-1078
TELEPHONE (310) 319-3300

TOKYO OFFICE
TORANOMON OHTORI BUILDING
4-3, TORANOMON 1-CHOME
MINATO-KU, TOKYO 105
TELEPHONE (03) 3507-0730

ATLANTA OFFICE
GEORGIA-PACIFIC CENTER
133 PEACHTREE STREET N.E.
ATLANTA, GEORGIA 30303-1840
TELEPHONE (404) 588-9900

CONNECTICUT OFFICE
1055 WASHINGTON BOULEVARD
STAMFORD, CONNECTICUT 06901-2217
TELEPHONE (203) 961-7400

NEW YORK OFFICE
399 PARK AVENUE
NEW YORK, NEW YORK 10022-4697
TELEPHONE (212) 318-6000

WASHINGTON, D.C. OFFICE
1299 PENNSYLVANIA AVENUE, N.W.
WASHINGTON, D.C. 20004-2400
TELEPHONE (202) 508-9500

June 14, 1995

WRITER'S DIRECT DIAL NUMBER

(213) 683-6244

OUR FILE NO

08811.61600

Via Facsimile

Daniel Coffey, Esq.
1710 Esplanade, #H
Redondo Beach, California 90277

Re: **Omega Chemical Site--Access Agreement**

Dear Dan:

This letter is in response to your letter to me of late Tuesday afternoon, June 13, 1995. The issue of site access has "risen to a fever pitch" because of the fact that you have not given the Group clear site access but rather have couched your purported access in conditional terms in a twelve page letter.

As we told you Friday, June 9, we need a simple statement of access to allow the contractor to perform the work required under the Order. The EPA's insistence on the fence being put up made that requirement all the more crucial. Additionally, work is scheduled to begin on June 19 and we have already spent a considerable amount of time, without success, attempting to resolve this issue with you. The time deadlines set forth in the Order require that we resolve the access issue immediately so work can proceed on June 19.

With respect to "what [we] told [Jan Carlson] to get her in such a fuss," I had no conversations with Jan. I copied her on the letter and agreement which I sent you. The Group has done nothing more than advise her of the status of our attempts to negotiate access with you. EPA has obviously formed their own conclusions based upon your actions. To the extent you have problems with their involvement I suggest they

are of your own creation by not agreeing to memorialize a simple grant of access.

On Friday, you expressed two concerns to granting the Group access. These concerns related to the Fourth and Fifth Amendments. These concerns are specifically addressed in the agreement that was sent to you. If you intend to give the Group access to conduct the work there is no reason for you not to sign the agreement and return it to us. At the very least, you can return comments, suggestions or propose an agreement of your own. It seems clear however, that you are not interested in signing a simple, concise agreement so that work can begin at the site to remedy the problems created by your client.

Next, we are confused by the second to last sentence of your letter which asks about common counsel for the Group; the undersigned did not purport to "take any position" with respect to that issue. You have already been informed that the Group does not have common counsel and operates through a Steering Committee. It is sufficient for your purposes to know that I am on the Steering Committee for the Group and am acting on behalf of the Group pursuant to that authority in my efforts to negotiate a simple site access agreement.

Finally, the Group disagrees with your assertion that the issue of an access agreement is moot. Your execution of the access agreement with the Group (and any access EPA might feel the need to negotiate for itself) will permit work to proceed in a timely fashion. Please contact me if you have any questions or comments.

Very truly yours,

Keith F. Millhouse
for PAUL, HASTINGS, JANOFSKY & WALKER

KFM:ck
Enclosure

cc: Janet Carlson, Esq., EPA
John Jaros, EPA
Richard Martyn, EPA

LAW OFFICES OF
PAUL, HASTINGS, JANOFSKY & WALKER
A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS
TWENTY-THIRD FLOOR
555 SOUTH FLOWER STREET
LOS ANGELES, CALIFORNIA 90071-2371
TELEPHONE (213) 683-6000
TWX 910-321-4065
FACSIMILE (213) 627-0705

COUNSEL
LEE G. PAUL
ROBERT P. HASTINGS
LEONARD S. JANOFSKY
CHARLES M. WALKER

ORANGE COUNTY OFFICE
695 TOWN CENTER DRIVE
COSTA MESA, CALIFORNIA 92626-1924
TELEPHONE (714) 668-6200

WEST LOS ANGELES OFFICE
1299 OCEAN AVENUE
SANTA MONICA, CALIFORNIA 90401-1078
TELEPHONE (310) 319-3300

TOKYO OFFICE
TORANOMON OHTORI BUILDING
4-3, TORANOMON 1-CHOME
MINATO-KU, TOKYO 105
TELEPHONE (03) 3507-0730

ATLANTA OFFICE
GEORGIA-PACIFIC CENTER
133 PEACHTREE STREET, N.E.
ATLANTA, GEORGIA 30303-1840
TELEPHONE (404) 588-9900

CONNECTICUT OFFICE
1055 WASHINGTON BOULEVARD
STAMFORD, CONNECTICUT 06901-2217
TELEPHONE (203) 961-7400

NEW YORK OFFICE
399 PARK AVENUE
NEW YORK, NEW YORK 10022-4697
TELEPHONE (212) 318-6000

WASHINGTON, D.C. OFFICE
1299 PENNSYLVANIA AVENUE, N.W.
WASHINGTON, D.C. 20004-2400
TELEPHONE (202) 508-9500

June 13, 1995

WRITER'S DIRECT DIAL NUMBER

(213) 683-6244

OUR FILE NO.

08811.61600

Via Facsimile

Daniel Coffey, Esq.
1710 Esplanade, #H
Redondo Beach, California 90277

Re: **Omega Chemical Site--Access Agreement**

Dear Dan:

Pursuant to our conversation on Friday, June 9, 1995, I have prepared a short form access agreement with respect to work to be done at the Omega site. In essence, the agreement permits the Omega Chemical site PRP Group, its contractor Harding-Lawson Associates, and our project manager Ian Webster, access to the property to carry out the work required by EPA and set forth in the approved Phase I work plan.

The proposed agreement also attempts to address the concerns you raised on behalf of your client regarding the Fourth and Fifth Amendments to the United States Constitution. Please review the agreement and if it is acceptable to you return an executed copy to me as soon as possible so that the contractor may proceed with implementation of the work on Monday, June 19, 1995.

Please contact me if you have any questions or comments.

Very truly yours,

Keith Millhouse

Keith F. Millhouse
for PAUL, HASTINGS, JANOFSKY & WALKER

KFM:ck
Enclosure

cc: Janet Carlson, Esq., EPA Steering Committee (PRP Group)

AGREEMENT FOR ACCESS

Dennis O'Meara, Omega Chemical Corporation and Omega Refrigerant hereby grant the Omega Chemical Site Organized PRP Group and its agents, including, but not limited to Harding-Lawson Associates (their subcontractors, if any), and the Group's project manager, access to the Omega Chemical Corporation site, located at 12504 East Whittier Boulevard, Whittier, California, for the purpose of performing the work required by EPA and set forth in the Phase I work plan for the site approved by EPA pursuant to Order No. 95-15.

The United States Environmental Protection Agency and Department of Toxic Substances Control are not deemed to be agents of the Group for purposes of this access agreement. This access is given with an express declaration by the signatories that this is not deemed to be any admission, consent or waiver under the Fourth and/or Fifth Amendments to the United States Constitution.

DATED: _____ By _____

200

OMEGA CHEMICAL SITE
PRP ORGANIZED GROUP

June 22, 1995

Via Telecopy and First-Class Mail

Daniel W. Coffey, Esq.
1710 Esplanade, No. H
Redondo Beach, California 90277

Re: Omega Site/Commencement of Work Under Order No. 95-15

Dear Mr. Coffey:

This letter is intended to inform Mr. O'Meara, Omega Chemical Company and Omega Refrigerant that the Omega Chemical Site PRP Group intends to commence implementation of the final approved workplan for Part I (Paragraphs 21 (a-g)) of Order No. 95-15 on at 8:30 a.m. on Monday, June 26, 1995. Our contractor, as you know, will be Harding Lawson & Associates (HLA).

Please be advised that since Mr. O'Meara, Omega Chemical Company and Omega Refrigerant have refused to provide written site access to the Group, the Group must rely on access secured by USEPA. If USEPA has not secured access before 8:30 a.m. on June 26, 1995, commencement of work may be delayed until access is secured.

On a related matter, we understand a security fence eight feet high, with razor wire on top, has been installed. The Group thus will not execute its plans to install a security fence.

Finally, you have noted that some drums onsite may contain freon or other usable product. We understand any such drums are in the warehouse. Please identify these drums as provided in the workplan. A copy of the final workplan approval by USEPA is attached to this letter. Also, we have instructed HLA to forward you under separate cover, via overnight delivery service, a copy of the final workplan.

Please contact Robin Hulshizer or the undersigned with any questions.

Sincerely,

Judith M. Praitis, for the
Omega Chemical Site PRP Group

cc: Janet Carlson, Esq., USEPA
Mr. Richard Martyn, USEPA
Mr. John Jaros, USEPA
Omega Chemical Site Steering Committee

201

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11 Golden Shore Drive
Long Beach, California 90802
Tel: (310) 435-6188, Fax: (310) 435-6687

MEMORANDUM

Post-it™ Fax Note 7671	Date	# of pages ▶ 2
To R. MARTYN	From M. SCH-	
Co./Dept.	Co.	
Phone #	Phone #	
Fax #	Fax #	

To: R. Martyn, FOSC

From: M. Schwennesen, TAT

Date: June 16, 1995

Subject: Weekly Status Report, Summary of This Week's Inspections, Monday 6/12 through Friday, 6/16/95

Monday, June 12, 1995; 1230-1800 Hours; Temperature approx. 80-90° F

The inspection began at 12:30 pm, with Rod Cleem of IT Corporation in attendance. During the inspection, two drums were found to be leaking. In neither case was it obvious exactly where the leak was coming from. TAT notified R. Martyn, who directed that the drums be overpacked immediately, as a release was in progress. Rod Cleem mobilized three additional personnel (two technicians and a chemist) and overpacking began at 1500 hours with TAT in attendance. The two drums identified as leakers, Nos. 1772 and R1518, are listed in Table 1 along with identifying information which was on the drums' labels.

IT Corp. conducted the overpacking operations as per their Work Plan and Health and Safety Plan. They used Omega's forklift as the forklift they ordered was late in arriving.

Drum # R1518 appeared to be a drum in excellent condition. When it was lifted for overpack the leak was seen to be from a small hole in the side of the drum. Based on the pH of the liquid in the drum, the drum was overpacked into a polyurethane-type overpack drum. Upon opening the drum to collect the sample, the contents was found to be damp sandy soil, and had there not been an obvious leak, this drum would have appeared to contain a solid and not any liquid.

A third leaking drum was found in the process of moving drums around by forklift. The drum was polyurethane, and was bulging so badly that the contents was seeping out of it's bung. This drum was numbered 2007 (Table 1). A sample was collected from the seepage without having to open the drum itself.

All three drums' contents were hazard characterized at the site, and the IT Corp. chemist affixed the proper labeling to each of the three overpacks. The results of the hazard characterization were provided to TAT.

Once all overpacking was completed, but before pallets of drums could be replaced in their rows, the Omega forklift ran out of fuel. TAT notified Mr. O'Meara of this, and he indicated that it was not a problem, and that the pallets of drums could remain where they were. The overpacking was completed at 1800 hours.

Attachment L

202

recycled paper

Table 1

Ω Drum Number	IT Corp. Overpack Number	Omega Drum Label Info.			OVA Reading (ppm)
		EPA #	CA #	Ω Code	
1772	0-86	D001	461	1C1	10
R1518	0-84	F002	351	PS*	>1,000
2007	0-85	--	135	1A	20

* - unknown (to TAT) code

Tuesday, June 13, 1995; 1400-1445 Hours; Temperature approx. 85° F

The inspection took place without incident. No leaking drums were found. Jim Stapleton of IT Corp. was present for the inspection. The EPA-ordered additional fencing had not yet been installed.

Wednesday, June 14, 1995; 1300-1330 Hours; Temperature approx. 70° F

The inspection took place without incident. No leaking drums were found. Rod Cleem of IT Corp. was present for the inspection. The new fencing still had not been installed.

Thursday, June 15, 1995; 1000-1030 Hours; Temperature approx. 65° F

The inspection took place without incident. No leaking drums were found. Rod Cleem of IT Corp. was present for the inspection. The new fencing still had not been installed. TAT observed two large school buses parked in front of the adjacent skating rink, and about 20-30 children were milling around outside the rink, near the Omega property.

Friday, June 16, 1995; 1000-1030 Hours; Temperature approx. 60° F

The inspection took place without incident. Rod Cleem of IT Corp. was present for the inspection. No leaking drums were found; however, it had rained the evening before and drums/concrete were still wet in places. It also began raining during the inspection. A fencing contractor was installing the EPA-required fencing at the time of the inspection.

Respectfully submitted,

M. Schwennesen

20B

Phase I Work Plan
Drum Removal Action
Omega Chemical Facility
12504 East Whittier Boulevard
Whittier, California

Prepared for

Omega Chemical Site PRP Organized Group
c/o Boone and Associates
901 Corporate Center Drive
Monterey Park, California 91756

HLA Project No. 32026 13

Andrew Keller
Associate Environmental Scientist

Matthew L. McCullough, P.E.
Principal-in-Charge
Southern California Operations
Chemical Engineer - CH4673
Quality Control Reviewer

June 16, 1995

Harding Lawson Associates
Engineering and Environmental Services
3 Hutton Centre Drive, Suite 300
Santa Ana, CA 92707 – (714) 556-7992

Attachment B

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1.0 INTRODUCTION

This Phase I Work Plan (Plan) has been prepared for the Omega Chemical Site PRP Organized Group (PRP Group) by Harding Lawson Associates (HLA). This Plan has been prepared in response to the Administrative Order (Order No. 95-15) pursuant to Section 106 of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) of 1980, as amended, 42 USC Section 9606 (a), issued by the U.S. Environmental Protection Agency (EPA) and dated May 9, 1995.

1.1 Objective

HLA has prepared this Plan for the removal of drummed wastes and decontamination of equipment from the Omega Chemical facility (Site) located at 12504 East Whittier Boulevard in East Whittier, California.

The work effort required to properly assess, sample, evaluate, remove, and dispose of the drummed wastes, waste located in other containers, cylinders, tanks, process equipment, and all and any other hazardous wastes associated with the property will collectively be called the Drum Removal Action (DRA).

The Order states that the activities outlined in the Phase I Work Plan must be completed within 60 calendar days from approval of the Plan. This Plan presents HLA's approach to the tasks required to properly manage, transport, and dispose of the drums by determining the hazards associated with the drum contents.

The Plan consists of the following elements:

- Site Safety and Health Plan (SSHP)
- Work Plan (WP)
- Transportation and Disposal Plan (TDP)
- Sampling and Analysis Plan (SAP)
- Data Collection Quality Assurance Plan (DCQAP)
- Contingency Plan

1.2 Site Description

The Site is located at 12504 East Whittier Boulevard, Whittier, California (see Plate 1). The Site is approximately 40,000 square feet in area and consists of two buildings: a warehouse (150 by 160 feet) and an administrative building (80 by 30 feet) surrounded by a service yard. The west, east, and south boundaries of the Site are enclosed with a concrete block wall approximately 2 feet high. Additionally, a fence reaches a maximum height of 4 feet along the northeast boundary of the Site.

Adjacent to the Site and to the east is an indoor roller skating rink called Skateland, and west of the Site is Kaiser Hospital. Residential areas are located across the street and to the south of the Site.

The Order reports the numerous hazardous waste process units that were identified on Omega's RCRA Part A permit; however, all of these units were not observed at the Site during the March 14, 1995, Site visit by HLA.

The following units have been identified on Omega's RCRA Part A permit:

- 600-gallon storage tank (unknown contents)
- 20-gallon-per-hour incinerator
- 2,000-gallon-per-day pH modification chemical treatment unit
- 2,000-gallon-per-day organic compound reaction chemical treatment unit
- 0.5-ton-per-hour thermal treatment unit
- 20,000-gallon-per-day low temperature oxidation chemical treatment unit
- 2,000-gallon-per-day dewatering/drying physical treatment unit
- 2,000-gallon-per-day distillation physical treatment unit
- 3,000-gallon-per-day evaporation physical treatment unit
- 2,000-gallon-per-day solidification/stabilization physical treatment unit
- 200,000-gallon storage tank

The following provides a description of the process or waste management units that were identified on the Site during the Site visit and are included in the DRA (see Plate 2):

- Approximately 2,700 55-gallon drums are located throughout the outside service yard as shown on Plate 2. The drums remain from previous Site operations and are reported to contain primarily halogenated compounds and hazardous wastes with characteristics of ignitability and corrosivity. The drums outside, in the service yard, are stored on two large concrete pads.

- Five 5,000-gallon aboveground storage tanks (ASTs) are located in the western portion of the Site are reportedly contain process sludge. The tanks sit on a concrete pad and are surrounded by low walls.

- A rainwater sump is located in the southern portion of the Site and is considered to have served as a point of collection for surface runoff.

- Two distillation columns and two evaporators are located on the Site.

1.3 Site History

Omega Chemical Corporation (Omega) is a California corporation that had corporate offices in Whittier, California, from 1976 until at least 1991. The Site, located at 12504 East Whittier Boulevard, operated as a spent solvent recycling and treatment facility. The Site is currently owned by Mr. Dennis O'Meara, president of Omega. Drums and bulk loads of waste solvents and chemicals from various industrial activities were processed to produce commercial products. Chemical, thermal, and physical treatment processes were used to recycle and reuse the wastes. Wastes generated from these treatment activities included still bottoms, aqueous fractions, and nonrecoverable solvents.

The following historical information regarding the drums has been summarized from the Order. The accuracy of the following information has not been independently verified.

The Site is known to have operated as an offsite hazardous waste treatment and storage facility under Interim Status designation from 1976 until 1991.

Omega entered into an Administrative Order on Consent, EPA Docket No. RCRA-09-91-0005 ("RCRA Order") to implement a RCRA facility investigation and interim measures, which were signed by EPA on October 17, 1991.

On August 27, 1993, at the request of the Department of Toxic Substances Control (DTSC), EPA Federal On-Scene Coordinator, Mr. Richard Martyn, tasked the Technical Assistance Team (TAT) to conduct a site assessment at the Site. Mr. Martyn is also the EPA On-Scene Coordinator for the Phase I work. The following observations were made during the assessment:

- Approximately 2,700 drums of hazardous waste were observed to entirely fill all available storage space onsite.

- Drums were sometimes stacked on pallets, and in rows three high.
- Many drums were weathered; however, only a few drums were noted as leaking.

The conclusion of the assessment was that Omega represented a significant waste management problem; however at that time the DTSC was working with Mr. O'Meara, and it was recommended to retain the DTSC as the lead agency.

In January 1995, a second preliminary assessment of the Site was performed by the EPA and the following observations were made:

- Over 2,700 drums were present stacked three high, some without pallets between them
- A large majority of the drums appeared to be extremely corroded
- Numerous drums were observed leaking into other drums and onto the concrete pad
- Numerous spills were observed leading away from the drums to other parts of the property

1.4 Status of Drums

On March 16, 1995, HLA personnel visited the Site to assess the status of the drums located at the Site. Approximately 2,700 55-gallon drums were counted in the outside service yard.

Approximately 83 of these drums have been overpacked by IT Corporation because of deteriorated drum conditions. IT Corporation's Hazard Characterization (HazCat®) analyses on these drums revealed halogenated compounds and hazardous waste characteristic of ignitability and corrosivity.
Labels identifying the exact contents of the drums were not evident. None of the drums with secured tops were opened, so the exact contents of most of the drums remain unknown.

Approximately 1,000 drums, located in the warehouse, are suspected to contain new and/or recyclable CFC product. The validity of this will be determined once both of the following conditions have been met:

- Omega justifies that this material is a useable product and provide facility batch records or other documents that indicate the material had been reclaimed; and

- Omega demonstrates that the facility has proper certification and approval, with any and all applicable permits from the local Health and/or Fire department, for the storage of such a material at the facility. Further, the owner of the facility must be in compliance with any and all OSHA requirements, including but not limited to worker training and notification requirements, placarding, and warning signs.

If records are not available that prove the above information to be true, then the materials/containers identified as useable product will be sampled [redacted] and sent to an approved, state-certified laboratory for determination. The results of the analysis will be compared to typical established industry standards for reclaimed CFCs to determine whether this is a useable product. If a material/container is determined to be a useable product, it will be set aside until compliance with all local codes and regulations has been determined.

If the analysis confirms the material(s) to be waste CFC refrigerant, then an amendment to the Phase I Work Plan will be submitted which will outline the management process to be implemented for the removal of these wastes from the Site.

1.5 Project Schedule

Appendix A includes a schedule of the activities associated with this Plan. One week has been provided for EPA review. Field activities will be initiated within three days of work plan approval. The DRA is scheduled to be completed within 60 days from EPA approval of the work plan.

2.0 ORGANIZATIONAL RESPONSIBILITIES AND CONTACTS

2.1 EPA On-Scene Coordinator

The EPA has designated Mr. Richard Martyn to serve as the EPA On-Scene Coordinator. Mr. Martyn will be present onsite or will be available during the DRA. The EPA On-Scene Coordinator will work with the Project Coordinator; together they are responsible for overseeing the implementation of the Order. All communications, documents, reports, and other correspondence between the PRP Group and the EPA regarding the activities onsite relevant to the Order will be directed through the EPA On-Scene Coordinator and the Project Coordinator.

2.2 Project Coordinator/Senior Superfund Project Manager

The Project Coordinator/Senior Superfund Project Manager will initially be Dr. Rajeev Sane; however, the position will be transferred to Dr. Ian Webster after the first few weeks of project implementation. The Project Coordinator/Senior Superfund Project Manager supervises all activities at the Site. The Project Coordinator, or his designee, will be the representative for signing hazardous waste manifests and review of DRA progress. The EPA On-Scene Coordinator will work with the Project Coordinator; together they are responsible for overseeing the implementation of the Order. All communications, documents, reports, and all other correspondence between the PRP Group and the EPA regarding the activities onsite relevant to the Order will be directed through the EPA On-Scene Coordinator and the Project Coordinator.

2.3 Program Manager

The Program Manager has overall responsibility for HLA in the execution of work at the Site. The Program Manager is Mr. Matthew McCullough, P.E. Mr. McCullough will work with the Project Manager to evaluate and resolve regulatory issues related to the DRA and will be available to support the Project Coordinator and EPA On-Scene Coordinator throughout the DRA. The Program Manager also serves as the advisor to the PRP Group on regulatory and technical strategies.

2.4 Project Manager

The Project Manager reports to the Program Manager and has responsibility for performance of technical aspects of work for the project. Mr. Andrew Keller will be the Project Manager for all phases of the project.

2.5 Site Supervisor

The Site Supervisor is Mr. Jim Hardesty. Mr. Hardesty is responsible for field implementation of the SSHP. As part of the requirements of the SSHP, the Site Supervisor will coordinate daily tailgate safety meetings; will work with the Field Activities Manager to establish the exclusion, contamination reduction, and support zones; and will ensure that the respiratory protection program is implemented and decontamination procedures meet established criteria. The Site Supervisor will also serve as the liaison between the EPA On-Scene Coordinator and Project Coordinator with the Project Manager.

2.6 Field Activities Manager

The Field Activities Manager is Mr. Ed McGlothin. Mr. McGlothin will direct the field activities onsite during the DRA. He will supervise field efforts and communicate regularly with the Site Supervisor and Project Manager regarding the status of the project.

2.7 Project Chemist

The Project Chemist is Mr. John Gaudot. Mr. Gaudot will be the primary point of contact for the onsite HazCat® analytical laboratory and if any samples require offsite laboratory analysis, he will coordinate sampling/laboratory analysis activities. Mr. Gaudot will provide oversight and quality assurance and quality control (QA/QC) of HazCat® and offsite analytical activities.

2.8 Designated Safety and Health Officer

The Designated Safety and Health Officer (DSHO) is Mr. Chris Corpuz. Mr. Corpuz has developed the SSHP and serves as the primary advisor for health and safety-related issues. The Site Supervisor is responsible for field implementation of the SSHP.

2.9 QA/QC Officer

The QA/QC Officer is Mr. Doug Alvy. Mr. Alvy will assist the Program Manager in the removal and decontamination phases of the project and will ensure that all QA/QC procedures are followed and met.

2.10 Field Technicians

Field Technicians will be involved in the drum removal, tank decontamination, equipment facility decontamination, hazard characterization, waste disposal activities onsite, as well as other DRA activities.

2.11 Environmental Specialist

The Environmental Specialist will operate, maintain, and calibrate the weather station and ambient air monitoring equipment. He will also maintain daily logs and record daily observations of the weather conditions during the DRA.

2.12 Organization Chart

An organizational responsibilities chart is provided in Appendix B.

3.0 SITE SAFETY AND HEALTH PLAN

3.1 Introduction

It is HLA's intent to provide a safe work environment for employees and subcontractors. This SSHP has been developed to fulfill the following objectives:

1. Instruct employees and subcontractors on procedures to minimize the potential for injury or exposure to a hazardous condition.
2. Train employees and subcontractors on the proper action to be taken if a hazardous condition cannot be avoided by engineering controls.
3. Provide guidelines for emergency response for known hazards and hazardous situations.
4. Specify actions required to comply with applicable (1) Occupational Safety and Health Administration (OSHA) regulations and (2) state and local regulations or other requirements.

3.1.1 Purpose of the Site Safety and Health Plan

This SSHP is intended as a guideline that allows the Site Safety and Health Officer (SSHO) to respond to changing conditions and make professional judgments regarding the interpretation of monitoring data and related control measures. This SSHP also delineates health and safety responsibilities and assigns those responsibilities to project and office personnel. This document is to be read and understood by Site personnel. The specific requirements of this SSHP apply to HLA employees and subcontractors involved in implementing the DRA work. It is not applicable to other contractors and/or Site tasks unless authorized for such use by a designated HLA representative. Site personnel (employees and subcontractors) must be permitted access to this SSHP upon request. Site personnel are required to sign this SSHP as an acknowledgement of agreement, acceptance, and understanding of the contents.

3.1.2 Scope of Work

HLA will sample, characterize, and remove approximately 2,700 drums of unknown chemicals from the Site for appropriate disposal. This will involve industrial and hand-held equipment (e.g., forklift, tools) onsite. Drums will be opened and sampled. Site personnel will use hand tools and an air monitoring device such as a photoionization detector (PID) or a flame ionization detector (FID). Deteriorated drums will be overpacked and moved offsite for appropriate disposal using a forklift, hand tools, and a heavy-

duty truck. Decontamination of ASTs, distillation columns, evaporators, a sump, drum storage pads, and other equipment will be performed.

3.1.3 Implementation and Modification of the Site Safety and Health Plan

Before any activities begin on or around the Site, a health and safety tailgate meeting will be held with Site personnel to discuss safety procedures and to familiarize personnel with the potential hazards of the Site. Changes in this SSHP will be discussed with the Designated Safety and Health Officer (DSHO) before being applied at the Site. Site personnel will be informed of changes during the weekly tailgate meetings or when Site conditions or risks change.

The SSHO will perform daily inspections of the Site dependent on field activities. If any operation, practice, or equipment does not pass inspection, the SSHO will document the item in the logbook and initiate corrective actions. The SSHO will notify the DSHO of inspection findings, as appropriate. Operations will cease or the faulty equipment will be removed, as appropriate. Unacceptable practices and/or faulty equipment will be remedied immediately, and the SSHP will be modified to correct any deficiencies.

3.1.4 Approval of the Site Safety and Health Plan

Plan Prepared By:	Carol Hamilton (Name)	Staff Environmental Scientist (Title)
	(Signature)	(Date)
Plan Approved By:	Andrew Keller (Name)	Associate Environmental Scientist (Title)
	(Signature)	(Date)
	Chris Corpuz (Name)	Associate Industrial Hygienist (Title)
	(Signature)	(Date)

Plan Revised By:

(Name) (Title)

(Signature) (Date)

(Name) (Title)

(Signature) (Date)

3.2 Site and Project Information

This section provides a general description of the Site and a discussion of chemicals previously detected in onsite media and chemicals suspected to be present onsite. A discussion of Site zones is also provided.

3.2.1 Site Location and Description

The Omega Chemical Site is bounded on the northwest by Pacific Place, on the southeast by Washington Boulevard on the northeast by Whittier Boulevard and on the southwest by Putnam Drive. The Site is approximately 40,000 square feet and is comprised of two buildings, a warehouse and an administrative building; both are surrounded by a service yard. The size of the warehouse is approximately 150 by 160 feet and the administrative building is approximately 80 by 30 feet. A site plan is presented as Plate 2.

The Omega Site includes approximately 2,700 55-gallon-drums containing a variety of unknown materials. A large number of drums appear to have deteriorated due to long-term storage and exposure to the weather; however, only a few of the drums inspected displayed any signs of gross deterioration or leakage.

3.2.1.1 Site Status

____ Active/Open ____ Inactive/Open __X__ Inactive/Closed ____ Unknown

3.2.1.2 Site History

The Omega Site was a spent solvent recycling and treatment facility (primarily chlorinated hydrocarbons and chlorinated fluorocarbons) that operated from 1976 until at least 1991. Omega utilized a variety of chemical, thermal, and physical treatment processes to recycle and reduce wastes. Drums and bulk loads of waste solvents and chemicals from various industrial activities were processed to produce commercial products. Waste generated from the treatment activities included still bottoms, aqueous fractions, and non recoverable solvents. The Omega Site entered into an Administrative Order on Consent, to implement a RCRA facility investigation and interim measures, which was signed by EPA on October 17, 1991. On August 27, 1991, the DTSC requested the EPA to conduct a Site assessment at the Omega Site. The conclusion reached from the 1993 Site assessment was that Omega represented a significant waste management problem; however, the state was working with the owner/operator, and the Site should retain a state lead. In January 1995, the Superior Court ordered that all operations cease at the Site.

3.2.1.3 Surroundings

The Site is surrounded by Presbyterian Hospital, Nelles School for Boys, and Whittier Union High School. The area is well developed with primarily industrial, commercial, and residential areas. Additionally, the Puente Hills are located north of the Site.

3.2.1.4 Climate

Average Wind Speed and Direction: 7.5 (mi/hr) from the west-southwest

Humidity: x Arid ___ Semiarid ___ Humid ___ Tropical

	Nov
Mean High Temperature (°F)	75.1
Mean Low Temperature (°F)	56.8

3.2.1.5 Locations of Resources Available to Onsite Personnel

Toilet facilities: Onsite
Drinking water supply: Onsite
Telephone: Onsite
Radio: N/A

3.2.2 Chemicals Detected in Onsite Media

Not applicable to the DRA.

3.2.3 Chemicals Suspected to be Present Onsite

Chemicals that have not been detected onsite but that HLA suspects may be present onsite include dilute aqueous waste, still bottom residuals, and non-recyclable organic wastes.

3.2.4 Site Zones

Site zones will be established to prevent or minimize exposure (of unauthorized personnel) to hazards by establishing boundaries to reduce migration of contaminants into clean areas. A three-zone approach will be used for field activities, as appropriate (e.g., nonhazardous work sites do not require the use of site zones). The zones will be determined by the SSHO and/or the Site Supervisor and will be identified during safety briefings, as well as clearly marked by traffic cones, fencing, barricades, signs, or other means. These three zones will be designated as the Support Zone, the Contamination Reduction Zone, and the Exclusion Zone. Site entrance and exit will be through controlled access points established for each work location.

3.2.4.1 Support Zone

The Support Zone is the clean area in which the possibility of encountering hazardous materials or conditions is minimal. Therefore, personal protective and respiratory equipment are not necessary. Inside the Support Zone, the following will be available: an effective means of communication, first-aid supplies, fire extinguisher, drinking water, and other appropriate support equipment. The Support Zone will also serve as the main point of contact for the visitor check-in and initiation of emergency services when necessary.

3.2.4.2 Contamination Reduction Zone

The Contamination Reduction Zone is the area where equipment and personnel are decontaminated before leaving the Exclusion Zone. Personnel will remove and/or decontaminate personal protective equipment (PPE) and place it in appropriate containers. Site vehicles and equipment will also be decontaminated in the Contamination Reduction Zone. The Contamination Reduction Zone will consist of a decontamination pad (temporary or permanent); a means of washing protective equipment, site vehicles, and equipment; containers for liquids, solids, and PPE; first-aid supplies; an eyewash/emergency shower; and a fire extinguisher.

3.2.4.3 Exclusion Zone

The Exclusion Zone includes the work activities at the Site (e.g., initial drum handling, sampling, and steam cleaning etc.). Only authorized, trained, and qualified personnel with the appropriate personal and respiratory equipment will be admitted. Personnel entering the Exclusion Zone must use the buddy system.

Work activities within the Exclusion Zone pose the greatest possibility of exposure to personnel and equipment. The Site Supervisor will be responsible for controlling the access points and keeping bystanders and unauthorized personnel to a minimum. The Exclusion Zone will be clearly marked with flagging, fencing, barricade tape, traffic cones, or other indicators to limit access.

3.2.5 Site Control

The Site will be enclosed by an 8-foot high chain-link fence with razor wire top to maintain Site control at the facility prior to initiation of field activities. A security guard will be onsite when the project management team or the workers are not present throughout the entire project.

3.3 Project Organization and Personnel Requirements

This section presents discussions of health and safety responsibilities of key personnel and HLA personnel requirements.

3.3.1 Organization and Safety Responsibilities

To meet its health and safety objectives, HLA has developed a line of reporting and tasked individuals with health and safety responsibilities. This information is presented below. Exhibit 1 presents an organization flow chart illustrating the lines of reporting for the personnel noted in this section.

PROGRAM MANAGER: Matthew McCullough
(Name)

To receive, consider, and initiate action upon recommendations from project personnel and/or the DSHO. Overall responsibility for the implementation and effectiveness of the HLA Health and Safety Program.

PROJECT MANAGER: Andrew Keller
(Name)

Acquaint field personnel with potential hazards and procedures to minimize the negative impact of those hazards. Make available proper PPE, adequate time and budget, and trained personnel to perform site work in a safe manner. Arrange for preparation of an SSHP. Investigate and report to the DSHO each work-related illness or injury, near-misses, accidents, and damage to physical property.

DESIGNATED SAFETY AND HEALTH OFFICER: Chris Corpuz
(Name)

Write or review and approve the SSHP. Implement health and safety procedures that are stated in the SSHP. Conduct periodic audits to confirm that the SSHP is being followed. Select PPE and monitoring instruments to be used at the field site. Revise SSHPs based on advisories received from the SSHO based on actual site conditions.

SITE SUPERVISOR: Jim Hardesty
(Name)

Ensure that site personnel have read and signed the master copy of this document Exhibit 2. Coordinate with the SSHO on accident investigations, as necessary. (See Accident Investigation Form in Exhibit 3

SITE SAFETY AND HEALTH OFFICER: Jim Hardesty
(Name)

Ensure that the guidelines, rules, and procedures in this document are followed for Site work. Check that Site personnel meet OSHA requirements regarding training, medical examinations, and fit testing. Be familiar with local emergency services. Conduct a tailgate health and safety meeting before work startup and weekly thereafter. Additional meetings may be required for specific projects or Site activities. Maintain and inspect PPE and monitoring instruments, monitor onsite hazards, and monitor the physical condition of Site personnel. Perform daily inspections of work site activities. Maintain health and safety files, which will include training and medical certifications, tailgate meeting notes and rosters, inspection reports, or other health and safety documentation, as applicable. Shut down operations that pose a potential threat to site personnel.

TECHNICIANS: Dave Hill, Alex Vargas, and Wes Haydock
(Names)

Obey health and safety work practices issued by law and by HLA. Wear PPE as directed by this SSHP. Use safety equipment as directed by this SSHP.

VISITORS

Follow the direction of the Site Supervisor or the SSHO. Read, understand, and sign the SSHP. Do not enter the work zones unless the appropriate OSHA-required training and medical monitoring has been obtained. Use PPE, as appropriate.

SUBCONTRACTORS: Allwaste, ENSCO
(Name)

Follow the guidelines, rules, and procedures in this document. Report recognized unsafe conditions and actions to the SSHO and/or the Site Supervisor. Provide Material Safety Data Sheets (MSDSs) for subcontractor-provided materials at the job site.

3.3.2 Personnel Requirements

A minimum of two personnel must perform the Site activities for this project; however, a total of twelve personnel is the maximum anticipated to be on the Site at a given time. The project is expected to take 60 days for completion.

3.4 Project Hazard Identification and Mitigation

This section discusses general health and safety work practices and hazard identification and mitigation. PPE and monitoring instruments that will be used onsite are also discussed.

3.4.1 General Health and Safety Work Practices

HLA's general safety policy advocates exercising every reasonable precaution when performing the work to prevent property damage and to protect the health and safety of employees, the public, and the environment.

Employees have certain responsibilities for their own safety, as follows:

- Report to work rested and physically and mentally fit to perform the job assignment.
- Working while under the influence of intoxicants, narcotics, or controlled substances is prohibited.
- Wear suitable clothing for the weather and the work.
- Wear PPE and follow established procedures for a particular job. Do not wear jewelry or loose-fitting clothing when operating or near equipment.
- Call the supervisor's attention to any behavior or condition that may cause injury or illness to others or damage to property.

- Read warning labels on containers and equipment. Follow specified precautions.
- Discontinue any operation that could lead to injury, illness, or property damage.
- Keep horseplay and other disruptive behavior away from the job.
- Promptly report to the Site Supervisor, SSHO, or DSHO any occupational injury, illness, or exposure to toxic material. If injured, get first aid. Small injuries can become serious if neglected.
- Promptly inform the Site Supervisor, SSHO, or DSHO whenever new substances, processes, procedures, or equipment that could present new safety and health hazards are brought into work areas or onto projects.
- Do not eat, smoke and/or chew tobacco, or chew gum in the Exclusion Zone or the Contamination Reduction Zone.
- Do not allow visitors without adequate safety training into the Exclusion Zone or the Contamination Reduction Zone.
- Work upwind of field activities when it is possible to do so.
- Perform work in a manner that will minimize dust from becoming airborne (i.e., use water spray or wet technique when feasible).
- Do not work alone inside the Exclusion Zone. Use the "buddy system" defined in OSHA 29 CFR Section 1910.120 or applicable state regulations during all work activities.
- Enter the Exclusion Zone only while in proper PPE and with a "buddy." The buddy system will also be in effect at any work zone where respirators are being worn.
- While in the Exclusion Zone, avoid contact with objects or soil unless the contact is necessary to the field operation.
- Be alert to abnormal behavior of other personnel that may indicate distress, disorientation, or other ill effects.
- Verify that vehicles have an ABC-rated fire extinguisher, a first-aid kit, and 32 ounces of eyewash fluid.
- Monitor weather conditions, particularly wind direction, because they could affect potential exposure.
- Be aware of the amount of solar radiation exposed skin is receiving. Take steps to minimize the potential for sunburn.
- Operate a vehicle only if you are a licensed driver. Seatbelts must be worn when operating a company vehicle or when driving a private vehicle on company business.
- Drive vehicles in a safe manner and obey traffic regulations.
- Operate a forklift only if you are a trained operator.
- Contact the DSHO if contact with human body fluids occurs during the administration of first aid.

These general safety responsibilities also apply to subcontractors and visitors.

3.4.2 Project Hazard Analysis

This section provides information regarding potential hazards that might be encountered during field activities and the risk(s) associated with each hazard. Projects are identified by activity numbers as follows:

Activity Number	Job Project
1	Mobilization/demobilization
2	Drum opening and sampling
3	Drum overpack and removal
4	Decontamination of AST's, distillation columns, evaporators, a sump, and drum storage pads
5	Assess other containers, cylinders, tanks, process equipment, hazardous equipment, substances, and wastes
6	Analyze other containers, cylinders, tanks, process equipment, hazardous equipment, substances, and wastes
7	Remove other containers, cylinders, tanks, process equipment, hazardous equipment, substances, and wastes

The hazard analysis evaluates the possible type of hazards at the site by project. This analysis is presented in Exhibit 4.

Procedures that will be used to minimize hazards identified onsite are listed in this section. The applicable activity number(s) is shown next to the procedure to mitigate the hazard. Hazards not presently applicable or anticipated to ever become applicable onsite are identified by "N/A."

Hazards	Activity Number	Procedures to Mitigate Hazards
Physical		
	All	Keep ground clutter in the work area to a minimum to minimize the potential for tripping.
	All	Use caution when the ground surface is slick or uneven.
	All	Clean up liquid spills or use sorbent material (e.g., dry soil) to minimize the potential for loss of footing.
	4,5,6,7	Use appropriate devices (e.g., ladder) to access high areas.
	All	Exercise caution when using hand tools.
	All	Use proper lifting and reaching techniques.
	All	Use hand carts or ask for assistance when lifting or moving heavy loads.

Hazards	Activity Number	Procedures to Mitigate Hazards
	N/A	Wear safety vests and be aware of motorized traffic when working in roadways or on road shoulders.
	3,7	Use a squeegee or a wide-head broom to guide drums into overpacks. Do not use hands, arms or legs to guide the drums.
Mechanical		
	N/A	Do not stand near backhoe buckets and earthmoving equipment.
	2,3,7	Establish communication hand signals with heavy equipment operators.
	All	Verify daily that all equipment and associated tools are in good condition.
	3,4,5,6,7	Do not stand or walk under elevated loads or ladders without appropriate guarding.
	N/A	Identify the drilling rig kill switches to personnel.
	2,3,4,5,6,7	Do not repair equipment while it is in operation.
	All	Immediately remove defective equipment from the work site for subsequent repair.
	2,3,4,5,6,7	Obtain safety training before operating heavy equipment, such as forklifts, bobcats, front-end loaders, and vacuum trucks.
	All	Wear a seatbelt if you are a heavy equipment operator or a motor vehicle occupant.
	2,3,4,5,6,7	Do not ride on the forks of lift truck, vacuum truck, or front-end loader buckets, or on a load, rigging, hook, or ball.
	N/A	Perform load tests (as required by OSHA regulations) on cranes and hoists before personnel are permitted to ride in the cage.
	All	Inspect motor vehicles and heavy equipment before operating.
	2,3,4,5,6,7	Do not wear loose clothing near operating equipment. Tie back long hair.
	All	Consult the DSHO if other mechanical hazards exist.
Electrical		
	N/A	Locate and mark buried utilities before drilling or excavating.
		Utilities located by _____ on _____. (To be completed by the Site Supervisor when location is complete.)
	N/A	Obtain permits, licenses, or right of entry required by local or state authorities.
	N/A	Maintain at least a 20-foot clearance (or minimum recommended by local utility company) from overhead powerlines. Contact the client for additional requirements.

Hazards	Activity Number	Procedures to Mitigate Hazards
	N/A	Contact the utility company for information regarding minimum clearance from high-voltage powerlines.
	N/A	If unavoidably close to buried or overhead powerlines, have power turned off, with circuit breaker locked and tagged or have the local utility company mask the wires.
	All	Properly ground electrical equipment. Use only three-wire grounded receptacles and extension cords.
	All	Do not stand in water when operating electrical equipment.
	All	Do not make electrical repairs or install electrical equipment unless you are qualified.
	All	If equipment must be connected by splicing wires, be sure connections are properly taped and that the splice is electrically and mechanically equal to the cord's quality.
	All	Be familiar with specific operating instructions for each piece of equipment.
	All	Consider all wires live until locked and tagged out.
	All	Do not use metal ladders within 4 feet of an electrical source.
	All	Use ground fault circuit interrupters (GFCIs) if operating outdoor electrical equipment.
Chemical		
	All	Use PPE as indicated in Section 3.4.3, or as directed by the SSHO.
	2,5,6	Conduct direct-reading air monitoring to evaluate respiratory and explosion hazards (list instrument, action level, monitoring location, and action to be taken in Section 3.5).
	N/A	Locate underground pipelines before drilling or excavating.
	All	Do not use spark-ignition equipment when in a flammable or combustible environment.
	All	Do not smoke, except in designated areas.
	N/A	Use fans to disperse airborne contaminants at the work site. No sparking or open flame equipment will be permitted inside the Exclusion Zone if there is a potential of reaching the Lower Explosive Limit (LEL) of contaminants present at the site.
	All	Respirators with high-efficiency particulate/air (HEPA) filters should be worn if there is a potential for contaminated dust at the site, or if asbestos-containing material (ACM) is being disturbed.
	N/A	Thoroughly ventilate chemical storage areas before entering.
	All	Consult the DSHO or SSHO for personal air monitoring.

Hazards	Activity Number	Procedures to Mitigate Hazards
Temperature		
Heat stress		
	All	When temperature exceeds 70°F, take frequent breaks in shaded area. Unzip or remove coveralls during breaks. Have cool water or electrolyte replenishment solution available. Drink small amounts frequently to avoid dehydration. Count the pulse rate for 30 seconds as early as possible in the rest period. If the pulse rate exceeds 110 beats per minute at the beginning of the rest period, shorten the work cycle by one-third.
Natural		
	All	Wear long sleeves and/or sun block on sunny days.
	All	Cease field activities during severe storms. Seek shelter until the storm has passed.
	N/A	If an earthquake occurs while working outside: - Stay away from buildings, trees, and power lines. - If operating a motor vehicle or heavy equipment, stop immediately but stay in the vehicle or piece of equipment until the tremors have stopped.
	All	Use a moisturizing cream before and after work as necessary to minimize wind burn.
Biological		
	N/A	Do not touch infectious waste or any items suspected of being infectious waste.
	All	Do not approach or agitate animals, especially ones behaving strangely or foaming at the mouth.
	N/A	Do not touch refuse suspected of being from a biological or animal laboratory. Contact the DSHO for procedures involving biological laboratory refuse.
	N/A	If possible, avoid contact with poisonous snakes or other reptiles by quietly walking away. If bitten, seek medical assistance immediately.
	All	Avoid contact with rodents because they frequently are hosts to fleas, which can carry typhus and the plague. Rodent urine and feces may also contain spirochetes harmful to human health.
	All	Avoid encounters with stinging insects.
Fire/Explosion		
	All	Use a fire extinguisher only to escape or to fight very small fires. Do not attempt to fight large fires.

Hazards	Activity Number	Procedures to Mitigate Hazards
	All	Field vehicles must have a 5-pound ABC-rated fire extinguisher.
	3,4,5,6,7	Heavy equipment (e.g., drilling rig) must have a 20-pound ABC-rated fire extinguisher.
	All	Obtain fire extinguisher use training.
	All	Obtain "hot work" permits when appropriate.
	N/A	Work with explosives or around unexploded ordnance at a site only if you are authorized and qualified to do so.
	All	Explosive or flammable material will be stored only in approved facilities as described in 27 CFR Section 181 or applicable state regulation.
	All	Do not smoke or operate spark-ignition equipment within 50 feet of explosive or flammable storage or where flammable liquid or vapor is present.
	N/A	Do not use equipment that may generate a spark where the potential presence of explosive gas or vapor is suspected. At these sites, an explosimeter must be used.
	N/A	Use a combustible gas indicator when working at a site with the potential for explosive gas or when the potential for flammable vapor exists.
	N/A	Use fans as an engineering control to limit buildup of explosive gas.

1 = Mobilization/demobilization
2 = Drum opening and sampling
3 = Drum overpack and removal
4 = Decontamination of AST's, distillation columns, evaporators, a sump, and drum storage pads
5 = Assess other containers, cylinders, tanks, process equipment, hazardous equipment, substances, and wastes
6 = Analyze other containers, cylinders, tanks, process equipment, hazardous equipment, substances, and wastes
7 = Remove other containers, cylinders, tanks, process equipment, hazardous equipment, substances, and wastes

3.4.3 Required Personal Protective Equipment and Related Safety Equipment and Procedures

Personal Protective Equipment. This section describes the available levels of PPE as specified by 29 CFR 1910.120 Appendix B. The SSHO will be responsible for selecting the PPE appropriate to the actual work site conditions. Site personnel will only use PPE for which they have received training on

the appropriate use and inspection. PPE for HLA employees will be supplied by HLA. Subcontractors and Site visitors will be required to supply their own PPE.

Since the exclusion zone is the area where contamination does or could occur and this is the zone with the highest potential for exposure to contaminants by dermal contact or inhalation, all personnel within this zone will wear Level B PPE. The forklift operator in the exclusion zone will also be in Level B PPE and will have a dedicated air cylinder to supply air to the forklift operator. A detailed description of the control zones and the level of PPE that personnel within each zone will be required to wear is given in Section 4.3 of the Plan.

Related Safety Equipment and Procedures. Spill containment materials will be available onsite at all times. The material will include absorbent (clay), booms, and absorbent pads. Shovels, brooms, and empty drums will be available as needed. An explosion-proof pump will also be available to remove materials from drums which show signs failing. Appendix C details the procedures which ensure that drums are safely handled and opened during DRA activities.

3.4.3.1 Levels of Personal Protective Equipment

Level D PPE

A work uniform affording minimal protection used for nuisance contamination only. The following constitute Level D PPE, which may be used as appropriate:

- Coveralls or field clothing
- Gloves (optional as applicable)
- Boots/shoes; chemical-resistant, steel toe and shank
- Safety glasses or chemical splash goggles
- Hardhat (optional as applicable)
- Earplugs and/or earmuffs (optional as applicable)
- Escape mask (optional as applicable)
- Face shield (optional as applicable)

Modified Level D PPE

This level of protection applies when concentration(s) and type(s) of airborne substance(s) are known to be below the PELs/threshold limit values (TLVs). Air-purifying respirators should be readily available. The following Modified Level D PPE, which may be used as appropriate:

- Chemical-resistant clothing
- Coveralls or field clothing
- Gloves, outer, chemical-resistant
- Gloves, inner, chemical-resistant
- Boots, chemical-resistant, steel toe and shank
- Safety glasses or chemical splash goggles
- Hardhat (optional as applicable)
- Earplugs and/or earmuffs (optional as applicable)
- Escape mask (optional as applicable)
- Face shield (optional as applicable)

Note: Use of an air-purifying respirator with Modified Level D PPE will constitute Level C PPE.

Level C PPE

This level of protection applies when the concentration(s) and type(s) of airborne substance(s) are known and the criteria for using air-purifying respirators are met. The following constitute Level C PPE, which may be used as appropriate:

- Full-face or half-mask, air purifying respirators (NIOSH-approved) with appropriate cartridges. Employees working on this project will use organic vapor/acid mist/HEPA filter cartridges
- Chemical-resistant clothing (hooded unless approved by the DSHO or SSHO)
- Coveralls or field clothing
- Gloves, outer, chemical-resistant
- Gloves, inner, chemical-resistant
- Boots, chemical-resistant, steel toe and shank

- Boot covers, chemical-resistant (disposable)
- Hardhat (optional as applicable)
- Earplugs and/or earmuffs (optional as applicable)
- Escape mask (optional as applicable)
- Face shield (optional as applicable)

Level B PPE

This level of protection applies when the highest level of respiratory protection is necessary but a lesser level of skin protection is needed. The following constitute Level B PPE, which may be used as appropriate:

- Positive pressure, full-face self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA (NIOSH-approved)
- Hooded chemical-resistant clothing
- Coveralls or field clothing
- Gloves, outer, chemical-resistant
- Gloves, inner, chemical-resistant
- Boots, chemical-resistant, steel toe and shank
- Boot covers, chemical-resistant (disposable)
- Earplugs and/or earmuffs (optional as applicable)
- Hardhat (optional as applicable)
- Earplugs and/or earmuffs (optional as applicable)
- Face shield (optional as applicable)

3.4.3.2 Unknown Situations

For unknown, uncharacterized, and unanticipated situations, field activities must begin in Level B PPE. Downgrade to Level C or D PPE will not be permitted until analytical data for the Site have been reviewed. The DSHO and/or the SSHO must approve the downgrade. The forklift operator will remain in Level B PPE with a dedicated air tank during all exclusion zone activities.

3.4.3.3 Confined Spaces

The following policies and procedures serve as a general guideline for confined space entry situations, a detail description of the confined space policy and procedures to be implemented, if needed, during DRA activities is included as Appendix D.

1. Employees will not enter manholes, underground vaults, chambers, tanks, silos, or other similar places that receive little ventilation, unless it has been determined that it is safe to enter.

2. Entry into a confined space will be prohibited until a written "confined spaces entry permit" has been completed and its atmosphere has been tested from the outside for toxic and flammable contaminants and oxygen content.

3. Entry into a confined space will be prohibited if flammable gases exceed 10 percent of the lower explosive limit (LEL) or oxygen concentration is less than 19.5 percent or exceeds 23.5 percent.

4. Entry into a confined space containing toxic contaminants in concentrations at or exceeding the threshold limit value (TLV) will be permitted only with appropriate PPE (i.e., respiratory protection) and will only be performed by qualified personnel.

5. The DSHO will be contacted for further information about OSHA confined space regulations.

3.4.4 Exclusion Zone Air Monitoring for DRA Activities

This section describes instruments and procedures that to be used in air monitoring during DRA activities. It may not be necessary to perform all of these activities at the Site. Final decisions regarding air monitoring will be made by the DSHO or the SSHO.

A daily monitoring log will be kept by the SSHO for each piece of air monitoring equipment. The following information will be recorded:

- Name and model number of the equipment
- Calibration information
- Field work to be performed
- Air monitoring results and monitoring locations
- PPE worn
- Accidents or incidents
- Unusual occurrences and personnel complaints
- Weather information
- Postcalibration results, if performed

Air monitoring will be performed at the rim or bungs of the drums to monitor the VOC concentration in the drum headspace. Air monitoring results will also be recorded in a field logbook.
This section does not address ambient air monitoring. A detailed description of these activities is presented in Section 4.7, Ambient Air Monitoring for Offsite Receptors.

3.4.4.1 Gases and Vapors

A PID with a 10.2 eV lamp or FID will be used to monitor concentrations of volatile organic compounds (VOCs) at the drum head. Monitoring will be conducted continuously during sampling or intrusive activities. Calibration of monitoring equipment will be performed daily before startup of work (Exhibit 5). Calibration gas to be used will be specific to the instrument per manufacturer instructions.

Action levels for known contaminants will be based on the PEL or TLVs of the contaminants, whichever level is the most conservative. Due to the implementation of engineering controls, such as carbon scrubbers, to reduce the concentration of VOCs at the drum head when levels exceed 500 ppm; action levels *in the breathing zone* are not anticipated to ever exceed 500 ppm VOC. Refer to Appendix C, Drum Handling and Opening Procedures, for a detailed description of monitoring procedures at the drum head.

Action levels for unidentified total atmospheric organic contaminants for DRA activities at the drum head are based on the following:

Instrument Reading for One Minute at the Drum Head	Action
Background	Level D
Above background	Level D - introduce engineering controls (e.g., fans) and don respirator
Above background to <5 ppm above background	Level C
5 ppm above background	Level C - leave area, upgrade to Level B
5 to <500 ppm above background	Level B
500 ppm above background	Level B - implement engineering controls (e.g., carbon scrubber)

3.4.4.2 Explosion Hazard

A combustible gas indicator (CGI) will be used at sites as appropriate to monitor the possible presence of explosive gases (e.g., methane). Equipment calibration will be performed daily before startup of work per manufacturer instructions (Exhibit 5). As the SSHP is intended to be a stand-alone document, Exhibit 5 of the SSHP is a duplication of Appendix F of the Plan. The alarm will be set to 10 percent of the LEL. If feasible, calibration gas to be used will be specific to the combustible gases suspected to be present.

Continuous monitoring for the presence of combustible gases will be performed at the sampling point. If the monitoring instrument indicates greater than 10 percent of the LEL, personnel must leave the area. Explosion-proof fans should be used to lower the LEL. Personnel must not reenter the area until the LEL is less than 10 percent.

3.5 Decontamination and Disposal Procedures

Procedures to be followed for equipment and personnel decontamination and disposal of investigation-derived material are described below.

3.5.1 Personnel Decontamination

The sequence for personnel decontamination for Level C PPE or Level B PPE field activities is described below. Personnel decontamination for Level D PPE or Modified Level D PPE activities will include the applicable procedures described below. Decontamination will occur at either a temporary job site decontamination pad or at a central decontamination pad as follows:

1. If gross contamination is present, wash PPE in detergent or other appropriate solution and rinse in clean water.

2. Remove disposable overboots (if used). Remove outer gloves.

3. Wash chemical-resistant boots with detergent solution and rinse with clean water.

4. Remove SCBA belt and straps (if used) and remove coveralls. Starting at the neck, roll the coveralls off from the inside out and down past the boots. Take care to prevent the release and dispersion of dusts or prevent contact with decontamination water that may have accumulated on the coveralls. Avoid contaminating clothing inside the coveralls during removal.

5. Remove the respirator. Clean and disinfect the respirators and place into a plastic bag for storage.

6. Place disposable PPE in an appropriate container (plastic garbage bags in drums) for disposal.

7. Remove liner gloves.

8. Thoroughly wash hands and face.

3.5.2 Investigation-Derived Waste Disposal

This section describes procedures for disposing of investigation derived waste (IDW). Each IDW drum will be issued a unique number. The number will be recorded on the drum and in a log. Information as to the drum contents, the location the contents were collected, and the date filled will also be recorded on the drum and in the drum log.

3.5.2.1 Personal Protective Equipment

Used PPE will be placed in plastic garbage bags, placed in drums, and stored onsite until appropriate disposal is determined.

3.6 Emergency Procedures

Pertinent emergency information and the contingency plan are provided in this section.

3.6.1 Emergency Telephone Numbers

Ambulance: 911

Police: 911

Fire Department: 911

Hospital: Presbyterian Inter-Comm Hospital: (310) 698-0811 (Switchboard); (310) 698-2511

Poison Control Center: (213) 222-3212 (Los Angeles)

CHEMTREC: 1-800-424-9300

Client Contact:	Ian A. Webster	Office:	(213) 977-6382
Project Manager:	Andrew Keller	Office: Pager:	(714) 556-7992 (714) 291-7137
DSHO:	Chris Corpuz	Office: Pager:	(415) 884-3149 (800) skypage #3081589
RSO:	N/A	Office:	

3.6.2 How to Report an Emergency

When calling for assistance in an emergency situation, the following minimum information should be provided:

1. Name of person calling
2. Telephone number of caller's location
3. Name of person(s) exposed or injured
4. Nature of emergency
5. Actions already taken

The recipient of the call should hang up first - not the caller.

3.6.3 Emergency Routes

Name of Facility: Presbyterian Inter-Comm Hospital Address: 12401 E. Washington Boulevard

Telephone Numbers: (310) 698-0811 (Switchboard); (310) 698-2511 (Emergency)

Specific Directions: Exit to the north from the site then turn right onto Whittier Boulevard. Turn right on Washington Boulevard and the Presbyterian Inter-Comm Hospital will be on the right side of the road.

3.6.4 Emergency Signals

In the unlikely event that an emergency situation occurs, all field activities at that site will cease. The emergency situation will be signaled by a blast from a carbon dioxide (CO_2)-propelled air horn.

The following hand/body emergency communication signals should be used when other forms of communication are difficult or impossible:

Signal	Meaning
Hand clutching throat	Out of air/can't breathe
Hands on top of head	Need assistance
Thumbs up	OK/I'm all right/I understand
Grip partner's wrist or both hands around partner's waist	Leave area immediately

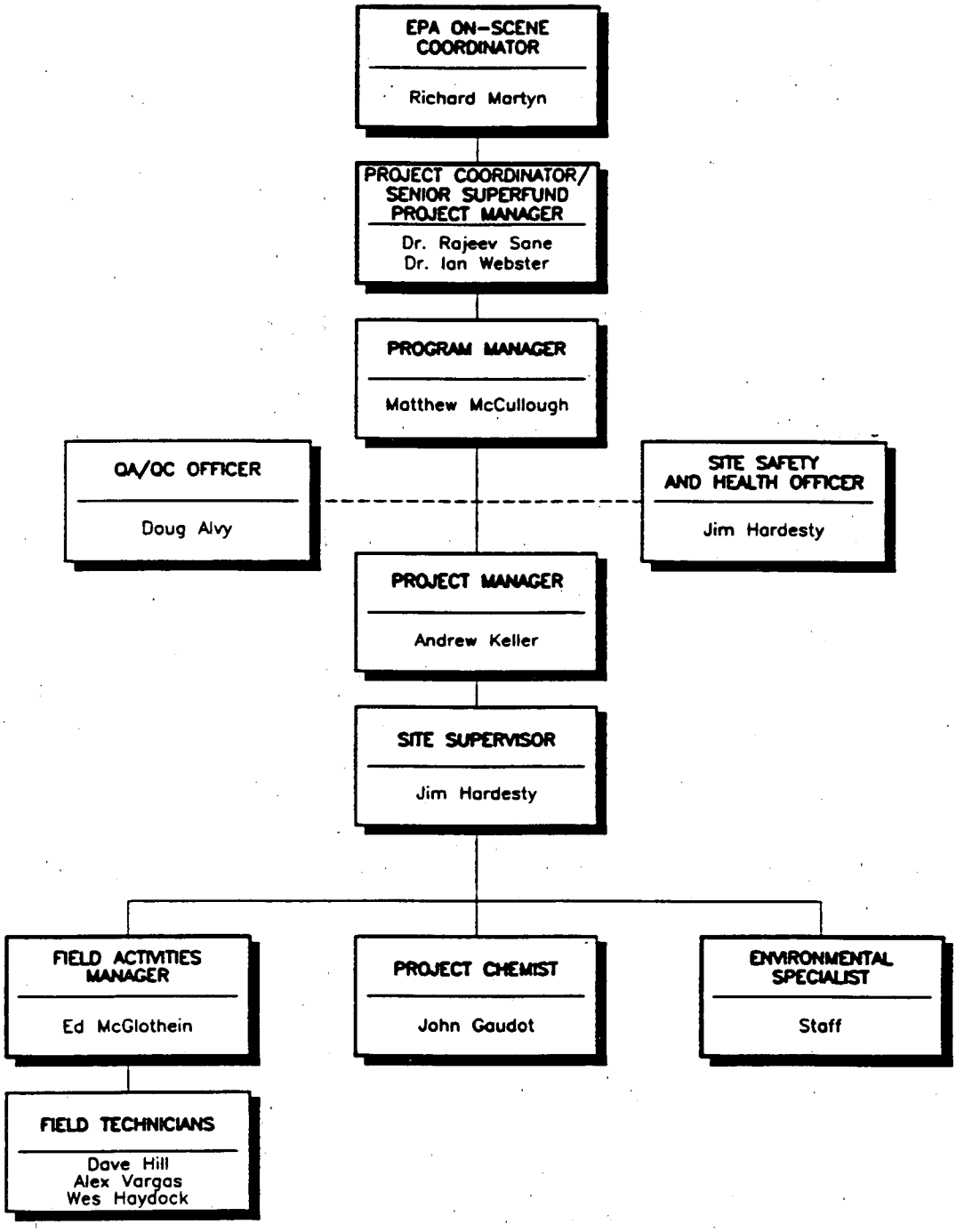
If the emergency occurs in the Exclusion Zone, all field personnel will quickly move to the Contamination Reduction Zone for an appropriate decontamination before exiting to the Support Zone. In life-threatening emergencies, decontamination may not be appropriate. The emergency decontamination decision will be made by the SSHO. Emergency situations occurring outside of the Exclusion Zone in Level D PPE will not require decontamination at the Contamination Reduction Zone before administering first aid.

Minor emergencies will be handled within the Support Zone utilizing the onsite first-aid kit. A portable emergency eyewash or a total of 32 ounces of eyewash fluid will be available in the field vehicle. Either an emergency shower or a shower facility will be available for personnel decontamination. If working at a remote location (more than 15 minutes from an emergency medical facility), at least one onsite HLA person will be trained in first aid. Exhibit 6 is a summary of American National Red Cross first-aid procedures. The appropriate emergency response personnel (i.e., ambulance and fire department) will be contacted for all major emergencies.

Routes to the nearest hospital are provided at the front and the back of this document. Plate 3 also presents the route to the nearest hospital. The SSHO should drive the hospital route before field activities begin. A written report of all emergencies will be submitted to the DSHO. Accident forms are located in Exhibit 3. Copies of this report will also be sent to the appropriate agencies.

EXHIBIT 1

ORGANIZATION FLOW CHART



HARDING LAWSON ASSOCIATES
Engineering and Environmental Services

ORGANIZATIONAL RESPONSIBILITIES WORKCHART
Omega Chemical Corporation
Whittier, California

PLATE

DRAWN	PROJECT-TASK NUMBER	APPROVED	DATE	REVISED DATE
JTL	32026-13		6/95	

EXHIBIT 2

PERSONNEL ACKNOWLEDGEMENT RECORDS

EXHIBIT 2

PERSONNEL ACKNOWLEDGEMENT RECORDS

HLA Employees

Project staff must sign the master copy of this document, indicating they have read and understand it. The employee's signature indicates acceptance and compliance with the requirements of the SSHP. Copies of this document must be made available for their review and readily available at the Site.

LOG OF HLA PROJECT PERSONNEL

Employee Name/Job Title (Please print)	Date	Signature

Contractors and Subcontractors

Copies of this document will be provided to contractors and subcontractors who may be affected by activities addressed herein. Contractors and subcontractors must comply with this document (and/or their own SSHP if it is equally stringent or more stringent than the HLA SSHP) and applicable OSHA, EPA, and local government rules and regulations. The contractors' and subcontractors' signatures acknowledge reading and understanding the SSHP and agreeing to comply with the procedures presented therein.

LOG OF CONTRACTOR AND SUBCONTRACTOR PROJECT PERSONNEL

Contractor Name/Company (Please print)	Signature	Date

Visitors

It is HLA's policy that visitors must furnish their own PPE. Visitors are required to sign the Visitor Log and comply with guidelines, rules, and procedures presented herein. If the visitor represents a regulatory agency concerned with Site health and safety issues, the SSHO must immediately notify the DSHO.

VISITOR LOG

Name of Visitor (Please print)	Company Name	Date of Visit	Signature

Health and Safety Meetings

Project personnel must receive initial health and safety orientation. Thereafter, a brief tailgate safety meeting is required as deemed necessary by the SSHO. Health and safety meetings will be held at least once every week or when risks and/or hazards change.

HEALTH AND SAFETY MEETING LOG

Date	Topics	Name of Attendee (Please print)	Company Name

Health and Safety Meetings

Project personnel must receive initial health and safety orientation. Thereafter, a brief tailgate safety meeting is required as deemed necessary by the SSHO. Health and safety meetings will be held at least once every week or when risks and/or hazards change.

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HEALTH AND SAFETY MEETING LOG

Date	Topics	Name of Attendee (Please print)	Company Name

EXHIBIT 3

ACCIDENT INVESTIGATION FORM

EXHIBIT 3

ACCIDENT INVESTIGATION FORM

HLA requires that an Accident Investigation form be completed for accidents occurring during working hours. The form, which is included in this exhibit, can be obtained from the DSHO. This form must be completed as soon as possible (limit - within three working days) after occurrence of any injury that results in medical treatment or property damage. After completion, the form must be returned to the DSHO for processing.

ACCIDENT INVESTIGATION

COMPLETED FORM MUST BE FORWARDED TO CORPORATE HEALTH AND SAFETY WITHIN 10 WORKING DAYS

I. GENERAL DATA

Case No.

Employee name | Social Security No. | Sex | Date of injury

Job Title | Age | Time of injury

Office | OT last week ____/hrs | Immediate Supervisor | Date injury reported

Location of injury (address; description of job site) | Date of Hire

II. MEDICAL DATA

A. Class of injury (check one only)

___ Fatality ___ Lost workday ___ No lost time ___ First aid only ___ Other

B. Nature of injury (check all that apply)

___ Amputation
___ Asphyxiation
___ Burn, scald
___ Burn (chemical)
___ Concussion
___ Contagious, infectious disease
___ Contusion, bruise
___ Cut, laceration, bruise
___ Dermatitis
___ Dislocation
___ Electric shock, electrocution
___ Flesh burn
___ Foreign body in eye
___ Fracture
___ Freezing, frostbite
___ Hearing loss or impairment
___ Heat stroke, sunstroke
___ Hernia rupture
___ Poisoning–systemic
___ Pneumoconiosis
___ Radiation effects
___ Scratches, abrasions
___ Strains, sprains
___ Occupational disease
___ Other ____
___ Unclassified, not determined

C. Part of Body Affected (check all that apply)

___ Trunk (abdomen, back, chest, hips, pelvis, shoulder, other)
___ Head and neck (ear, eye, face, mouth, scalp, skull, neck, other)
___ Lower extremities (ankle, foot, knee, lower leg, thigh, toe, other)
___ Upper extremities (upper arm, elbow, forearm, finger, hand, wrist, other)
___ Body system (circulatory, digestive, genitourinary, hematologic, integumental, musculo-skeletal, nervous, respiratory, other)

III. ACCIDENT ANALYSIS

A. Accident Type (check one only)

___ Struck by
___ Struck against
___ Fall from elevation
___ Fall to foot level
___ Motor vehicle accident
___ Public transportation
___ Rubbed or abraded
___ Bodily reaction
___ Overexertion
___ Contact with electric current
___ Contact with temperature extremes
___ Contact with chemical or toxic substance
___ Exposure to physical hazards (noise, UV radiation)
___ Inhalation of toxic substance
___ Other ____
___ Caught in, under, or between

B. Source of Injury (check all that apply)

___ Air pressure
___ Animals, insects, birds, reptiles
___ Animal products (not food)
___ Body motion
___ Boilers, heating equipment, pressure vessels
___ Boxes, barrels, containers, packages
___ Building and structures
___ Ceramic items
___ Chemicals (liquids, solids, gases, vapors, fumes, etc.)
___ Clothing, apparel, shoes
___ Coal and petroleum products
___ Cold (atmospheric, environmental)
___ Conveyors, unpowered (chutes, rollers, etc.)
___ Dollies, hand trucks
___ Drugs and medicines
___ Electrical apparatus
___ Excavations, trenches, tunnels
___ Flame, fires, smoke
___ Floors, level surface
___ Furniture, fixtures, furnishings
___ Glass items
___ Hand tools, not powered
___ Heat (atmospheric, environmental)
___ Hoisting apparatus
___ Infectious, parasitic agents
___ Ladders, scaffolds
___ Liquids
___ Machines
___ Mechanical power transmission apparatus
___ Metal (plate, sheet, coil)
___ Noise, vibration
___ Paper, plastic, foil
___ Particulate (undefined)
___ Plants, trees, vegetation
___ Plastic items
___ Pumps, prime movers
___ Radiating substances, equipment
___ Soaps, detergents, cleaning compounds
___ Silicates
___ Scrap, wastes, debris
___ Steam
___ Textile items
___ Tooling and fixtures
___ Vehicles, powered
___ Wood items (pulp, lumber, slabs, chips)
___ Working surfaces
___ Work area environment
___ Other ____

C. Unsafe Act (check all that apply)

___ Horseplay
___ Failure to secure, warn, lockout, or assure clearance
___ Improper lifting or carrying
___ Improper task selection
___ Working on energized, pressurized equipment
___ Misuse of equipment, tools, materials, vehicles
___ Driver/operator error
___ Failure to use equipment provided
___ Failure to follow instructions
___ Failure to use proper personal protective
___ Improper use of hands or body parts
___ Unsafe placing, mixing, loading
___ Operating or acting without authorization or in unauthorized location
___ Taking an unsafe bodily position or posture (climbing, reaching, stretching)
___ Failure to wear safe personal attire
___ Inattention to footing or surroundings
___ Using unsafe equipment
___ Removing or making safety devices inoperative
___ Other ____

D. Unsafe Condition (check all that apply)

___ Poor housekeeping
___ Guarding not provided
___ Inadequate traffic control, traffic hazards
___ Defects of machines, equipment, tools, materials, vehicles
___ Inadequate illumination
___ Inadequate or improperly designed ventilation
___ Unsuitable design construction, layout of prescribed work method
___ Natural hazards (terrain, elements, etc.)
___ Hazardous conditions
___ Inadequate or improper guarding
___ Other ____
___ Unavailability of required equipment or devices
___ No hazardous condition
___ Improper stackings, palletizing, and banding

E. Supervisory Conditions (check all that apply)

___ Failure to enforce safety rules, standards, or procedures
___ Inadequate inspection of equipment or work
___ Failure to follow instructions
___ Incorrect job assignment, layout, or design
___ Inadequate training or instruction provided
___ Failure to provide appropriate personal protective equipment
___ Other ____
___ Ineffective immediate supervision
___ Failure to provide correct or safe tools

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(continued on reverse

EXHIBIT 4

HAZARD ANALYSIS

Exhibit 4: Hazard Analysis

Hazards	Job Project by Activity Number			
	Mobilization/Demobilization Activity 1	Drum Opening Sampling Activity 2	Drum Overpack and Removal Activity 3	Decontamination of ASTs, Distillation Columns, Evaporators, a Sump, and Drum Storage Pads Activity 4
Physical	Slip/trip/fall Lifting	Slip/trip/fall Hand tools Lifting	Slip/trip/fall Hand tools Lifting	Slip/trip/fall Hand tools Lifting
Mechanical	Field Vehicles	Forklift Field vehicles	Forklift Truck Field vehicles	Field vehicles Truck
Electrical	Overhead powerlines	Overhead powerlines	Overhead powerlines	Overhead powerlines
Chemical	N/A	Volatiles in air Volatiles in drums	Volatiles in air Volatiles in drums	Volatiles in air Volatiles in equipment
Temperature	Heat stress	Heat stress	Heat stress	Heat stress
Acoustical	Field vehicles	Forklift Field vehicles	Forklift Truck Field vehicles	Field vehicles Truck
Natural	Storms Wind	Storms Wind	Storms Wind	Storms Wind
Biohazards	Animals	Animals	Animals	Animals
Fire/Explosion	Fuel	Fuel Drum Contents	Fuel Drum Contents	Fuel AST contents

N/A Not applicable

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EXHIBIT 5

INSTRUMENT CALIBRATION PROCEDURES

EXHIBIT 5

INSTRUMENT CALIBRATION PROCEDURES

This exhibit presents HLA's standard operating procedures for field calibration and maintenance of direct reading instruments, personal sampling pumps, and detector tubes that may be used during field activities. Each equipment item is described and the calibration, operation, and maintenance procedures are detailed to the extent necessary to ensure proper care and use. Detailed procedures are provided in instrument-specific manuals from each manufacturer.

These standard operating procedures are intended to ensure that equipment is properly maintained and operated. These procedures were developed on the basis of the following assumptions:

- Procedures are consistent with the manufacturer's calibration, operation, and maintenance guidelines.
- Equipment calibration, operation, and maintenance procedures will be performed by properly trained HLA personnel.
- Only designated personnel will calibrate, operate, and maintain certain instruments.
- Records will be maintained to allow tracking of the calibration, operation, and maintenance of a given instrument.

PHOTOIONIZATION DETECTOR (HNU PI 101/HNU DL-101/PHOTOVAC MICROTIP)

Theory of Operation

The portable photoionization detector (PID) detects the concentration of organic gases as well as a few inorganic gases. The basis for detection is the ionization of gaseous species. Every molecule has a characteristic ionization potential (IP), which is the energy required to remove an electron from the molecule, yielding a positively charged ion and the free electron. The incoming gas molecules are subjected to ultraviolet (UV) radiation, which is energetic enough to ionize many gaseous compounds. Each molecule is transformed into charged ion pairs, creating a current between two electrodes.

Three lamps, each containing a different UV light source, are available for use with most PIDs. Ionizing energies of the lamp are 9.5, 10.2, and 11.7 electron volts (eV). All three detect many aromatic and large molecule hydrocarbons. The 10.2 eV and 11.7 eV probes, in addition, detect some smaller organic molecules and some halogenated hydrocarbons. The 10.2 eV lamp is the most useful for environmental response work because it is more durable than the 11.7 eV lamp and detects more compounds than the 9.5 eV lamp. The following sections detail the proper calibration and field maintenance methods to be used with these PIDs.

HNU PI 101

The HNU PI 101 PID is designed for trace gas analysis in ambient air. The HNU PI 101 is factory-calibrated with certified standards of benzene, vinyl chloride, and isobutylene, with the reference standard being benzene. Because of the inherent toxicological risks associated with benzene and vinyl chloride, the primary calibration standard to be used should be isobutylene. When calibrating the unit with 100 parts per million (ppm) isobutylene, the SPAN control should be set at 9.8 and the unit should read approximately 70 ppm. This method of calibration converts the response of the unit to isobutylene to yield a direct reading of benzene that is based on the response factor of the unit using a 10.2 eV probe at a span setting of approximately 9.8. More simply stated, the required reading for calibration will be as follows:

$$= \text{Isobutylene ppm} \times \frac{\text{photoionization sensitivity (isobutylene)}}{\text{photoionization sensitivity (benzene)}}$$

$$= 100 \times 7/10$$

$$= 70 \text{ ppm}$$

When using probes with 9.5 eV or 11.7 eV lamps, consult the user's manual for photoionization sensitivities and required SPAN control settings because these units may change for each individual lamp.

In cases where hazardous chemicals have been identified, the HNU PI 101 can also be calibrated to provide direct reading results of these chemicals. Please consult the user's manual and the DSHO to select chemicals of concern for appropriate calibration. The calibration method for the HNU PI 101 with a 10.2 eV lamp follows:

1. Identify the probe by the lamp label. If a question exists, disassemble the probe and inspect the lamp. The energy of the lamp should be etched into the glass envelope.

2. Connect the probe to the readout assembly, making sure the red interlock switch is depressed by the ring on the connector.

3. Set the SPAN control potential to 9.8.

4. Battery check - turn the function switch to BATT. The needle should be in the green region. If it is not, recharge the battery.

5. Zero set - turn the function switch to STANDBY. In this position, the lamp is off and no signal is being generated. Allow the unit to sit for a minute to warm the parts. Set the ZERO point with the ZERO set control.

6. Fill a dedicated tedlar bag with the 100 ppm isobutylene in air SPAN gas.

7. Turn the function switch to the 0 to 200 range position. Attach the sampling bag to the probe inlet. Adjust the SPAN control setting to read approximately 70 ppm at a span setting of 9.8.

8. Record the units achieved at the set SPAN control and the calibration phase used.

9. Lamp cleaning - if calibration cannot be achieved at the desired span potential, the lamp must be cleaned. (See specific instrument manual for instructions)

HNU DL-101-2

The HNU DL-101-2 applies microprocessor capabilities to the basic PID principles exhibited by the HNU PI 101. The microprocessor provides electronic zeroing, site and time data logging, and the ability to store up to 12 calibrations. The unit provides two basic modes of operation: the survey mode and the hazardous waste mode. Like the PI 101, the DL-101-2 is also factory- calibrated using benzene as the reference standard. The primary method of calibration will also use 100 ppm isobutylene in air (the calibration gas standard) with the unit in the survey mode. If several compounds are suspected, the hazardous waste mode may be utilized to store the needed amount of calibration curves. In either case, it is essential to identify the lamp voltage being used and the photoionization sensitivities of the chemical species of interest.

To calibrate in the survey mode, follow these instructions:

1. Identify the lamp energy. If this information is not available on the outside of the probe, disassemble the probe and inspect the lamp. The energy of the lamp should be etched into the glass envelope.

2. Press the power button to start the unit. Wait one minute to allow the unit to warm up.

3. Completely fill a dedicated Tedlar bag with isobutylene calibration standard.

4. Press the CALIBRATE key on the front panel. "Calibrate" should appear on the liquid crystal display (LCD).

5. Press ENTER. "Zeroing Unit" will appear on the LCD. The unit will display the unit concentration before the electronic zero. The display will then prompt: CE/ENT/EXIT Conc = ___ppm. Enter the concentration of the calibration gas and press enter. "Attach gas to probe and /ENTER/" should appear on the LCD.

6. Attach the Tedlar bag to the probe and press ENTER. Allow the sample to be naturally drawn into the unit. Press ENTER when ready. "xxxx ppm" should appear on the LCD. When the readings reach 100 ppm (± 10 percent), press ENTER. The LCD should then display "Calibrating...please wait."

In the survey mode, the unit will save the calibration and then the LCD reverts to the operation screen. When additional calibrations are called for, utilize the hazardous waste mode and cross reference calibration responses with the DL-101-2 user's manual.

Photovac MicroTIP

The MicroTIP must be calibrated to display concentrations in units equivalent to ppm. First, a supply of zero gas (total hydrocarbon concentration <1 ppm) is used to set the zero point. Then Span gas (100 ppm isobutylene in air) is used to set the sensitivity.

Follow these steps for MicroTIP calibration:

1. Turn the MicroTIP on and allow five minutes for warm up.

2. Fill the dedicated zero gas Tedlar bag with zero gas calibration standard.

3. Fill the dedicated span gas Tedlar bag with 100 ppm isobutylene-in-air calibration standard.

4. Press SETUP and select the desired Cal Memory (i.e., 100 ppm) with the arrow keys and press ENTER. Press EXIT to leave setup.

5. Press CAL and attach the filled zero gas bag to the MicroTIP probe. Press ENTER and the MicroTIP sets its zero point.

6. MicroTIP then asks for the span gas concentration. Enter 100.0 and then connect the span gas bag to the MicroTIP probe.

7. Press ENTER and MicroTIP sets its sensitivity.

8. When the display reverts to normal, the unit is calibrated and ready for use. Remove the Span gas bag from the inlet.

9. Record applicable calibration information.

ORGANIC VAPOR ANALYZER FOXBORO MODEL 128

Theory of Operation

The Foxboro Model 128 organic vapor analyzer (OVA) is designed to detect and measure hazardous vapors and gases. The instrument utilizes the principle of hydrogen flame ionization for detection and measurement of organic vapors. The instrument measures organic vapor concentration by producing a response to an unknown sample, which can be related to a gas of known composition to which the instrument has been previously calibrated. During normal survey mode operation, a continuous sample is drawn into the probe and transported to the detector chamber by an internal pumping system.

The sample stream is metered and passed through particulate filters before reaching the detector chamber. Inside the detector chamber, the sample is exposed to a hydrogen flame that ionizes the organic vapors. When most organic vapors burn, they leave positively charged carbon-containing ions. An electric field drives the ions to a collecting electrode. As the positive ions are collected, a current corresponding to the collection rate is generated. This current is measured with a linear electrometer preamplifier that has an output signal proportional to the ionization current. A signal-conditioning amplifier is used to amplify the signal from the preamplifier and to condition it for display on the probe/readout assembly.

The OVA will be used primarily in the survey mode. In the survey mode, the OVA is internally calibrated to methane by the manufacturer. When the instrument is adjusted to manufacturer's instructions, it indicates the true concentration of methane in air. In response to all other detectable compounds, however, the instrument reading may be higher or lower than the true concentration.

The following procedures detail the operation, calibration, hydrogen refilling, and recharging methods to be used with the OVA:

1. Startup Procedures

   a. Connect the probe/readout assembly to the sidepack assembly by attaching the sample line and electronic jack to the sidepack.

   b. Select the desired sample probe (close area sample or telescoping probe) and connect the probe handle. Before tightening the knurled nut, check that the probe accessory is firmly seated against the flat seals in the probe handle and in the tip of the telescoping probe.

   c. Move the INST/BATT switch to the test position. The meter needle should move to a point beyond the white line, indicating that the integral battery has more than four hours of operating life before recharging is necessary.

   d. Move the INST/BATT switch to the "ON" position and allow a five-minute warm up.

e. Turn the PUMP switch on.

f. Use the Calibrate Adjust knob to set the meter needle to the level desired for activating the audible alarm. If this alarm level is other than zero, the CALIBRATE switch must be set to an appropriate range.

g. Turn the Volume knob fully clockwise (optional).

h. Using the Alarm Level Adjust knob, turn the knob until the audible alarm is activated (optional).

i. Move the CALIBRATE switch to x1 and adjust the meter reading to zero using the Calibrate Adjust (zero) knob.

j. Open the hydrogen Tank Valve one or two turns and observe the reading on the Hydrogen Tank Pressure indicator. (Approximately 150 pounds per square inch [psi] of pressure is required for each hour of operation.)

k. Open the Hydrogen Supply Valve one or two turns and observe the reading on the Hydrogen Supply Pressure Indicator. The reading should be between 8 and 12 psi.

l. After approximately one minute, depress the IGNITER button until the hydrogen flame lights. The meter needle will travel upscale and begin to read "Total Organic Vapors." Caution: Do not depress igniter for more than six seconds. If flame does not ignite, wait one minute and try again.

m. The instrument is ready for use. NOTE: If the ambient background organic vapors are "zeroed out" using the Calibrate Adjust knob, the meter needle may move off-scale in the negative direction when the OVA is moved in a location with lower background. If the OVA is to be used in the 0 to 10 ppm range, it should "zeroed" in an area with very low background. A charcoal filter (Part No. 510095-1) can be used to generate the clean background sample.

2. Calibration Using Known Samples for Each Range

The accuracy is obtained when the instrument is calibrated with known concentrations for each range. Prepare separate samples of methane-in-air in these concentration ranges: 7 to 10 ppm, 90 to 100 ppm, and 900 to 1000 ppm. Calibrate the instrument as follows:

a. Place the instrument in normal operation and allow a minimum of 15 minutes for warmup and stabilization.

b. Set the Gas Select control to 300.

c. Set the Calibrate switch to x1.

d. Set the Calibrate Adjust (Zero) knob so that the meter reads zero.

e. Check that the meter reads zero on the x10 and x100 ranges.

f. Set the Calibrate switch to x1 and introduce the sample with known concentration in the 7 to 10 ppm range.

g. Adjust R31 so the meter reading corresponds to the sample concentration.

h. Set the Calibrate switch to x10 and introduce the sample with known concentration in the 90 to 100 ppm range.

i. Adjust R32 so that the meter reading corresponds to the sample concentration.

j. Set the Calibrate switch to x100 and introduce the sample with known concentration in the 900 to 1000 ppm range.

k. Adjust R33 so that the meter reading corresponds to the sample concentration.

l. The instrument is now calibrated for methane and ready for service.

If the flame-out alarm is actuated, check that the pump is running, then press the IGNITER button. Under normal conditions, flame-out results from sampling a gas mixture that is above the lower explosive level, which causes the hydrogen flame to extinguish. If this is the case, reignition is all that is required to resume monitoring. Another possible cause for flame-out is restriction of the sample flow line, which would not allow sufficient air into the chamber to support combustion. The normal cause for such restriction is a clogged particle filter.

It should be noted that the chamber exhaust port is on the bottom of the case and blocking this port with the hand will cause fluctuations and/or flame-out.

3. Shutdown Procedure

a. Close HYDROGEN TANK valve

b. Close HYDROGEN SUPPLY valve

c. Move INSTRUMENT switch to OFF

d. Wait five seconds and move PUMP switch to OFF. The instrument is now in a shutdown configuration.

4. Fuel Refilling

Note: Use Prepurified or Zero grade hydrogen (certified total hydrocarbons as methane <0.5 ppm is recommended).

a. The instrument and the charger should be completely shut down during hydrogen tank refilling operations. Refilling should be performed in a ventilated area. There should be no potential igniters or flame in the area.

b. If you are making the first filling on the instrument or if the filling hose has been allowed to fill with air, the filling hose should be purged with hydrogen before filling the instrument tank. This purging is not required for subsequent fillings.

c. The filling hose assembly should be left attached to the hydrogen supply tank when possible. Ensure that the FILL/BLEED valve on the instrument end of the hose is in the OFF position. Connect the hose to the refill connection on the Side Pack Assembly.

d. Open the hydrogen supply bottle valve on the instrument panel and place the FILL/BLEED valve on the filling hose assembly in the FILL position. The pressure in the instrument tank will be indicated on the Hydrogen Tank Pressure indicator.

e. After the instrument fuel tank is filled, close the REFILL valve on the panel, the FILL/BLEED valve on the filling hose assembly, and the hydrogen supply bottle valve.

f. The hydrogen trapped in the hose should not be bled off to atmospheric pressure. Caution should be used in this operation as described in step (g) below because the hose will contain a significant amount of hydrogen at high pressure.

g. The hose is bled by turning the FILL/BLEED valve on the filling hose assembly to the Bleed position. After the hose is bled down to atmospheric pressure, the FILL/BLEED valve should be turned to the FILL position to allow the hydrogen trapped in the connection fittings to go into the hose assembly. Then, again, turn the FILL/BLEED valve to the Bleed position and exhaust the trapped hydrogen. Then turn the FILL/BLEED valve to OFF to keep the hydrogen at one atmosphere in the hose so that at the time of the next filling there will be no air trapped in the filling line.

h. Close the HYDROGEN TANK valve.

i. With the HYDROGEN TANK valve and the HYDROGEN SUPPLY valve closed, a small amount of hydrogen at high pressure will be present in the regulators and plumbing. As a leak check, observe the Hydrogen Tank Pressure indicator while the remainder of the system is shut down and ensure that the pressure reading does not decrease rapidly (more than 350 psi/hour), which would indicate a significant leak in the supply system.

5. Battery Charging

Warning: Never charge in a hazardous environment.

a. Plug charger connector into mating connector on battery cover and insert alternating current (AC) plug into 115V AC wall outlet.

b. Move the battery charger switch to the ON position. The lamp above the switch button should illuminate.

c. Battery charge condition is indicated by the meter on the front panel of the charger; meter will deflect to the left when charging. When fully charged, the pointer will be in line with the "charged" marker above the scale.

d. Approximately one hour of charging time is required for each hour of operation. However, an overnight charge is recommended. The charger can be left on indefinitely without damaging the batteries. When finished, move the battery charger switch to OFF and disconnect from the Side Pack Assembly.

It has been established that these battery charging procedures may not be effective when the battery has completely discharged. When this happens and the above procedures fail to charge the battery, perform the following additional steps:

e. Remove the battery from the instrument case.

f. Connect to any variable direct current (DC) power supply.

g. Apply 40 volts at 1/2 ampere (A) maximum.

h. Observe the power supply meter. As soon as the battery begins to draw current, gradually reduce the power maintaining 1/2 A maximum until the meter reads approximately 15 volts.

Note: The time required to reach the 15-volt reading will depend on degree of discharge.

i. Repeat steps (a), (b), (c), and (d) above to complete the charging cycle.

SAMPLING PUMPS (SKC, MSA, or Gillian)

Sampling pumps utilized to collect personal and area samples will be calibrated before and after sampling. In each case, the sampling pumps will be calibrated in accordance with parameters established in National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods (1984). Calibration will be performed onsite using a primary standard (i.e., electronic bubble meter or 1-liter glass buret). Calibrations of sampling trains will be conducted with the collection media (e.g., charcoal tubes, XAD-2 tubes, tenax, cyclone separators, impingers) in line with the primary standard to ensure quality data.

The following calibration procedures should be followed when calibrating sampling trains:

1. Electronic Bubble-Meter Method

   a. Allow the pump to run five minutes before voltage check and calibration.

   b. Connect the collection media to the bottom of the calibration meter by Tygon tubing. Then connect the pump and the tubing to be used to the top of the meter. This will allow the sampling train to be calibrated as it is to be used.

   c. Visually inspect all Tygon tubing connections.

   d. Wet the inside of the electronic flow cell with the supplied soap solution by pushing on the button several times.

   e. Turn on the pump and adjust the pump rotameter, if available, to the appropriate flow rate setting.

   f. Press the button on the electronic bubble meter. Visually capture a single bubble and electronically time the bubble. The accompanying printer will automatically record the calibration reading in liters per minute.

   g. Repeat step f until two readings are within 5 percent.

   h. While the pump is still running, adjust the pump, if necessary.

   i. Repeat the procedure for all pumps to be used for sampling. The same cassette and filter may be used for all calibrations involving the same sampling method.

2. Bubble-meter Method

   Perform calibration using the bubble-meter method as follows:

   a. Allow sampling pumps to run for five minutes before calibration. Check voltage after five minutes. If the voltage is below the level specified by the manufacturer, the pump needs to be recharged. Check the manufacturer's instructions for proper charging procedures.

   b. Wet the inside of the buret with the soap solution before setup.

   c. Assemble the bubble meter and connect the sampling pump and the type of collection device intended for the field sampling.

   d. Momentarily submerge the opening of the buret to capture a film of soap.

   e. Draw two or three bubbles up the buret to ensure that they will reach the top.

f. Visually capture a single bubble and time (with a stopwatch) the bubble from 0 to 1,000 milliliter (ml) or 0 to 100 ml, depending on the pump being calibrated.

g. Adjust the pump flow rate until the desired flow rate is achieved. For example, for a flow rate of 2 liters per minute, the bubble must travel from 0 to 1,000 ml in 30 seconds. Verify the flow rate at least twice.

h. For pumps with rotameters, mark or record the position of the float (ball) when the pump is running at the desired flow rate. This will allow the industrial hygienists to adjust the pump flow rate back to the correct rotameter position if the float moves off the marked setting during sampling.

DETECTOR TUBES/PUMPS (Sensidyne/Gastech, Drager, MSA)

Principle/Description

1. Detector tubes/pumps, when used with a variety of commercially available detector tubes, are capable of measuring the concentrations of a wide variety of compounds in industrial atmospheres.

2. Operation consists of using the pump to draw a known volume of air through a detector tube designed to measure the concentration of the substance of interest. The concentration is determined by a calorimetric change of an indicator that is present in the tube contents.

Applications/Limitations

1. Detector tubes/pumps can measure more than 200 organic and inorganic gases and vapors or for leak detection. Some aerosols can also be measured.

2. Detector tubes of a given brand are to be used only with a pump of the same brand. The tubes are calibrated specifically for the same brand of pump and may give erroneous results if used with a pump of another brand.

3. A limitation of many detector tubes is the lack of specificity. Many indicators are not highly selective and can cross-react with other compounds. Manufacturer's manuals describe the effects of interfering contaminants.

4. Another important consideration is sampling time. Detector tubes give only an instantaneous interpretation of environmental hazards. This may be beneficial in potentially dangerous situations or when ceiling exposure determinations are sufficient. When long-term assessment of occupational environments is necessary, short-term detector tube measurements may not reflect time-weighted average levels of the hazardous substances present.

5. Detector tubes normally have a shelf life at 25°C of one to two years. Refrigeration during storage lengthens the shelflife. Outdated detector tubes (i.e., beyond the printed expiration date) should never be used.

Performance Data

1. The specific tubes are designed to cover a concentration range that is near the Permissible Exposure Limit (PEL). Concentration ranges are tube-dependent and can be anywhere from one one-hundredth to several thousand ppm. The limits of detection depend on the particular detector tube.

2. Accuracy ranges vary with each detector tube ($\pm$25 percent).

3. The pump may be handled during operation (weighing from 8 to 11 ounces) or it may be an automatic type (weighing about 4 pounds) that collects a sample using a preset number of pump strokes. A full pump stroke of either type of short-term pump has a volume of about 100 cubic centimeters (cm^3).

4. In most cases where only one pump stroke is required, sampling time is about one minute. Determinations for which more pump strokes are required take proportionately longer.

Leakage Test

1. Each day before use, perform a pump leakage test by inserting an unopened detector tube into the pump and attempt to draw in 100 ml of air. After a few minutes, check for pump leakage by examining pump compression for bellows-type pumps or return to resting position for piston-type pumps. Automatic pumps should be tested according to the manufacturer's instructions.

2. In the event of leakage that cannot be repaired in the field, notify the DSHO to expedite repairs.

3. Record leakage test on the HLA Air Monitoring Calibration Form.

Calibration Test

1. Calibrate the detector tube for proper volume measurement at least quarterly.

2. Simply connect the pump directly to the bubble meter with a detector tube in-line. Use a detector tube and pump from the same manufacturer.

3. Wet the inside of the 100 cm^3 bubble meter with soap solution.

4. For volume calibration, experiment to get the soap bubble even with the zero mark of the buret.

   a. For piston-type pumps, pull the pump handle all the way out (full pump stroke) and note where the soap bubble stops; for bellows-type pumps, compress the bellows fully; for automatic pumps, program the pump to take a full pump stroke. For either type pump, the bubble should stop between the 95 cm^3 and 105 cm^3 marks. Allow four minutes for the pump to draw the full amount of air (This time interval varies with the type of detector tube being used in-line with the calibration setup).

   b. Also check the volume of 50 cm^3 (1/2 pump stroke) and 25 cm^3 (1/4 pump stroke) if pertinent. If error is greater than ± 5 percent, send the pump for repair and recalibration.

5. Record the calibration information required on the Calibration Log.

6. It may be necessary to clean or replace the rubber bung or tube holder if a large number of tubes have been taken with the pump.

Additional Information

1. Draeger, Model 31 (bellows)

   When checking the pump for leaks with an unopened tube, the bellows should not be completely expanded after 10 minutes.

2. Draeger, Quantimeter 1000, Model 1 (automatic)

   A battery pack is an integral part of this pump. The pack must be charged before initial use. One charge is good for 1,000 pump strokes. During heavy use, the battery pack should be recharged daily. If a "U" (undervoltage) message is continuously displayed in the readout window of this pump, the battery pack should be immediately recharged.

3. Mine Safety Appliances, Samplair Pump, Model A, Part No. 463998 (piston)

   The pump contains a flow rate control orifice protected by a plastic filter that periodically needs to be cleaned or replaced. To check the flow rate, the pump is connected to a buret and the piston is withdrawn to the 100-ml position with no tube in the tube holder. After 24 to 26 seconds, 80 ml of air should be admitted to the pump. Every six months, the piston should be relubricated with the oil provided.

4. Sensidyne-Gastec, Model 800, Part No. 7010657-1 (piston)

   The handle should be released after one minute. Periodic relubrication of the pump head, the piston gasket, and the piston check valve is needed and is use-dependent.

Special Considerations

1. Detector tubes should be refrigerated when not in use to prolong shelf life.

2. Detector tubes should not be used when cold. They should be kept at room temperature or in a shirt pocket for one hour before use.

3. Lubrication of the piston pump may be required if volume error is greater than 5 percent.

COMBUSTIBLE GAS INDICATOR (Model 361 or equivalent)

Theory of Operation

The Model 361 Hydrogen Sulfide combustible gas and oxygen sensors operate simultaneously. Each sensing circuit is equipped with an individual, visual alarm descriptor. There is a common, pulsating audible alarm. One position of the FUNCTION switch enables the audible alarm to be turned off, if so desired. The alarm descriptors will remain on until the concentration returns to within the alarm setpoints and the reset button is depressed.

A low-battery alarm will activate the BATT descriptor on the display and a continuous, steady-sounding audible alarm. This steady sound indicates that the Model 361 must be removed from service and charged in a nonhazardous area.

> WARNING: Exposure of the combustible gas sensor to a concentration high enough to cause the readout to indicate a reading higher that 100 percent Lower Explosive Limit (LEL) will cause the readout to latch. When latched, the LEL readout will be blank and the descriptors for OVER and LEL ALARM will appear. This latching circuit is a warning that the gas concentration has exceeded the LEL and that all personnel must evacuate the area.

This latching circuit can be reset by removing the Model 361 to an area known to be free of combustible gas (fresh air) and turning off the instrument. The Model 361 can then be turned on and rezeroed in fresh air. This latch circuit does not operate during the first 30 seconds after turning on the instrument, thus providing sufficient time for sensor warm-up and rezeroing.

Toxic Gas Sensor

The toxic gas sensor used in the Model 361 is a membrane-sealed electrochemical cell. The cell requires an external voltage source to function and produces a current output that is proportional to the amount of hydrogen sulfide present. The hydrogen sulfide diffuses through the front membrane of the cell and is oxidized at the working electrode. Current flows through the liquid electrolyte (acid solution) to the counter/reference electrode where oxygen reduction occurs. The amount of current produced for a concentration of hydrogen sulfide is dependent on the voltage across the working reference electrodes as well as the electrode materials and the electrolyte. The choice of the particular noble metal electrodes and the setting of the cell voltage optimizes the sensor for the detection of hydrogen sulfide.

The current from the cell is fed to a current-to-voltage converter. This voltage signal is applied to an amplifier that drives the toxic gas readout and provides input for an alarm comparator circuit.

Combustible Gas Sensor

The flammable properties of combustible gases are used as the basis of detection. The sensor consists of a pair of pelletized filaments called Pelements™ arranged in an electrically balanced bridge circuit. The detector pelement is treated with a catalyst that causes the combustible gases to combine with oxygen at much lower temperatures than would be required for normal burning. The inactive compensator pelement is also exposed to the sample flow and acts to offset any electrical changes caused by flow conditions, sample temperature, pressure, and/or humidity.

Combustible gases in the sample combine with oxygen in the air at the surface of the catalyzed detector pelement. Heat is liberated by this chemical reaction, thus increasing the temperature of the pelement and causing an associated increase in the pelement electrical resistance.

Increased resistance of the detector pelement unbalances the bridge circuit, causing a voltage change at the midpoint connection between the detector pelement and the compensating pelement. This voltage signal is applied to an amplifier that drives the combustible gas readout and provides an input for an alarm comparator circuit.

Oxygen Sensor

The oxygen sensor is a galvanic type cell containing gold and lead electrodes in a potassium hydroxide solution. The cell is sealed with a membrane that allows oxygen to diffuse into the active area. The current generated by the cell is proportional to the oxygen partial pressure in the atmospheric sample passing over the face of the membrane. The generated current passes through a resistance to provide a voltage input signal for an amplifier. The output of the amplifier drives the oxygen readout and also serves as an input to the alarm comparator circuit.

The following instructions detail the procedures for operation and calibration of the MSA Model 361 Combustible Gas Indicator.

Operating Instructions

The Model 361 oxygen calibration and toxic and combustible zero checks must be made in fresh air or with the inlet end of the sampling line in fresh air.

1. Turn the FUNCTION control to the HORN OFF position; the HORN OFF indicator will light and the descriptor percent LEL will show in the readout.

2. Set the readout to zero (00) by adjusting the LEL ZERO control (NOTE: this must be done within 30 seconds of turning ON to prevent the possibility of activating the off-scale LEL latching alarm).

3. Press the SELECT button firmly to obtain percent OXY on the readout; then set the readout to 20.8 percent by adjusting the OXY CALIBRATE control.

4. Press the SELECT button firmly to obtain PPM TOX on the readout; then set the readout to zero (00) by adjusting the TOX ZERO control.

5. Press the RESET button.

6. Turn the FUNCTION control to MANUAL for continuous readout of any one gas or to SCAN for automatic scanning of the three gas readings. (NOTE: All alarm functions operate in either position.)

7. Momentarily place a finger over the sample inlet fitting or the end of the sample line, if one is used. Observe that the FLOW indicator float drops, indicating no flow. If it does not, check the flow system and sample line for leaks.

8. The instrument is ready for calibration.

   WARNING: If an alarm is indicated by an ALARM or OVER sign in the readout or a pulsing horn, evacuate personnel from the area and notify the safety officer.

   A low battery condition is indicated by a BATT sign in the readout or by a steady horn; remove the Model 360 or 361 and recharge in a nonhazardous area to prevent potential ignition of combustible atmospheres.

Model 361 Calibration

1. Attach the flow control to the 0.75 percent pentane/15 percent oxygen calibration gas tank.

2. Connect the adapter-hose to the flow control.

3. Open the flow control valve.

4. Connect the adapter-hose fitting to the inlet of the instrument; within 30 seconds, the LEL meter should stabilize and indicate between 47 and 55 percent. If the indicator is not in the correct range, remove the right end of the indicator and adjust the LEL SPAN control to obtain 50 percent.

5. Verify the oxygen reading; it should be between 13 and 17 percent.

6. Disconnect the adapter-hose fitting from the instrument.

7. Close the flow control valve.

8. Remove the flow control from the calibration gas tank.

9. Attach the flow control to the 10 ppm hydrogen sulfide calibration gas tank (40 ppm gas may be used; the choice of hydrogen sulfide calibration will depend on concentrations anticipated in the work place).

10. Open the flow control valve.

11. Connect the adapter-hose fitting to the inlet of the instrument; after approximately one minute, the TOX readout should stabilize and indicate between 7 to 13 ppm (35 to 45 ppm for 40 ppm hydrogen sulfide). If the indication is not in the correct range, remove the right end of the

indicator and adjust the TOX SPAN control to obtain 10 ppm (40 ppm for 40 ppm hydrogen sulfide).

12. Disconnect the adapter-hose fitting from the instrument.

13. Close the flow control valve.

14. Remove the adapter-hose from the flow control.

15. Remove the flow control from the calibration gas tank.

CAUTION: Calibration gas tank contents are under pressure. Do not use oil, grease, or flammable solvents on the flow control or the calibration gas tank. Do not store calibration gas tank near heat or fire, nor in rooms used for habitation. Do not throw in fire, incinerate, or puncture. Keep out of the reach of children. It is illegal and hazardous to refill this tank. Do not attach any gas tank other than MSA calibration tanks to the flow control.

EXHIBIT 6

FIRST AID AND EMERGENCY CARE

EXHIBIT 6

FIRST AID AND EMERGENCY CARE

Most accidents occurring at a job site will require minimal first aid available through use of the first aid kit(s) at the work site or in the support facility. For more serious medical emergencies that may or may not require professional medical attention, the American National Red Cross (1988) has developed first-aid procedures that can be followed until professional medical attention is obtained. The following sections present a summary of these procedures.

HEAT EMERGENCIES

There are three forms of heat emergencies: heat stroke, heat exhaustion, and heat cramps. Of these three, heat stroke is the most serious because it is life-threatening.

Heat Stroke

Symptoms

- Hot, red skin
- Very small pupils
- Very high body temperature
- Skin may feel dry

First Aid

- Call for medical assistance.
- Move the victim to a cool (not cold) place immediately.
- Cool the victim quickly by immersing him/her in a cool (not cold) bath, wrapping wet sheets around the victim and fanning him/her, or spraying the victim with cool water.
- Monitor the victim for shock until medical assistance arrives.

Heat Exhaustion

Symptoms

- Cool, pale, and moist skin
- Heavy sweating
- Dilated pupils
- Headache
- Nausea
- Dizziness

- Vomiting
- Normal body temperature

First Aid

- Move the victim out of the heat.
- Have the victim lie down with feet elevated.
- Loosen or remove the victim's clothes.
- Cover the victim with wet towels or sheets or apply cold packs wrapped in cloth.
- Fan the victim.
- Have the victim drink one-half glass of water every 15 minutes if they are conscious and able to keep the fluid down.

Heat Cramps

Symptoms

- Muscular pains and spasms

First Aid

- Move the victim out of the heat.
- Have the victim drink one-half glass of water every 15 minutes for one hour.

COLD EMERGENCIES

Severe cold exposure can be an immediate danger to life and health. The two most serious forms of cold exposure are hypothermia and frostbite.

Hypothermia

Symptoms

- Shivering
- Dizziness
- Numbness
- Confusion
- Weakness
- Impaired judgment

- Impaired vision
- Drowsiness

Stages

- Shivering
- Apathy
- Loss of consciousness
- Decreasing pulse rate and breathing rate
- Death

First Aid

- Call for medical assistance.
- Move the victim to a warm place.
- Remove the victim's wet clothing, as applicable.
- Cover the victim with a dry blanket.
- Warm the victim slowly.
- Monitor the victim's breathing and heart rate.
- Give the victim warm broth or water - no alcohol or caffeine.

Frostbite

Symptoms

- Area is very cold to the touch and numb
- Skin is slightly flushed
- Mild frostbite will appear on the edges of appendages as white or grayish-yellow with hardened skin
- Moderate frostbite will show a larger portion of the appendages as white or grayish-yellow and skin will have blistered
- Severe frostbite is grayish-blue and skin will be hard, cold, and numb. There is a danger of gangrene developing from severe frostbite

First Aid

- Move the victim to a warm place.

- Place the frostbitten areas in warm (not hot) water.
- Handle the frostbitten areas gently.
- Do not rub, massage, or apply unnecessary pressure to the frostbitten areas.
- Place dry gauze between frostbitten toes or fingers.
- Bandage frostbitten areas loosely.

ANIMAL BITES

Infection from an animal bite can develop quickly: first aid should be administered immediately.

First Aid

- Control the bleeding.
- Gently wash the wound unless bleeding heavily.
- Cover the bite with a bandage.
- Have the victim see a trained medical person.

RABID ANIMAL BITES

Rabies can be found in the saliva of skunks, bats, raccoons, cattle, cats, dogs, foxes, squirrels, prairie dogs, rats, and mice.

First Aid

- Observe the animal for unusual behavior.
- Get the victim to medical care.
- Give a description of the animal and where it was last seen to the police and/or animal control so they can capture the animal for determination of rabies infection.
- Do NOT attempt to capture or restrain the animal yourself.

INSECT BITES AND STINGS

Insect bites and stings may be tolerated by some individuals more so than others. A past history of bite and sting tolerance is not indicative of continued tolerance. All bite and sting victims should be monitored for allergic reactions. The following is a summary of symptoms and first-aid response for an allergic reaction to a bite or sting.

Symptoms

- Pain
- Swelling of the bite or sting area, which may be accompanied by swelling of the throat

- Redness or discoloration of the bite or sting area
- Itching
- Hives
- Decreased awareness
- Noisy or difficult breathing

First Aid

- Remove the stinger with tweezers or scrape with a rigid item without squeezing it (which may release more venom).
- Wash the area of the bite or sting.
- Place a cold pack wrapped in cloth on the area.
- Keep the bite or sting below heart level.
- Get the victim to medical assistance if an allergic reaction is observed.

SNAKE BITES

Few people actually die from snake bites; however, quick response to a snake bite is imperative.

First Aid

- Call for medical assistance.
- Immobilize the bitten area.
- Keep the bitten area below the heart level.
- Keep the victim calm and still.
- Observe victim for symptoms of shock.
- Give a description of the snake to the medical responder.
- Do not cut above the bite and aspirate the poison.
- Do not use a tourniquet.

SEVERE BLEEDING

First Aid

Stop external bleeding by:

- Applying direct pressure to the wound using a clean cloth.

- Apply cloths on top of the first one if bleeding persists; do not remove original cloth.
- If there is no fracture, raise the wound above the level of the heart.
- Apply pressure at the appropriate pressure point (squeezing the main artery against the bone in the forearm or against the pelvis in the groin) while continuing pressure on and elevation of the wound.
- Wrap the wound using subtle pressure to tighten the wrap.
- Check for a pulse on the injured limb to determine that the wrap is not too tight.
- Call for medical assistance.

INTERNAL BLEEDING

Internal bleeding may be as innocuous as a bruise to a condition that threatens life and health.

Symptoms

- Tender, bruised, swollen or rigid abdomen
- Fractured ribs or pelvis
- Vomiting small to large amounts of blood
- Injuries that have penetrated the body cavity
- Rectal or vaginal bleeding
- Difficult breathing
- Abnormal pulse rate
- Cool, moist skin
- Pallor

First Aid

- Treat small bruises by applying a cold pack to the injury.
- Obtain medical help immediately if more severe internal bleeding is suspected.
- Observe the victim's breathing and monitor his/her pulse.
- Keep the victim calm and still.
- Loosen the victim's clothing.
- Place the victim on his/her side if vomiting.
- Monitor the victim for symptoms of shock (below).

SHOCK

Shock can be caused by internal and external bleeding, insect bites or stings, snake bites, electrical shocks, severe injuries or burns, as well as other medical conditions. First aid and medical assistance is imperative for shock victims because shock is caused by a lack of sufficient blood supply to such vital organs as the heart, the lungs, and the brain.

Symptoms

- Confused behavior
- Either very slow or very fast pulse rate
- Either fast, shallow breathing or very slow breathing
- Weak and trembling limbs
- Cool, moist skin
- Pallor or bluish skin
- Dilated pupils

First Aid

- Improve victims's circulation by lying them down with feet elevated if there are no leg fractures or suspected neck/head injuries. (Lay the victim flat if injuries are suspected.)
- If no injuries are suspected, a semireclining position may be used to alleviate breathing problems.
- If the victim is vomiting turn him/her onto their side.
- Keep the victim warm.
- Call for medical assistance.
- Monitor the victim's heart rate and breathing.

VICTIM NOT BREATHING

First Aid

- Tap or gently shake the victim to see if there is a response. Ask, "Are you okay?"
- Roll the victim onto his/her back and toward you.
- Tilt the head back while lifting the chin.
- Check for breathing for 3 to 5 seconds.
- Pinch the nose shut, seal your mouth over the victim's mouth, and give two 1- to 1-1/2-second breaths while keeping the head tilted back.
- Check for a pulse.

- Call or send someone for help.
- Continue rescue breathing, if necessary, by breathing into the victim's mouth for 1 to 1-1/2 seconds every 5 seconds.
- Observe victim for a pulse approximately every minute.

VICTIM NOT BREATHING AND HAS NO PULSE

First Aid

- Roll the victim onto his/her back and toward you.
- Tilt the head back while lifting the chin.
- Check for breathing for 3 to 5 seconds.
- Pinch the nose shut, seal your mouth, over the victim's mouth and give two 1- to 1-1/2-second breaths while keeping the head tilted back.
- Check for a pulse.
- Call or send someone for help.
- Locate the notch at the lower end of the breastbone.
- Place the heel of your hand two fingers-width up from the end of the notch.
- Place your other hand on top keeping the fingers of your hands off the chest.
- Position your shoulders directly over your hands.
- Using a steady, firm force, bending at the waist, compress the breastbone 1-1/2 to 2 inches for 15 counts in 10 seconds.
- Perform rescue breathing (2 quick breaths as above).
- Repeat this for a total of 4 cycles.
- Recheck pulse.
- Continue cardiopulmonary resuscitation (CPR) procedures as described above until medical assistance arrives.

BURNS

There are four types of burns: heat burns, chemical burns, electrical burns, and radiation burns. Each type has three categories of burns: first degree, second degree, and third degree.

First Degree Burn Symptoms

- Least severe
- Skin is red or discolored

- Mild swelling
- Pain

Second Degree Burn Symptoms

- Burn extends deeper into the skin
- Skin is red or mottled
- Blistering
- May appear wet from skin fluid loss
- Painful

Third Degree Burn Symptoms

- Deepest burn; extends through all skin layers
- Skin appears white or charred
- Can look like second-degree burns
- Pain may be severe or, if nerve endings are destroyed, may not occur at all
- Can occur in patches with less severe burns

First Aid for Heat Burns

- Flush with cool running water if there are no blisters or charring. Apply moist dressings and bandage loosely.
- If blisters or charring are present, apply a dry dressing and bandage loosely. Do not use water.
- Call for medical assistance.

First Aid for Chemical Burns

- Flush the chemicals from the skin with lots of water.
- Continue flushing for 15 to 30 minutes.
- Remove any contaminated clothing or jewelry.
- Cover burns loosely with a dry bandage or dressing.
- Call for medical assistance.

First Aid for Electrical Burns

- Avoid contact with electrical source.

- Shut down the electrical source.
- Cover all burns with a loose dry dressing and bandage.
- Provide care for shock as needed.
- Call for medical assistance.

First Aid for Radiation Burns

- None.
- Decontaminate the victim.
- Obtain medical assistance immediately.

EYE INJURIES

Eye injuries should always be treated as a serious injury.

Symptoms

- Visible foreign object
- Redness
- Burning
- Pain
- Headache
- Tearing

First Aid

- Use care and be gentle when touching the eyes.
- Wash hands before caring for an eye injury, if possible.
- If an object is in the eye, lift the upper eyelid, have the victim look down and flush the eye with clean water or eye wash solution.
- If there are chemicals in the eye, flush the eye with clean water or eye wash solution from the nose outward for 15 to 30 minutes.
- For objects in the eye (whether removed through flushing or not) and for chemicals in the eye, wrap a bandage loosely around both eyes.
- If the eye is cut or there is a penetrating object in the eye, place a cup over the injured eye and wrap both eyes loosely with a bandage. Do not attempt to remove the penetrating object.
- Obtain medical assistance for all (even minor) eye injuries.

NOSE INJURIES

Nose injuries can be indicative of more serious injuries to the head, back, or neck. Caution should be used to assess this type of injury. Nosebleeds are typically a less serious injury but can be severe enough to cause shock from loss of blood. Be sure to ask the victim how the nosebleed began.

First Aid

- Have the victim sit down.
- Have him/her lean forward with the chin resting on the chest.
- Pinch the nose.
- Keep the victim calm and quiet until the bleeding has stopped.

Symptoms of a More Serious Nose Injury

- Swelling and pain
- Pupils dilated unevenly
- Bloody or clear fluid draining from either the ears or the nose
- Loss of feeling and movement in appendages

First Aid for a More Serious Nose Injury

- Do not attempt to stop the flow of fluid from the nose.
- Keep the victim's head and neck stable.
- Keep the victim calm and quiet.
- Call for medical assistance.

FRACTURES

There are two types of fractures: simple (one internal fracture) and compound (two or more fractures often breaking the skin). The compound fracture is more serious because of the accompanying open wound. Fractures occurring in the body may be indicative of internal injuries.

Symptoms

- A grating sensation and/or a snapping sound when the appendage is moved
- Deformities
- Pain and tenderness
- Bruising and swelling
- Immobility of the injured part

Note: First aid for fractures, dislocation, sprains, and strains are similar for these injuries. The first aid for these injuries will be discussed after the symptoms.

DISLOCATIONS

Symptoms

- Deformity
- Swelling and tenderness
- Pain in the joint
- Loss of or limited movement

SPRAINS OR STRAINS

Sprains are the result of stretched or torn tendons or ligaments around the joints. Torn muscles are indicative of strains.

Symptoms

- Pain in the joint
- Sharp pain
- Tender to the touch
- Bruising and swelling
- Stiffness

First Aid for Fractures, Dislocations, Sprains, or Strains

- If the injury is to the head, neck, or back, stabilize the head and neck. Do not attempt to move the victim unless absolutely necessary. Obtain medical assistance immediately. Keep the victim calm and quiet.
- Determination of the precise injury is often difficult, so remember this rule of thumb: "When in doubt, splint."
- Splint only if it can be done without causing more pain and discomfort to the victim.
- The injury must be splinted in the position in which it is found. Do not attempt to straighten the injured part.
- Splint the injured area as well as the surrounding joints so that the entire limb is immobilized.
- Check for a pulse before and after splinting.
- Call for medical assistance.

4.0 WORK PLAN

All activities will be conducted consistent with Occupational Safety and Health Administration (OSHA) regulations, Department of Transportation (DOT) requirements, treatment/disposal site or recycling facility acceptance parameters, and any other applicable federal, state, and local regulations.

4.1 Security and Access Restriction

The west, east, and south boundaries of the Site are currently enclosed with a concrete block wall approximately 2 feet high with a 4-foot-high fence on the northeastern boundary. As the current security for the Site has been determined in the Order to be insufficient in its ability to restrict access from persons who congregate at public facilities in the area of the Site, an 8-foot-high chain-link fence, with razor wire top, along the perimeter of the property, which is of sufficient height and design to control unauthorized access to the Site. Appropriate warning signs will be posted on the fence to help prevent exposure of unauthorized and unprotected people to Site hazards.

Site access will be controlled as follows:

- During drum removal activities the fence, signage, and onsite authorized personnel will provide security and access restriction.

- Throughout the entire project, a security guard will be onsite when the project management team or the workers are not present. Arrangements have been made with the Whittier Police Department to make nightly visits to the Site and check-in with the onsite security guard.

4.2 Mobilization

Inventory Site. The site will be initially cataloged for equipment, structures and drum locations. A detailed drum inventory will be included as an ongoing process during the DRA.

Mobilization of Equipment and Personnel. Before initiation of the DRA, HLA will mobilize personnel and equipment to the Site and set up a temporary field office. It is anticipated that the current Omega facilities will be used as field offices and staging areas. If this is not a viable option, a portable trailer will be situated onsite to serve as a temporary field office.

SSHP Review. HLA has prepared an SSHP that covers all phases of this Plan and is included in Section 3.0. Onsite personnel performing the DRA will review the SSHP and sign the master copy of the document, indicating they have read and understand all elements of the SSHP. Copies of the SSHP will be available for their review and will be readily available onsite.

4.3 Establishment of Control Zones

Preparation of Control Zones. Control zones will be constructed and safety zones established by the Project Manager. Exclusion, contamination reduction, and support zones with access points will be established. The exclusion zones will be marked off with portable barricades and caution tape during drum removal and equipment decontamination to prohibit unauthorized personnel from entering the work area. It is currently anticipated that two sets of control zones will be utilized to efficiently implement the DRA.

Exclusion Zone. An exclusion zone is the area where contamination does or could occur. This zone has the highest potential for exposure to contaminants by dermal contact or inhalation. All personnel within the exclusion zone will wear Level B personal protective equipment (PPE), based on the EPA Level of Protection guidelines. The level of protection in this area may be modified to reflect any hazards discovered during the DRA. The exclusion zone will move, and continuously decrease in diameter, as drum removal activities progress. The exclusion zone will be divided into two areas: the drum storage area and the initial staging area.

The drum storage area comprises the area where drums are removed from their storage position. The drums will be visually inspected for structural integrity and possible hazards associated with drum handling. The drums will not be opened at this point but may be overpacked if warranted. The initial staging area will be established proximal to the drum storage area. The initial staging area comprises the area where drum opening, initial screening, and sampling occurs. Drums will remain in the initial staging area until HazCat® results are available. Additionally, an assessment of drum integrity and the drum's ability to be transported per DOT requirements will be made. Overpacking will be performed as necessary based on field observations. A forklift will be dedicated to work exclusively in the exclusion zone to minimize the hazard exposure and decontamination efforts.

Contamination Reduction Zone (CRZ). The CRZ is the transition between the exclusion zone and the support zone. The purpose of the zone is to reduce the probability that the support zone will become contaminated or affected by other Site hazards. The CRZ will be established just outside the exclusion zone. The CRZ will be the area where the sealed, characterized, and DOT-transportable drums are

transferred to the transportation vehicles located in the support zone. A forklift will be dedicated to work exclusively in the CRZ to minimize hazard exposure and decontamination efforts. Additionally, the CRZ will be utilized for decontamination of technician's PPE and field equipment leaving the exclusion zone. The decontamination procedures are outlined in the SSHP, Section 3.0 of this Plan.

Support Zone. The support zone is the uncontaminated area where workers should not be exposed to hazardous conditions. This is the area used for administrative and other support functions needed to keep the operations in the exclusion zone and CRZ running smoothly. Supplies will be sent to the Site on an as-needed basis; therefore, a supply storage area is not necessary. Because of the limited working space at the Site, this zone will initially be quite restricted, but as drum removal activities progress it will increase in size. The Omega office or a portable trailer will be utilized for administrative purposes.

Posting. Portable barricades and caution tape will be employed in readily visible locations to delineate the exclusion zone, CRZ, and support zone, if determined necessary.

4.4 Establishment of HazCat® Stations

A HazCat® station will be established in the laboratory within the warehouse building at the Site (see Plate 2). The HazCat® System of Haztech Infosystems, Inc., is the field screening test system to be utilized in identifying the primary hazard characteristics of the drum contents. The results of the field screening evaluation for hazard characterization will be the basis for determining appropriate handling procedures, transportation, and disposal of the drums. The Department of Transportation (DOT) basic description and shipping procedures will be determined based on tentative assignments as provided in 49 Code of Federal Regulations (CFR) Part 172.101 (c) (11).

The station will be equipped with a chemical hood, under which characterization will be performed, and any necessary reagents, test papers, supplies, and protective clothing to facilitate testing.

Level C PPE will be used at the HazCat® station unless information gathered during the sampling indicates that additional PPE is necessary.

4.5 Waste Verification

Drum Inventory. HLA will mark each drum with a unique drum number and approximate location. This information and other markings on the drum exterior will be included in a drum inventory database along with other information that assists the drum removal activities. The drum inventory will consist of

numbering the drums, visually inspecting drum conditions, and logging drum characteristics. The drums will be clearly numbered using paint sticks and paint pens. A detailed drum inventory will be developed as the DRA progresses.

If Omega's drum numbering and drum content code is discernible and provides useful information it will be recorded and included in the database.

Waste Identification/Verification. Each drum will be opened and the contents will be visually assessed (identified). Because current drum labeling is inadequate to verify specific drum contents and individual analytical reports are not available, the contents of drums containing wastes will be determined by sampling and HazCat® analysis. If the HazCat® of the drum contents is inconclusive, inconsistent, or of concern to the field chemist, samples will be collected as described in Section 6.0 and taken to a state-certified laboratory for hazardous waste characterization. Refer to Section 6.0, Sampling and Analysis Plan (SAP), for a detailed description of activities. Those drums with discernible labels will be visually examined to assess whether any information recorded on the labels may be used to aid in waste profiling. Drums will also be inspected for leaks and other damages.

All applicable information will be entered in the drum inventory database.

4.6 Waste Sampling (HazCat® System)

Drum Handling Procedures. As part of the waste sampling procedures, drums will be moved from the storage location, utilizing a forklift by the pallet or with a drum grabber or picker, to the sampling location. Refer to Appendix C for a thorough description of drum handling and opening procedures. Initially, the sampling area will be co-located near the drum storage area because of the confined conditions at the Site. As space becomes available the drum sampling area may be enlarged to accommodate more drums.

The sampling area will be designed and constructed with plastic sheeting and temporary berming. Additionally, adequate volumes of absorbent will be kept nearby during drum moving. All personnel will be instructed on the hazards of drum handling before moving the drums and will be warned to be alert for new information about potential hazards.

Drums will be opened by personnel in Level B PPE. Before opening, all drum ring tops and/or bungs will be wiped clean and made free of debris. If a drum cannot be opened by conventional means, nonsparking puncturing tools may be used. Bulging drums, if encountered, will be opened remotely or

with safety shielding per 29 CFR 1919.120 (j) (2) (vi). Bulging drums will be vented through the vent bungs before being opened. Field personnel will not attempt to puncture a bulging drum that cannot be vented by conventional means. Damaged drums that cannot be handled safely and open drums will be placed in overpack containers prior to movement, if necessary. Appendix C provides guidance for determining when the overpacking of drums is necessary. The Field Activities Manager will assist the Field Technicians in this determination.

Drum Sampling. A detailed SAP is provided in Section 6.0, and the Data Collection Quality Assurance Plan (DCQAP) is provided in Section 7.0 of the Plan. Drums that were previously overpacked will be resampled and a hazard characterization will be performed.

Waste Profiling. Broad spectrum waste profiles will be established at the TSDF at the onset of the DRA. Samples of the wastes will be collected and provided to the TSDF prior to arrival of the wastes. The analytical results from analyses of wastes by the TSDF, will be used to confirm waste profiles. If a waste is encountered that does not fit into a pre-established profile at the TSDF, additional profiles will be established. Independent analyses of samples are not anticipated to be performed, as the TSDF's analysis of incoming wastes will be provided to the Project Chemist, and any other appropriate DRA persons, and will be used to confirm and document waste profiling. The TSDF is required to perform an analysis of at least ten percent of inbound drums in order to accept the wastes per the TSDF's RCRA Waste Analysis Plan.

Sample Analysis. Representative samples of the waste from the drums will be taken to the HazCat® station for hazard characterization. The HazCat® System of Haztech Infosystems, Inc., is the field screening test system to be utilized in identifying the primary hazard characteristics of the drum contents. This system will identify compatible wastes and will be the basis for determining appropriate handling and transportation procedures and disposal options for the drums. A detailed description of the sampling procedures are provided in Section 6.0 SAP.

The appropriately trained HazCat® chemist will perform a HazCat® procedure based on industry standard practices. The tests will include a sulfide screen, cyanide screen, oxidizer screen, chlorinated screen (hot wire), pH test, water reactivity, and Char test. Based on the test results, further tests may be conducted to more fully characterize the wastes. All results from the HazCat® testing will be recorded on a HazCat® report form with the corresponding drum identification number.

4.7 Ambient Air Monitoring for Offsite Receptors

The purpose of this section is to describe the ambient air monitoring procedures to be utilized in identifying and quantifying airborne contaminants generated as a result of DRA activities for the protection of offsite receptors. It is not anticipated that ambient air monitoring for the protection of onsite workers will be necessary, due to the implementation of engineering controls and PPE. Refer to Section 3.4.4 for a description of exclusion zone air monitoring for DRA activities. A weather station will be centrally located on top of the warehouse to record the temperature and wind speed and direction. The weather station will be installed approximately 3 days prior to initiation of field activities so that Site-specific meteorological data can be gathered. The meteorological data will assist in determining appropriate sampling locations, average wind speeds for the area, and any unique macroclimatological effects caused by the Puente Hills, local topographical changes, and nearby building influences.

It is anticipated that two sampling locations, one upwind and one downwind, will be established at the Site. The upwind location will provide ambient air concentrations [illegible] elected chemicals prior to any potential contribution from onsite activities. The downwind [illegible] location will provide both ambient concentration, in addition to any Site-specific contribut[illegible] [illegible]e difference between the two locations can be attributed to Site activities.

Sampling performed at the upwind and downwind locations will include:

- Total Organic Vapors - Flame ionization detectors (FIDs) will be utilized to determine the total organic vapor concentration at the sampling locations. The sampling equipment will provide data in the parts per million range and serve to document any significant potential releases. Because of the industrial nature of neighboring properties, the potential exists that the upwind sampling location will have detectable concentrations of organic vapors. If the downwind concentration exceeds the average upwind concentration by more than 2 standard deviations of the upwind average, site activities will be stopped, and the source will be investigation. This equipment will be utilized on all days involving drum openings and equipment decontamination. If the daily monitoring indicates that no significant increase in the ambient air organic vapor concentration is attributable to the Site activities, the monitoring will be discontinued.

- Particulate Matter - A Miniram Model MIE PDM-3 will be employed to determine real-time aerosol and dust concentrations ranging from 0.01 to 100 mg/m^3. The equipment will provide total particulate concentration at the upwind and downwind sampling locations. If the

downwind concentration exceeds the upwind concentration by more than a factor of 10, Site activities will be stopped and the source of the particulate matter will be investigated. Appropriate dust/aerosol suppression methods will be implemented to control the source. No speciation of the particulate matter is anticipated at this time because of the limited potential for dust generation during the DRA. If the daily monitoring indicates that no significant increase in the ambient particulate matter air concentration is attributable to the Site activities, the monitoring will be discontinued.

- Speciated Volatile Organic Hydrocarbons - After approximately the first week of the DRA and routine operation is underway, upwind and downwind samples will be collected for speciated organic vapors. Two evacuated Summa canisters will slowly be released over a 4-hour period during routine operations. The canisters draw in the ambient air as the pressure starts to equilibrate with the atmospheric pressure. The canisters will be closed with approximately 5 inches of vacuum left to serve as a leak check during transfer for laboratory sampling. EPA protocols will be followed regarding the preparation, sampling, transfer, and analysis of the Summa canisters. EPA Method TO14 will be utilized to provide low (0 to 5 ppbv) detection limits for common industrial aromatic and chlorinated hydrocarbons. Two samples will be collected on three separate days to determine if any increased ambient air concentrations can be attributed to the DRA. Because of the industrial nature of neighboring properties, the potential exists that the upwind sampling location will have detectable concentrations of aromatic and chlorinated hydrocarbons.

All air monitoring equipment will be calibrated at the opening and close of each field day according to the manufacturer's recommended procedures. Refer to Appendix F for instrument calibration procedures. Equipment manuals will be kept with each instrument. Calibrations will be recorded on the appropriate calibration form. Equipment maintenance will be conducted, if required, following the manufacturer's recommended procedures. Any maintenance performed on the FID will be recorded on the instrument's calibration log.

4.8 Waste Sample Evaluation

Waste Sample Validation. After HazCat® results for the various waste streams are received by HLA, the results will be reviewed and validated following the DCQAP. The DCQAP is outlined in Section 7.0 of this Plan. The information will be included in the drum inventory database.

Waste Stream Characterization. HLA will use the results to characterize the various waste streams in relation to the applicable federal and state regulations to decide the recommended means of disposal or recycling.

4.9 Drum Labeling

Labeling of Drums. All drums will be marked, labeled, and/or placarded in accordance with all applicable federal and state laws and regulations. In addition to the marking and labeling required by law, the drums will also be marked with the drum identification number, as described in Section 4.5 of this Plan.

4.10 Waste Transportation and Disposal

Drums will be loaded onto the transportation vehicle once the waste has been characterized and as space becomes available on the transportation vehicle. The removal of drums will be an ongoing process, as the wastes will be sampled, analyzed, and characterized on a continuous basis. This method will allow for successively more space free of obstructions; therefore, the increased mobility will minimize potential hazards associated with working in confined areas.

The location of the drum loading stations will not be fixed. It will be necessary to adjust the locations as drum removal activities progress in order to ensure timely and efficient drum removal.

Initially, the two drum loading stations will be established at the north-northeast side of the Site and at the northeast side of the Site. The majority of drums are located in the service yard; however, there are drums inside the warehouse that require removal. The drums inside the warehouse will be moved via forklift to an initial staging area where drum opening, screening, and sampling will occur.

Drum Overpacks. If determined to be necessary from the visual assessment, drums may be overpacked and staged to meet transportation and disposal regulations. Appendix C provides guidance for determining if overpacking is necessary.

Bulk Containerization. Two 30-yard roll-off bins are located at the south corner of the property. The roll-offs contain 55-gallon drum-shaped polyurethane hardened resins. If it appears the polyurethane was reacted in 55-gallon drums and the drums were then cut away. The hardened resins will be transferred into cubic yard, DOT-approved, boxes for shipment and disposal. If found to be safe and efficient, other wastes may be bulk containerized onsite.

How will compatibility be determined

Hazardous Waste Manifests. A uniform hazardous waste manifest will be completed for each shipment of hazardous waste. The Project Coordinator, or his designee, is responsible for signing the hazardous waste manifest prior to transportation of the hazardous waste. The manifest will be completed in compliance with all applicable federal and state laws and regulations. If a hazardous waste is to be transported out of state, the hazardous waste manifest appropriate for that state will be utilized. In addition, a land disposal restriction form will be attached to the manifest, if appropriate. All necessary signatures and information will be entered on the manifest prior to transportation of the hazardous waste.

Waste Disposal Options. Waste disposal options include the direct transportation of wastes to ENSCO's incineration facility. ENSCO's incineration facility is a Part B permitted RCRA facility, located in El Dorado, Arkansas, and is capable of storing approximately 31,000 drums. The facility can accept 55-gallon steel drums as well as all DOT-approved containers. Certificates of Destruction will be provided for all waste shipments that are incinerated.

Alternative TSDFs may be used if they are determined to be more appropriate than the proposed disposal facility. The most appropriate disposal facility will be determined based on the type of waste, hazardous classification, cost of disposal, and regulatory status of the waste facility. The determination of the appropriate disposal facility will be made onsite as the wastes are being characterized. Alternatively, if the waste is transported to a transfer facility, determination of the most appropriate disposal facility will be made once the waste has reached the transfer facility and disposal options have been explored. All TSDFs will be approved to accept CERCLA wastes.

4.11 Equipment Decontamination

Equipment to be decontaminated onsite currently includes five ASTs, five distillation columns, two evaporators, one rainwater sump, and two drum storage pads. After a detailed initial assessment, an updated equipment list will be prepared. The ASTs are assumed to contain wastes; all other structures are assumed to be empty.

Aboveground Storage Tanks. The contents of the five ASTs will be removed and the ASTs pressure washed or steam cleaned. The decontaminated surfaces then will be triple rinsed in accordance with industry standard protocols. If entry into the ASTs is required in order to decontaminate the structure, entry will be performed under confined space conditions. Refer to Appendix D for the policy and procedures to be implemented when confined space entry conditions are required. ASTs are anticipated to be able to be cleaned in one operation; however, this may change once a more detailed assessment of the condition and extent of contamination of the structures are performed.

Distillation columns. The five distillation columns will be either pressure washed or steamed cleaned, and all decontamination surfaces will be triple rinsed in accordance with industry standard protocols. Distillation columns are anticipated to be able to be cleaned in one operation; however, this may change once a more detailed assessment of the condition and extent of contamination of the structures are performed.

Evaporators. The two evaporators will be either pressure washed or steamed cleaned, and all decontamination surfaces will be triple rinsed in accordance with industry standard protocols. If entry into the ASTs is required in order to decontaminate the structure, entry will be performed under confined space conditions. Refer to Appendix D for the policy and procedures to be implemented when confined space entry conditions are required. Evaporators are anticipated to be able to be cleaned in one operation; however, this may change once a more detailed assessment of the condition and extent of contamination of the structures are performed.

Rainwater sump. The contents of the rainwater sump will removed, the sump will be washed out with a pressure washer, then the decontaminated surfaces will be triple rinsed in accordance with industry standard protocols. The sump is anticipated to be able to be cleaned in one operation; however, this may change once a more detailed assessment of the condition and extent of contamination of the structure is performed.

Drum Storage Pad. The two drum storage pads will be steam cleaned, then the decontaminated surfaces will be triple rinsed in accordance with industry standard protocols. The storage pads are anticipated to be able to be cleaned in one operation; however, this may change once a more detailed assessment of the condition and extent of contamination of the structures are performed.

Obvious signs of visual contamination will be removed from equipment structures to eliminate any potential threat to human health or the environment. Because of the uncertainties associated with the ownership of the equipment, the final disposition cannot be determined at this time.

4.12 Decontamination Waste Disposal

Rinse water from equipment decontamination operations will be collected into temporary tanks, drums, or containers. The rinse waters will be managed and disposed of as hazardous wastes. The classification of the wastes will depend on the equipment from which the waste was derived and any additional knowledge obtained during decontamination activities that will aid in assessing the hazardous

materials/wastes that the rinse water may be contaminated with. All rinse waters will be disposed of at an appropriate, permitted TSDF or recycling facility.

4.13 Weekly Progress Reports

Weekly written summary reports will be provided to the EPA which will include a summary of the current and future week's activities. The summary will contain information regarding changes in personnel, the percentage of the project that has been completed, potential problem areas, and the projected work for the following week. Refer to Exhibit A, in this section, for a sample report.

4.14 Technical Memorandum

To assist in documenting and detailing a course of action for unforeseen changes that may occur in the field, a technical memorandum will be written. The technical memorandum will be prepared to ensure a clear line of communication and submitted to the EPA for approval. The memorandum will include a brief description of the proposed addition or modification, the purpose of the proposed activity, its estimated cost and possible alternatives. Refer to Exhibit B, in this section, for a sample report.

4.15 Phase I Report

A final Phase I report detailing all Site activities will be prepared and provided to the EPA.

EXHIBIT A

WEEKLY PROGRESS REPORT FORM

EXHIBIT A

WEEKLY PROGRESS REPORT NO. ___

OMEGA CHEMICAL CORPORATION

A. PERCENTAGE OF PROJECT COMPLETED

B. SUMMARY OF WORK PERFORMED

C. CHANGES IN REMEDIAL DESIGN/REMEDIAL ACTION

D. SUMMARY OF COMMUNITY INTEREST GROUPS AND AGENCY CONTACTS

E. POTENTIAL PROBLEM AREAS

F. ACTIONS TO BE TAKEN

G. CHANGES IN PERSONNEL

H. PROJECTED WORK FOR NEXT REPORTING PERIOD

I. INSPECTION REPORTS

EXHIBIT B

TECHNICAL MEMORANDUM FORM

EXHIBIT B
NO.____ TECHNICAL MEMORANDUM

SUBJECT: **DATE:**
SUBMITTED BY: **TASK NO.:**
SUBMITTED TO:
cc:

1.0 PURPOSE

2.0 DESCRIPTION OF REQUIRED ADDITION OR MODIFICATION

3.0 NEED FOR PROPOSED ACTIVITIES

4.0 IMPLEMENTATION SCHEDULE

5.0 ESTIMATED COSTS

6.0 EVALUATION OF ALTERNATIVE ACTIONS

7.0 ALTERNATIVES FOR IMPLEMENTATION

8.0 HEALTH AND SAFETY ISSUES

9.0 DESIGN/IMPLEMENTATION PRECAUTIONS

10.0 FUTURE IMPLICATIONS/CONSISTENCY WITH FINAL REMEDY

EPAAPPROVALBY: _____ **DATE:** _____

_____ **Approved** _____ **Disapproved** _____ **Additional Information Required**

_____ **Approved Conditional Upon Attached Comments**

5.0 TRANSPORTATION AND DISPOSAL PLAN

5.1 Overview

This Transportation Disposal Plan has been developed to provide the following:

- Proper completion of the Hazardous Waste Manifests,
- Proper completion of RCRA Hazardous Waste labels and/or TSCA PCB labels and any other required documents,
- Proper loading of the truck according to DOT-requirements,
- Vehicle inspections prior to departure,
- Two main transportation routes from the site to the nearest freeway,
- Procedures to be strictly followed in case of an incident while in transport, and
- Discussion of proposed transfer and disposal facilities.

5.2 Checklist for Manifests

The following checklist will be utilized to ensure hazardous waste manifest are properly completed:

1. Only current manifests will be used. *Failure to have a current manifest will result in the material being returned to the generator.* For shipments manifested to Arkansas, an Arkansas manifest will be used and for shipments manifested to California, a California manifest will be used.

2. The Generator Certification section will be signed and dated.

3. The Transported Acknowledgment section will be signed and dated.

4. EPA ID numbers for generator, transporter and facility will be filled in.

5. Section 11a-11d will have a proper DOT shipping description for all regulated waste. DOT shipping descriptions will include the proper shipping name, hazard class, ID#, and packing group at a minimum.

6. EPA waste codes will be indicated in Section I, the Waste Number section. "NR" will be used for EPA non-regulated material and "PCB" will be used for Polychlorinated Biphenyls. (Shipments to Arkansas <u>will</u> use "NR" for EPA non-regulated material.)

7. Verification will be made to ensure that no waste codes are manifested that are unacceptable at the receiving facility.

8. Waste Profile (WP) number will appear on the manifest either in Section 11a-11d or Section 15. The WP numbers for the materials will agree with the WP numbers provided on the ENSCO

Shipment Confirmation. The Site Supervisor will be notified of any discrepancy. Failure to have an approved WP number will result in the materials being returned to the generator.

9. The Load number will be indicated in Section 15.

10. 24-hour emergency response information (contact and phone numbers) will be listed in Section K.

11. Container types and numbers will be accurately indicated in Section 12 and correspond to the actual load count.

5.3 Land Disposal Restriction Notification Form

The following procedures will be implemented for completion of the land disposal restriction notification form for restricted wastes:

1. For any restricted waste, a Land Disposal Restriction Notification Form will be provided by the generator and attached to the manifest.

2. Land Disposal Restriction Notification Form will be signed and dated by the generator.

5.4 Preparation/Shipment of Drums

The following procedures will be implemented during the preparation and shipment of drums:

1. Drums of EPA and California regulated waste will have hazardous waste label that includes:

   - Generator information,
   - DOT shipping name,
   - UN or NA number,
   - Manifest number and line,
   - EPA and California waste code numbers, and
   - The WP number for regulated and non-regulated materials.

2. DOT-regulated material will have the appropriate hazard class label(s).

3. TSCA PCB articles and material will have on each article or drum:

   - TSCA PCB label
   - the date the PCB's were removed from service (storage date)

- a unique identifying number

TSCA PCB shipping papers must include a list stating for each article or drum:

- the unique identification number
- waste type
- storage date
- weight in kilograms

4. Inspections of all loads will be made to ensure that all drums are properly secured and not leaking.

5.5 Loading Requirements

The following procedures and precautions will be implemented during the loading of the drums.

1. Guard the drum from hazards. The following precautions will be taken with all hazardous materials shipments:

   - Do not drop, jar, or bump the drum. Impact can cause breakage and release of hazardous materials, fumes or vapors.
   - Keep away from heat. Excessive heat, such as when drums are stored next to heating units or loaded into a trailer and left in the hot sun, can increase the possibility of hazard from hazardous materials.
   - Protect the drum from moisture. Moisture can deteriorate the structural integrity of the drums.
   - Keep drum loading and shipment area well ventilated. Air circulating between drums prevents fumes and materials from becoming mixed and contaminated each other.
   - Avoid friction against drum. Don't slide drums of hazardous materials, as heat generated through friction may create a hazard.
   - Check the characteristics of the loading guide (hazardous materials) to ensure that shipments of incompatible hazardous material not loaded together.

2. Check shipping papers to be certain they accurately completed. Drums must be in good condition and require appropriate RCRA Hazardous Waste and/or TSCA PCB labels and markings. Report any discrepancies to the Site Supervisor.

3. Smoking and open flames are prohibited around any unit being loaded or unloaded.

4. The parking brake on the vehicle must be set and the engine must not be running while the vehicle is being loaded or unloaded.

5. Tools which might damage the shipment must not be used on any drums.

6. When Class 4 Flammable solids, Class 5 Oxidizing materials, or Class 8 Corrosive liquids are transported, they are to be so loaded as to provide ready accessibility for removal.

7. All hazardous materials should be kept free from extreme changes in temperature.

8. Tanks, barrels, drums, and cylinders must be reasonably secured against movement within the motor vehicle during transport and against relative movement between each other. Such motion might create friction or cause damage to valves or fittings and result in dangerous leakage.

9. Heaters may be used when transporting Class 3 Flammable liquids or Class 2 Flammable gases, provided:

   - It is a catalytic heater;
   - The heater's surface temperature cannot exceed 130° F. (54° C);
   - The heater is not ignited in a loaded vehicle;
   - There is no flame, either on the catalyst or anywhere in the heater;
   - The heater bears the manufacturers' certification "Meets DOT requirements for catalytic heaters used with flammable liquid and gas."; and,
   - The heater is also marked "Do Not Load Into or use in cargo compartments containing flammable liquids or gas if flame is visible on catalyst or in heater."

10. Vehicles equipped with heaters, not meeting the specifications outlined above, may be used to transport Class 3 Flammable liquid or Class 2 Flammable gas **only** if the device is first rendered inoperable by emptying or removing the heater fuel tank, closing its discharge valve, and disconnecting its fuel feed line.

11. Damaged or leaking packages of hazardous materials may be reloaded into a recovery drum for shipment to destination. A recovery drum must be of metal construction. Cushioning must be provided if necessary, and there must be a means of absorbing any free liquid. The drum, the cushioning and the absorptive material must be compatible with the hazardous material. The

drum must be marked with the proper shipping name of the hazardous material, the name and address of the consignee, labeled as required, and bear the additional marking "Recovery Drum". The capacity of a recovery drum must not exceed 110 gallons.

12. Transfer of Class 3 Flammable Liquids:

- Transfer of Class 3 Flammable liquids between containers not in metallic contact may be made only if metallic bonds or ground conductor are provided. Such bonding shall be made by first connecting an electrical conductor to the container to be filled and then to the containers from which the liquid is to be emptied. The latter connection must be at a point away from the opening from which the liquid is to be discharged.

- No Class 3 Flammable liquid shall be unloaded or loaded with the engine running unless the vehicle engine is used for the operation of the pump.

13. Class 4 Flammable Solids and Class 5 Oxidizing Materials shall be handled as follows:

- Lading shall be entirely within and covered by the body of the vehicle or by tarpaulins or by other suitable means and the tailgate or door shall be securely closed and fastened.

- Commodities which are susceptible to heat or spontaneous combustion shall be loaded in such a manner as to insure adequate ventilation between packages.

- Extra precautions shall be taken to prevent wetting of Class 4 Flammable solids and Class 5 Oxidizing materials which become more hazardous when wet.

14. Class 8 Corrosive materials shipments shall be loaded and unloaded as follows:

- Frangible containers of acids shall be individually handled when loaded or unloaded by hand.

- Frangible containers may be loaded in tiers if the weight of the upper tiers is upon the crates of boxes enclosing the frangible packagings and not upon the frangible packagings themselves. Means must be provided to prevent shifting or the tiers and individual frangible packagings in the tiers.

- Class 8 Corrosive materials may be hauled with other lading only as permitted by the loading chart. Ready access must be provided to corrosive liquids to permit their removal.

- Nitric acid loaded in the same motor vehicle with other acids or corrosive materials in carboys must be separated from the other carboys by a 2 by 6 inch plank, set on edge, nailed across the vehicle floor. The board shall be placed a distance of at least 12 inches from the nitric acid carboys and the space between shall be filled with an incombustible absorbent material such as sand, sifted ashes, etc.

15. Class 2 Gasses loading should be conducted as follows:

Cylinders shall be securely lashed in an upright position; or loaded into racks securely attached to the motor vehicle; or packed in boxes or crates which will prevent their overturn; or loaded in horizontal position. Spec. DOT - 4L cylinders must be loaded upright and securely braced. Cylinders of liquefied hydrogen cannot be transported by common carrier. Other carriers must comply with special loading rules of DOT.

16. Loading and Unloading of Division 6.1 Poisons and Division 2.3 Poisonous Gases

- Division 2.3 Poisonous Gases or Irritating Substance may not be transported if there are any inter connecting means of any character between containers.
- No Division 2.3 Poisonous Gases or Irritating Substance may be loaded into any cargo tank.

5.6 Pre-Transport Vehicle Inspection

Driver Rules

1. Only drivers who qualify under Federal Motor Carrier Safety Regulations can handle hazardous materials.
2. Vehicles carrying hazardous materials must meet federal requirements.
3. The driver must inspect his or her vehicle before loading hazardous materials or leaving the Site. Inspection should follow the procedure set forth in ATA Form C0830 (Appendix E). The driver must check to see that the vehicle is equipped with emergency equipment - fire extinguisher, red flags, flares, fuses, electric lantern; or reflective devices. (Note 1: Vehicles transporting hazardous materials must be equipped with a fire extinguisher having an Underwriter's Laboratories rating of X 10 B:C or more. Note 2: Flame producing warning devices are prohibited on any motor vehicle transporting Class 1 Explosives, Division 1.1, 1.2, or 1.3; on any tank truck transporting Class 3 Flammable liquids; or Division 2.1 Flammable Compressed Gas whether loaded or empty; or on any motor vehicle using compressed gas as a motor fuel.)
4. Tire Inspections: The driver must inspect tires before leaving the terminal and upon his return. He must also inspect tires every two hours or 100 miles, whichever comes first, while the vehicle is placarded. If any tire is leaking or otherwise defective he must drive to the nearest safe place for repair. If a tire is "hot", the driver shall notify the terminal immediately and not move the vehicle until the defective tire has been removed.
5. Placarding: Placards must be displayed on the vehicle before it leaves the Site. There should be a supply of assorted placards in the cab of the vehicle if it is not equipped with permanent placards. All placards must be removed when the hazardous materials are unloaded, except for tank vehicles or portable tanks not yet cleaned and purged.

6. Smoking: Do not smoke when driving, loading or unloading hazardous materials, or when within 25 feet of a vehicle that is placarded.

7. Fires: Do not drive near open fires. Pass open fires only when it is positively safe to do so and there is no alternative route. Don't park within 300 feet of an open fire.

8. Routing: Avoid tunnels, narrow streets, alleys and heavily populated areas unless there is no practicable alternative route or unless pickups and deliveries must be made in the area.

9. Rail Crossings. Any cargo tank or placarded vehicle containing hazardous materials, or any vehicle carrying any amount of chlorine, must make a full stop not more than 50 feet or less than 15 feet from the nearest rail of a highway grade crossing. Stops are not required at crossings which are marked "abandoned" or "exempt", street car crossings, crossings used exclusively for industrial switching within a business district, or crossings directed by a flagman, police officer, or functioning green traffic signal. If no stop is required you must reduce speed and take due care in crossing.

10. Fueling: When fueling a placarded vehicle the engine must be off and the driver or attendant must stay at the nozzle until fueling is completed.

11. Parking: Vehicles transporting hazardous materials cannot be parked on or within 5 feet of the traveled portion of a public street or highway except for brief periods when the necessities of operation require the vehicle to be parked, and it is impracticable to park the vehicle in any other place.

12. Attendance: Vehicles containing hazardous materials, other than Class 1 Explosives, Divisions 1.1, 1.2, or 1.3 that are parked on a public street or highway or the shoulder thereof must be attended by the driver. However, the vehicle need not be attended while the driver is performing duties which are incident and necessary to his duties as operator.

    A vehicle is attended when the person in charge of the vehicle is on the vehicle, awake, and not in the sleeper berth, or is within 100 feet of the vehicle and has it within unobstructed view.

5.7 Routes to Nearest Highway

The facility is located approximately 700 feet northwest of the corner of Whittier and Washington Boulevard on Whittier Boulevard. The nearest interstate is the 605 Freeway, approximately 2.25 miles northwest of the site. Whittier and Washington Boulevards provides the two most direct access routes from the facility to the nearest interstate. The following information should be utilized in determining the safest and most effective route from the Site to the 605 Freeway.

Whittier Boulevard - The Site is located along a frontage road that parallels Whittier Boulevard. The nearest exit from the frontage street does not allow a left hand turn onto Whittier Boulevard. Additionally, the corner of Whittier and Washington does not allow a U-turn.

If Whittier Boulevard is the preferred route, it is recommended to travel northwest on the frontage road approximately 200 yards to an exit that allows a left-hand turn. Care should be taken entering Whittier as

the boulevard is a major surface street thoroughfare. Both north and south bound entrance ramps are provided from Whittier Boulevard onto the 605 Freeway.

Washington Boulevard - If Washington Boulevard is the preferred route, leave the nearest frontage road exit, make a right-hand turn, proceed to the corner of Whittier and Washington and make a right-hand turn and proceed to the 605 Freeway.

Washington Boulevard is bounded by more industrial activities and truck traffic is common place. Both north and south bound entrance ramps are provided from Washington Boulevard onto the 605 Freeway.

5.8 Emergency Procedures

In the event of accident, breakdown or other emergency the driver must follow established company procedures for protecting the scene, obtaining assistance, notifying the fleet and gather information necessary for making reports. In addition, the following procedures should be followed when hazardous materials/wastes are involved:

On The Highway

1. Do not let people congregate in the vicinity of the accident or fire unless they are authorized to engage in combatting the fire or helping to handle the accident.

2. Keep fires, flame and lighted cigarettes, cigars and pipes away from the scene.

3. Set up warning signals on the highway to prevent further accident. Emergency signals shall be used as a required in DOT Safety Regulations 392.22 to 392.25. It is recommended that flame producing signals not be used when transporting hazardous materials of any type. The use of flame producing signals is specifically prohibited by the DOT for any cargo tank vehicle used a for transporting flammable liquids or flammable compressed gas and for any vehicle transporting Class 1 explosives, Divisions 1. 1, 1.2 or 1.3. Such signals must be placed a safe distance from vehicles, if used at all, when flammable or combustible liquids are seeping or leaking from a fuel container.

4. Prevent leaking liquids from draining onto the highway or into sewers and streams by damming up the liquid or by digging a drainage trench <u>only</u> if it can be performed safely.

5. Know your load. Refer to shipping papers for name a and hazardous materials classification of each commodity in your unit. Give information to firemen or police in case of emergency involving your unit. If unit displays "DANGEROUS WHEN WET" placards, advise firemen of the fact that your load includes water-reactive materials.

6. Show shipping papers and manifests to emergency response personnel so they can determine the nature of the contents and plan fire fighting techniques accordingly.

7. Leaking tanks may be transported only the minimum safe distance necessary to reach a place where safe transfer of the hazardous material to another tank may be made.

8. Flammable liquid may be transferred from one container to another or from one vehicle to another on public roads in emergencies only. Containers must be bonded or grounded before and during transfer of the liquid from one container to another. Emergency signals (non-flame producing) must be set up during this operation.

9. Flammable solids and oxidizing materials should be unloaded if it will decrease the fire and other hazards. Broken boxes and loose materials should be gathered and disposed.

Vehicle Break Downs

1. Emergency signals shall be used as required in rules 392.22 to 392.25 of the DOT Safety Regulations.

2. Special effort should be made to remove the vehicle to a place where the hazards of the load being transported may be protected against exposure.

3. Repair and maintenance of vehicles transporting hazardous materials are subject to the following restrictions:

   a) Except for a vehicle placarded COMBUSTIBLE, heat-producing repairs may not be made on the fuel or cargo containment systems of any placarded vehicle; e.g. welding or cutting could be done on a spring shackle, but not on the door of a van.

   b) Repair and maintenance on a placarded vehicle (except one placarded COMBUSTIBLE) may be made in a garage or closed space only under the following conditions:

      i) The cargo containment and fuel containment systems are closed (except as necessary to run the engine);

      ii) Provision must be made for immediate removal of the vehicle in case of emergency;

      iii) The vehicle must be removed from the building on completion of the work;

      iv) If the vehicle is transporting Division 1 .1, 1.2, or 1.3 explosives, flammable liquid or flammable gas, all sources of spark, flame or glowing heat in the enclosure (including a heat system drawing air from the enclosure) must be shut down or made explosion-proof by an acceptable method. This does not apply to the electrical system of the vehicle if its use is necessary in connection with the maintenance or repair.

   c) No heat-producing repair may be made on a cargo tank used for flammable liquids or gases, or poisonous liquids, or on a fuel tank of any type unless the tank, or any compartment has first been made gas-free.

Emergency Assistance, Accidents And Incidents

1. If hazardous materials on a vehicle are found to be leaking, damaged, on fire or have any appearance of being in unsafe condition the driver should notify the fleet safety director or a responsible individual as quickly as possible under the circumstances. He or she must not leave his or her vehicle to make such a notification unless there is no danger to the general public or

unless the vehicle is under guard by a responsible individual. It may be necessary to have another person make such notification while the driver stays with the vehicle.

2. If a vehicle transporting hazardous materials is involved in an accident, the driver should ascertain if the hazardous materials have been damaged or if it appears that such materials may become involved for any other reason such as fire in the wreckage. After he or she has taken the necessary steps to protect the scene and the public he or she should contact his or her fleet as outlined above.

Required Notification for Hazardous Material, Hazardous Waste or Hazardous Substances Incidents (spills, leaks, discharges, etc.)

Whenever there is a spillage or leakage of hazardous materials, including hazardous wastes and hazardous substances in a vehicle, or there is direct involvement of the hazardous materials arising out of a motor vehicle accident, special reports must be made in accordance with the following:

IMMEDIATE NOTICE OF CERTAIN HAZARDOUS MATERIALS INCIDENTS (49 CFR, 171.15)

(1) A call to the DOT National Response Center must be made as promptly as possible if an incident involves hazardous materials during transportation, loading, unloading or storage and results in one or more of the following:

- Death of any person(s).
- Injury requiring hospitalization of any person(s).
- Estimated damage to carrier or other property exceeding $50,000.
- An evacuation of the general public occurs lasting one or more hours.
- One or more major transportation arteries or facilities are closed or shut down for one hour or more.
- Fire, breakage, spillage or suspected radioactive contamination involving a shipment of radioactive materials.
- Fire, breakage, spillage or suspected contamination involving a shipment of etiologic agents.
- In the judgement of the carrier there exists a situation which should be reported even though it does not meet one of the specific criteria listed above.

SPECIAL DOT PHONE NUMBERS (National Response Center): Nationwide, 1-800-424-8802; Washington, D.C. Metropolitan Area, 202-426-2675.

(2) In making a telephone report, the following information must be provided to the extent that it is available:

- Name of reporter
- Name and address of carrier represented by reporter
- Phone number where reporter can be contacted

- Date, time and location of incident
- Extent of injuries, if any
- Classification, name and quantity of hazardous materials involved
- Type of incident, nature of hazardous materials involvement, and whether or not there is a continuing danger to life at the scene.

DETAILED HAZARDOUS MATERIALS INCIDENT REPORTS (49 CFR, 171.16)

(1) A written report must be made within 15 days of discovery of an incident arising out of the transportation, loading, unloading or storage of hazardous materials as follows:

- As a follow-up to any such incident reported by phone in accordance with the criteria set forth, above.
- As the result of an unintentional release of hazardous materials from any packaging including a cargo tank.
- As the result of release of any amount of hazardous waste.

(2) The report in duplicate shall be sent to:

Information Systems Manager
Research & Special Programs Administration
U. S. Dept. of Transportation
Washington. D.C. 20590

The report shall be made on the prescribed form DOT F-5800.1 available from American Trucking Associations, as form C0670.

(3) The filing of a Hazardous Materials Incident Report does not relieve the interstate carrier from the necessity of also filing an MCS 50T report with the Regional Motor Carrier Safety Office, if the hazardous materials incident arises out of a motor vehicle accident.

(4) In filing a Hazardous Materials Incident Report, the carrier should endeavor to provide all of the information required to complete the report and to provide as much information as possible about the incident. These reports are analyzed by DOT to discover unsafe or inefficient packagings of hazardous materials, and to make such changes in the hazardous materials regulations as experience indicates are necessary for safety.

(5) For reports of hazardous waste discharges a copy of the hazardous waste manifest must be attached to the written report.

(6) The filing of the reports mentioned above does not relieve a carrier from the responsibility to report spillages of hazardous materials, or spillages of other materials that may create a pollution problem to local, state and federal agencies concerned with environmental controls as required in the area where any such spillage occurs.

HAZARDOUS SUBSTANCE DISCHARGE NOTIFICATION (49 CFR, 171. 17)

(1) Any release of hazardous substances or hazardous wastes must be reported to the U.S. Coast Guard National Response Center at (toll free) 800-424-8802 or 202-426-2675. (Note: Only spills of hazardous substances which equal or exceed the designated reportable quantity are required to be reported, however, it is recommended that all spills be reported.)

(2) The report must be made by either the driver or a company official as soon as that person has knowledge of the discharge.

(3) The discharge notification should include:

(a) The information listed in (2) above;

(b) The name of the shipper; and

(c) The quantity of hazardous substance discharged, if known.

There are severe penalties for failure to make these reports.

(4) Releases of reportable quantities of an extremely hazardous waste or CERCLA hazardous substance listed in Title 40, Part 355, section 355.40, when they occur in transportation or storage incidental to transportation must be immediately reported to the local emergency planning committee, or if none available to the state emergency planning commission, or as a last resort by dialing 911 or calling the operator.

5.9 Waste Disposal

Waste disposal options include the direct transportation of wastes to ENSCO's incineration facility. ENSCO's incineration facility is a Part B permitted RCRA facility, located in El Dorado, Arkansas, and is capable of storing approximately 31,000 drums. The facility can accept 55-gallon steel drums as well as all DOT-approved containers. Certificates of Destruction will be provided for all waste shipments that are incinerated.

Alternative TSDFs may be used if they are determined to be more appropriate than the proposed disposal facility. The most appropriate disposal facility will be determined based on the type of waste, hazardous classification, cost of disposal, and regulatory status of the waste facility. The determination of the appropriate disposal facility will be made onsite as the wastes are being characterized. Alternatively, if the waste is transported to a transfer facility, determination of the most appropriate disposal facility will be made once the waste has reached the transfer facility and disposal options have been explored. All TSDFs will be approved to accept CERCLA wastes.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP has been prepared for the removal of approximately 2,700 drums of unknown chemicals, the decontamination of five AST's, five distillation columns, two evaporators, one sump, two drum storage pads, and other equipment identified onsite as having been impacted by former operations conducted at the Site.

6.1 Purpose and Scope

The purpose of this SAP is to define project activities necessary to ensure that field activities performed and data generated during the removal of the drums at the Site are technically valid and adequate to document the removal actions. This SAP specifies the requirements and procedures for field sampling, hazard and characterization, and laboratory analysis to be conducted and is intended to serve as a guidance document for use in the field at the Site. The QAPP Section 7.0, is referenced throughout the SAP and is intended to serve as an additional guidance.

The sampling procedures specify the sampling rationale, procedures, and related field operations for the drum removal and decontamination of onsite equipment and structures impacted by former operations conducted onsite. The DCQAP specifies sampling and analysis QA/QC requirements for this project.

6.2 Approach

The overall strategy of the SAP is to properly manage, transport and dispose of the drums by determining the hazards associated with each drum contents. Additionally, the SAP is designed to determine the basic waste characteristics of each drum's contents to determine safe, effective, and efficient disposal options.

The SAP consists of the following three steps:

1. Field sampling,
2. Hazard characterization,
3. TSDF waste profiling,
4. Laboratory sampling, if necessary.

Each drum will be field screened utilizing the HazCat® procedures discussed in Section 6.4. The HazCat® procedure will identify the hazards associated with the drum contents and allow for the proper profiling, labeling, transportation, and disposal of the drum contents.

If the HazCat® of the drum contents is inconclusive, inconsistent, or of concern to the field chemist, samples will be collected as described in Section 6.3 and transferred to a state-certified laboratory for hazardous waste characterization.

6.3 Drum Sampling Procedures

The first step in sampling is to open the bung or drum head on the drum.

The second step in sampling will be to screen the drum by visual observation and use of a photoionization detector (PID)/flame ionization detector (FID). The drum number and the PID/FID readings and observations should be noted in a field log book.

Samples for hazard characterization will be collected from all drums containing liquid or solid. A total of approximately 2,700 drums will be sampled. For each sample collected, the drum numbers from which material is collected will be recorded.

The method of sample collection will depend on the prevailing weather conditions and condition of the solid material. It is anticipated that one of the following sampling methodologies will be employed to obtain a representative sample from each drum. Sampling equipment will be decontaminated before samples are collected, or disposable sampling equipment will be utilized, and placed in drums after use for disposal as investigation-derived waste (IDW).

The sampling procedures to be used to obtain a representative sample of the waste - Sampling methods and equipment will vary with the form and consistency of the waste materials to be sampled; however, sampling will be conducted in accordance with "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods." Sampling strategy is outlined in Tables 6.1. Table 6.1 defines recommended sampling equipment and corresponding limitations. This strategy is a suggested guideline but actual methods used will depend on the particular situation.

Transfer the sample to the HazCat® area.

TABLE 6.1
SAMPLERS RECOMMENDED FOR VARIOUS TYPES OF WASTES

Waste Type	Recommended Sampler	Limitations
Liquids, sludges, and slurries in drums, vacuum trucks, barrels, tank trucks, and similar	Drum thieve	Not for containers greater than 2.5 m deep.
	a) Plastic	Not for wastes containing ketones, nitrobenzene, dimethylformamide mesityl oxide, or tetrahydrofuran
	b) Glass	Not for wastes containing hydrofluoric acid and concentrated alkali solutions.
	c) Stainless steel, etc.	Not for wastes with HCl, HNO_3.
Powdered or granular solids in bags, drums, barrels, and similar containers	a) Grain sampler	Limited application for sampling moist and sticky solids with a diameter 0.6 cm (¼")
	b) Sampling trier	May incur difficulty in retaining core sample of very dry granular materials during sampling.
Dry wastes in shallow containers	Trowel or scoop	Not applicable to sampling deeper than 8 cm (3"). Difficult to obtain reproducible mass of samples.
Solids deeper than 8 cm (3")	a) Soil auger	Does not collect undisturbed core sample.
	b) Veihmeyer sampler	Difficult to use on stony, rocky, or very wet soil.
Wastes in storage tanks	Weighted bottle sampler	May be difficult to use on very viscous liquids.

6.4 HazCat® Procedures

HazCat® procedures will consist of the following:

- A small sample of the unknown substance will be placed on a watch glass.
- The substance will be examined to determine if it is reacting with the air. Signs of heat or vapors being evolved will be noted.
- A small quantity of water will be placed on the sample using a pipet. The sample will be examined for signs of reactions.
- The pH of the sample will be tested by wetting the pH paper with the water on the watch glass.
- The sample will be tested with oxidizer paper and watched for any color change in the paper.
- The sample will be tested for cyanide using a draeger tube specific for cyanide. Any change in the color of the tube will be noted. If a color change is noted, the following procedures will be stopped and we will refer to the Sensidyne manual for further tests.
- A small quantity of hydrochloric acid (0.1N) will be added to the sample. The sample will be watched for any signs of reaction.
- The sample will be tested for sulfides by touching the sample with sulfide paper. Any color change will be noted.
- A small piece of wire will be heated and touched on a small part of the unknown.
- A new sample of the unknown will be placed on the watch glass and a burning match will slowly be moved under the watch glass. If the sample burns and how vigorously it burns will be noted. Samples that burn quickly with a strong flame will be classified as Flammable (Class 3).
- A small sample of unknown will be placed in a test tube and a char test will be performed. The Btu content will be estimated based on the flammability of the vapors given off and the residual ash left after the test.
- The hot wire test will be performed on the sample by dipping a bare copper wire in the sample and heating the wire with a propane torch. A green flame is a positive for chlorine. The chlorine will be estimated by the extent of the green flame.

6.5 Waste Profiling

Broad spectrum waste profiles will be established at the TSDF at the onset of the DRA. Samples of the wastes will be collected and provided to the TSDF prior to arrival of the wastes. The analytical results from analyses of wastes by the TSDF, will be used to confirm waste profiles. If a waste is encountered that does not fit into a pre-established profile at the TSDF, additional profiles will be established. Independent analyses of samples are not anticipated to be performed, as the TSDF's analysis of incoming wastes will be provided to the Project Chemist, and any other appropriate DRA persons, and will be used

- Title 21, Code of Federal Regulations, CFR Part 58, *Good Laboratory Practices*;
- Criteria described in *Methods for Chemical Analysis of Water and Wastes* (EPA, 1979; EPA-600/4-79-202);
- Requirements outlined in *Users Guide to the Contract Laboratory Program* (EPA, 1986).
- Physical testing will be conducted in accordance with American Society for Testing and Materials standards (Annual Book of ASTM Standards, 1994).

7.8 Data Reduction, Validation, and Reporting

Quality assessment of the analytical data will adhere to the procedures in the EPA *Users Guide to the EPA Contract Laboratory Program* for analysis of chemical data. These procedures specify the documentation needed and the technical criteria required to complete QA/QC of the data.

Validation of laboratory data will be performed by HLA specialists in analytical chemistry or physical testing and will adhere to the guidelines presented in the draft document *Scientific and Technical Standards for Hazardous Waste Sites* (California Department of Health Services [DHS], 1990). The laboratory will be required to submit results that are supported by sufficient backup data and QA/QC results to enable the reviewer to conclusively determine the validity of the data.

Validation of all data obtained from field measurements will be performed by qualified field personnel. Validation will be performed by checking calibration procedures utilized in the field and by comparing the data to previous measurements obtained at the specific site.

The Quality Assurance Officer (QAO) will check the data sets to ensure that QC was performed in accordance with the DCQAP.

7.9 Internal Quality Control

QC consists of specific checking, examination, and inspection as described in the procedures for field data collection, sample collection, and analysis. Documentation of QC actions is provided on field logs, data reports, related records or documents, and correspondence, all of which are then filed and maintained in the controlled project file.

7.10 Performance and System Audits

Field and office activities will be monitored and periodically audited by the QAO to evaluate the implementation effectiveness of the project QA program to produce reliable sampling and field measurement data.

Audit reports will be issued to the Project Manager with copies to the HLA Program Manager. Field audits will evaluate the execution of sample collection, sample identification, sample control, COC, field documentation, instrument calibration, field measurement, and data acquisition procedures. Office audits will evaluate data reduction and management activities, project record completeness and retrievability, and conformance to procedures for the issuance of all work products.

The initial audits will be conducted at both the office and the Site beginning at the inception of onsite activities in order to evaluate implementation of the DCQAP and project procedures.

It is not currently anticipated that audits of analytical laboratories will be necessary. However, the selected laboratory will be required to provide documentation of state certification. If inconsistencies or performance aberrations are noted during routine analytical data assessment and inspection, corrective action may be required (Section 7.13).

7.11 Preventive Maintenance

All instruments and equipment will receive routine preventive maintenance, which will be recorded in instrument-specific maintenance logs. At a minimum, all instruments will be inspected for usable condition and calibration status prior to field use.

Laboratory instruments will be maintained according to the QA/QC plan established by the laboratory. Calibration and maintenance will be performed in accordance with approved EPA calibration and maintenance checks.

7.12 Specific Routine Procedures to Assess Data

Chemical data will be validated according to accuracy, precision, and completeness for both the field and analytical laboratory programs. The primary goal of the programs is to ensure that the data reported are representative of conditions onsite. To meet this goal, a combination of statistical procedures and qualitative evaluations will be used to check data quality. If problems arise and the data are found to

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deviate from previous analyses or analyses of surrounding conditions, the data will be annotated rather than removed from the database. Repetition of sample collection and analysis will be used only in extreme cases of QC problems.

7.13 Corrective Actions

The need for corrective action may be identified during QC review of data and reports, during field and office audits, or during QA monitoring of activities. Identification, correction, verification, and documentation of corrective actions so identified are controlled by the appropriate sections of this DCQAP. Laboratory nonconformance may be noted during routine analytical data assessment and inspection. In such instances, the laboratory, QAO, and appropriate technical specialist will discuss the situation, and a corrective action report (CAR) will be prepared documenting the corrective action to be implemented (see Exhibit C). If necessary, HLA will perform an audit of the laboratory to confirm that corrective actions are implemented and are appropriate. The CAR will be distributed to the project file, Project Manager, and QAO.

During performance of a field investigation, the predictability of field conditions is limited. If conditions are encountered that are outside or contrary to those anticipated in project planning and not provided for or contrary to field investigation procedures, affected work will be stopped. The Task Managers or Project Manager will be immediately consulted, and their decision will be followed concerning direction of work. Any such deviation from approved procedures will be documented in field notebooks, and a CAR will be prepared. The involved Task Managers or Project Manager will be responsible for preparing and processing the CAR. The cause and actions to prevent recurrence will be approved by the project manager and the QAO. The QAO will verify completion of all actions required by the CAR. If appropriate, data sheets will be annotated. The CAR will be distributed to the project file, Project Manager, and QAO.

7.14 Quality Assurance Reports

The QAO will issue periodic QA activity reports to the Project Manager with copies to the HLA Program Manager. These reports will identify any audits conducted, audit findings, and finding resolution status. In addition, QA reports will include results of QA activities, i.e., assessments of measurement data accuracy, precision, and completeness; QA surveillance; and any corrective action items.

The Phase I report will include a QA section. A summary of the QA program results and quality of generated data will be discussed in this QA section.

8.0 CONTINGENCY PLAN

8.1 Contingency Plan

This Contingency Plan has been developed by HLA to present procedures that should be followed in the event of an emergency at the Site. A variety of events that are potential hazards to human health and the environment are discussed, including the following:

- An explosion or fire
- A chemical or petroleum spill or accident
- Other events presenting a hazard to human health or the environment

This section also specifies the general procedures should be followed, who should be notified, and the information that should be reported for the first person on the scene of an emergency.

8.2 Response Sequence for First Arrivals

If you are first on the scene, respond as follows:

1. Evacuate the incident area (if necessary). Rescue injured personnel and provide first aid as necessary. Remember that your safety must be the primary consideration.

2. Restrict access to the incident area.

3. Restrict the use of ignition sources for incidents involving flammable substances.

4. Call the Site Supervisor or the appropriate local emergency response organization (e.g., paramedics, fire department). Report the following information:

    - Your name
    - Company affiliation
    - Telephone number from which you are calling
    - Location and type of incident
    - Injuries, if any, and the number and type of those injuries
    - Details concerning the substance(s) involved (identification, amount, spill rate, size of area involved), if known

- Direction the spill is moving and the direction the wind may be dispersing airborne contaminants
- Surficial material on which the spill occurred (e.g., asphalt, gravel)
- Any first response action that has been taken
- The time the incident occurred or when you discovered it
- Any additional pertinent information

5. Notify the SSHO after the emergency response team has been contacted. The SSHO will then notify the local DSHO.

6. Coordinate with emergency response personnel when they arrive.

8.3 Response for Incidents Involving Another Contractor

If the incident involves another contractor's activity:

- Initiate steps 1 through 4 under Section 8.2.
- Decontaminate and remove PPE if the incident is not life- or health-threatening.
- Proceed to the predetermined assembly point.
- Make sure the SSHO knows you are present.

8.4 Emergency Response for Severe Weather Conditions

This section specifies what you should do in the event of a severe weather emergency, including electrical storms, high winds, and heavy rain or hail.

Electrical Storms

- Seek shelter at the support facility or in the field vehicles.
- Do not stand near or under high objects, such as trees and drilling rigs.
- If possible, lower the drilling rig mast.

High Winds

- Seek shelter at the support facility (if anchored) or in the field vehicles.
- Do not drive high-profile vehicles at high speeds.
- Park vehicles heading into the wind.

- If blowing dust is a hazard, don a respirator or wear safety goggles and a kerchief covering your nose and mouth.

Heavy Rain or Hail

- Seek shelter at the support facility or in the field vehicles.
- Do not attempt to drive a vehicle if you are in an area that is flooding or has the potential for flooding unless you are moving out of a low area.

8.5 Emergency Response for Earthquakes

Inside

If an earthquake occurs while you are in a building, follow these instructions:

- Stand in an interior doorway or get under a desk or table.
- Stay away from areas containing a large amount of glass.
- Do not use stairways or elevators during the tremor.
- If possible, turn off gas supplies and ignition sources.
- Be aware of the potential for live downed wires.
- Make sure the telephone handset is on the hook. Do not use the telephone for non -emergency calls.
- Evacuate the building when the tremors have ceased. Be aware of the potential for aftershocks.
- Walk briskly. Do not run. Do not pick up personal items.
- Report to a predetermined assembly area and notify your supervisor or the area monitor that you are safe.
- Report missing persons.

Outside

If an earthquake occurs while you are outside, follow these instructions:

- Avoid buildings, trees, areas with large amounts of glass, and power lines.
- Avoid downed wires.
- If operating heavy equipment or a motor vehicle, stop immediately but stay in the vehicle until the tremors have stopped.
- If operating a motor vehicle on a bridge, proceed to solid ground if the end of the bridge is close.

- If operating a motor vehicle on a bridge at mid-span, get out of the vehicle and begin walking to the nearest solid ground.

8.6 Emergency Response for Flash Floods

If a flash flood warning is issued, climb to higher ground. Seek shelter on stable ground. Do not stay in an area that is characterized by uncompacted material on a steep slope.

8.7 Emergency Response for Fires

If a small fire occurs, extinguish it with the fire extinguisher in the field vehicle. Remember to follow these directions to put out the fire:

- Aim at the base of the flame.
- Use the appropriate type of fire extinguisher (e.g., do not use a water-type fire extinguisher or an electrical fire).
- Remember that the spray only lasts a few seconds.

If a large fire occurs at the work site, follow these instructions:

- Move flammable and combustible items out of the path of the fire, only if such action can be performed safely.
- Call the fire department and report the information outlined under Section 8.2, step 4.
- Do not attempt to put out a large fire with the field vehicle fire extinguisher.
- Report the incident to the Site Supervisor.

8.8 Fire Prevention

Steps to be taken to minimize the potential of a fire include the following:

- Obey "No Smoking" signs.
- Label and store flammable liquid containers in a protected, ventilated, and approved area.
- Use only approved containers for flammable liquid storage.
- Use minimum amounts of flammable liquids.
- Shut off engines before refueling, if possible.
- Do not refuel a hot engine unless an ABC-rated fire extinguisher is nearby.
- Store oily rags in a self-closing metal container. Dispose of containers properly.

- Bond and ground all flammable liquid containers and transfer equipment when transferring or filling product.
- Use intrinsically safe equipment in areas potentially containing flammable vapor.

8.9 Emergency Response for Explosions

If an explosion occurs, follow these instructions:

- Initiate steps 1 through 4 under Section 8.2.
- If feasible, decontaminate yourself and others.
- Do not address medical emergencies until you are out of danger.
- Call the Site Supervisor or local emergency response organization when you are out of danger to report the incident.

8.10 Emergency Response for Spills

The following sections provide guidance regarding emergency response to a chemical spill including initial response to the incident and cleanup. Precautions you should take to minimize the likelihood of a spill are presented at the end of this section.

8.11 Initial Spill Response

When a spill occurs:

- Minimize or contain the flow by shutting off a valve, repairing the leak, righting an overturned barrel, or whatever action is appropriate. Remember that your safety is of primary concern. Only attempt emergency response actions if you can do so without injury or harm to yourself.
- Provide first aid to injured persons as needed.
- If the spill occurs on a porous surface (e.g., soil, gravel) mark the area so that samples may be taken to determine the area of impact. If the spill occurs on concrete, asphalt, or similar material, use sorbent material to contain the spill. Sorbent materials will be kept in field vehicles and in the support facility. Cover the area with soil, a tarp, plastic, or other appropriate material if the spilled material is volatile and cannot be cleaned up immediately.
- Call the Site Supervisor or the local emergency response organization (as applicable) to report the incident. Supply the information listed under Section 8.2.
- Dependent on the location and chemical nature of the spilled liquid, initial response action may require donning Level C or Level B PPE.

8.12 Spill Site Decontamination

Site personnel involved in the response action will undergo limited personal decontamination upwind of the incident site. Further decontamination will be completed at the decontamination area in the support zone. The SSHO will authorize site personnel to leave the job site or continue work, as appropriate. The Site Supervisor will provide guidance regarding decontamination and/or disposition of equipment and vehicles.

If personnel come in contact with site contaminants, they should remove and dispose of contaminated PPE, change out of contaminated field clothing, and wash exposed skin with soap and water.

8.13 Cleanup Materials and Used Personal Protective Equipment Disposal

- Materials used in spill cleanup must be collected and placed in barrels and stored at the Site. Contaminated soil, soil cleaned from equipment, and decontamination water will also be drummed or placed in a rolloff container and stored. The Site Supervisor should assess whether the surficial material on which the spill is located requires treatment or removal and relay this information to the Project Manager.
- Decontamination of large equipment may be performed at a temporary decontamination pad set up at the Site or at a central decontamination pad.
- Tools used during spill cleanup will be thoroughly cleaned at the decontamination pad.
- Used PPE will be rinsed of gross contamination, placed in barrels, and stored at the job site.

8.14 Spill Prevention

To minimize the potential for a spill, follow these guidelines:

- Receive instruction concerning recognition of potential spill problems, preventative maintenance actions, and increased safety awareness.
- Inspect stored materials at the beginning of each workshift. The container condition, as well as any notation of leaks or staining that may be related to or indicative of a potential spill, will be recorded in a field logbook. Deficiencies or corrective actions must be reported immediately to the Site Supervisor.
- Inspect transfer vehicles and equipment at the beginning of each day. Equipment conditions, as well as any notation of leaks or staining that may be related to or indicative of a potential spill, will be recorded in a field logbook. Loose and or worn connections and worn hoses will also be noted. Any abnormalities must be reported immediately to the Site Supervisor and steps should be taken to remedy the situation before continuing transfer activities.

- Make sure materials being stored are compatible with the containers in which they are being stored. Incompatible materials shall not be stored together.
- Store containers larger than 1 gallon separately from smaller quantities. Larger liquid storage containers will be stored in a warehouse and must have a secondary containment system. This system can be as simple as a liner with a berm constructed of 4-inch by 4-inch boarding and should be able to contain an amount 10 percent greater than that of the original container.
- Transfer liquid with catch basins under each joint or valve or with the hose or pipe lined so that no liquid can escape.

8.15 Responsibilities of Site Personnel

- Follow the first response directives in Section 8.2.
- Wear the correct and appropriate PPE for project completion.
- Use monitoring equipment applicable to the anticipated hazards (e.g., CGI, FID, PID)
- Have a decontamination area set up for fieldwork.
- Use approved decontamination procedures.
- Have available a means to decontaminate affected personnel.
- Treat minor injuries using the onsite first-aid kit.
- Take personnel with serious injuries to the nearest hospital to the Site or contact a medical emergency response team (Refer to Section 3.0, Health and Safety Plan).
- All personnel at the location where the incident has occurred must completely decontaminate and be debriefed by the SSHO before leaving the Site.
- Perform remedial actions as appropriate.

8.16 Emergency Response Equipment

The following is a list of minimum equipment that is required to be available for emergency response actions:

- 5-pound ABC-rated fire extinguisher
- First-aid kit
- Emergency shower
- Eyewash station or eyewash bottles (totaling 32 ounces)
- Appropriate type and quantity of absorbents for the situation
- Chemical-resistant brooms, shovels, and containment equipment

to confirm and document waste profiling. The TSDF is required to perform an analysis of at least ten percent of inbound drums in order to accept the wastes per the TSDF's RCRA Waste Analysis Plan.

6.6 Speciated Volatile Organic Hydrocarbon Sampling and Analysis

After approximately the first week of the DRA and routine operation is underway, upwind and downwind samples will be collected for speciated organic vapors. Two evacuated Summa canisters will slowly be released over a 4-hour period during routine operations. The canisters draw in the ambient air as the pressure starts to equilibrate with the atmospheric pressure. The canisters will be closed with approximately 5 inches of vacuum left to serve as a leak check during transfer for laboratory sampling. EPA protocols will be followed regarding the preparation, sampling, transfer, and analysis of the Summa canisters. EPA Method TO14 will be utilized to provide low (0 to 5 ppbv) detection limits for common industrial aromatic and chlorinated hydrocarbons. Two samples will be collected on three separate days to determine if any increased ambient air concentrations can be attributed to the DRA. Because of the industrial nature of neighboring properties, the potential exists that the upwind sampling location will have detectable concentrations of aromatic and chlorinated hydrocarbons.

6.7 Drummed Waste Laboratory Analysis

If the hazard characterization results are inconclusive, inconsistent, or of concern to the field chemist, samples of drummed wastes will be taken to a state-certified laboratory for analysis. Samples will be collected as described in Section 6.3. The following steps will be utilized to ensure the samples collected are properly identified and transported and that the requested analyses are performed.

Sample Labels. Sample labels are required for all samples. Site- and time-dependent information will be added to the labels using indelible ink. The labels will be protected from water and solvents with clear tape. Each label will contain the following information:

- Project name
- Name of collector
- Date and time of collection
- Sample number
- Preservative (if any)
- Method of analysis

Sample Identification System. A sample identification system will be used in the field to identify each sample collected during the sampling program. This coding system will provide a tracking record to allow retrieval of information about a particular sample and ensure that each sample is uniquely identified. Each sample will be identified by a unique code that indicates the site number, sample type, sample point, and sequence number.

Chain-of-Custody. Sample possession will be documented through the use of a chain-of-custody (COC) record. The COC will be used to document the integrity (i.e., quality) of samples during collection, transportation, analysis, and reporting. The possession of the samples will be traceable from the time samples are collected until the analyses are reported by the laboratory.

Each sample label and COC form will contain the following information:

1. Sample site type, which describes the nature of the media sampled (COC only)
2. Site identification (ID), which is keyed into a location by an alphanumeric code or a descriptive title
3. Sampling date
4. Time of sample collection, in 24-hour clock designation
5. Sampling technique
6. Name and signature of personnel responsible for sample collection
7. Specific name of the chemical or physical analysis to be performed
8. Project name (COC only)
9. Airbill number (COC only)
10. Laboratory ID (COC only)
11. Sample label or tag number
12. Preservation technique used and whether sample has been filtered

A sample label will be placed on the sample container before sample collection, when possible. The necessary information will be written on the label in permanent ink before sample collection, and the label will be secured to the container. All sample information recorded in the field will also be copied onto the COC before sealing the shipping cooler.

Samples will remain in the HLA Site Supervisor's custody or control following sample collection. The Site Supervisor will inspect each COC form to ensure it is accurate and legible before being released for transport to the laboratory. If necessary, a hazardous materials label will be placed on a readily visible portion of the sample cooler to warn transportation personnel of its contents. Individuals relinquishing custody or receiving custody will sign, date, and record the time on the COC form or airbill, if applicable. Copies of the COC form and airbill will be placed inside the sample cooler (at 4°C) in a tamper-proof envelope taped in place. The coolers will then be sealed with evidence tape. The courier will obtain custody of the samples through the airbill or shipping bill.

Transportation of Samples to Laboratory. All samples will be accompanied by a COC form. When transferring samples, the HLA field representative relinquishing and the individual receiving the sample(s) will sign and date the chain of custody form. When samples are shipped to Del Mar Analytical for analysis, the COC form will accompany each shipment and the method of shipment, courier name(s), and other pertinent information will be entered on the. A copy will be retained at the file or project office.

Laboratory Analysis. Upon receipt of samples by the laboratory, each field sample will be noted on a laboratory logsheet. The sample log-in clerk will physically apply a unique laboratory sample number to each sample. If sample tags are received with the samples, the laboratory sample number will also be applied to these. Care will be taken to ensure that the sample number does not interfere with information recorded on the sample label.

6.8 Decontamination Procedures for Sampling Equipment

Reusable sampling equipment that contacts drum contents will be decontaminated before each use. Decontamination will consist of Alconox wash or potable and deionized water rinses, as appropriate.

- Before individual sample collection, the equipment will be cleaned in an Alconox solution, rinsed with potable water, and rinsed with deionized water.
- All sampling equipment will be allowed to air dry before reuse.
- Clean sample containers will be provided as needed.

6.9 Calibration Procedures

The analytical instruments will be calibrated for target analytes in accordance with the required analytical method. The initial calibrations, continuing calibrations, and calibration evaluation will be

performed and calculated in accordance with the methods outlined in Appendix F, Instrument Calibration Procedures.

The field logs and sample record logs are discussed below.

6.10 Documentation Control

All project files will be maintained by the HLA Project Manager. All documents will be kept in project files in the field office and in HLA's Santa Ana, California office.

7.0 DATA COLLECTION QUALITY ASSURANCE PLAN

7.1 Project Description

The DCQAP has been prepared to address the collection of scientifically sound and defensible data for the removal of approximately 2,700 drums, decontamination of five ASTs, five distillation columns, two evaporators, one sump, and two storage pads at the Omega Site in Whittier, California. Adherence to this plan will ensure that the data collected by HLA are documented and of known precision, accuracy, and completeness.

This DCQAP is applicable to all HLA activities and to the management of HLA subcontractor activities in the collection and evaluation of data. The data quality objectives for the removal action are: (1) to remove approximately 2,700 drums at the site; (2) to identify the hazardous characteristics of the drums' contents; and (3) to present data that can be legally defended in a court of law.

In order to accomplish the preceding objectives, this DCQAP is designed to implement specific project procedures necessary to maintain an acceptable level of quality of technical results. This DCQAP including QC procedures and the Work Plan (Section 4.0) has been developed to meet the applicable quality guidelines of the following documents:

- EPA *Quality Assurance/Quality Control Guidance for Removal Activities under CERCLA* (April 1990)

The DCQAP and the Work Plan specify appropriate controls, responsibilities, and records requirements for observations, sample collection, and measurements. Project procedures relevant to this project and referenced in this DCQAP are contained in the Work Plan.

A complete description of the location, size, important features, and chronological history of the Site has been provided in Sections 1.2 and 1.3 of this Plan.

7.2 Project Organization and Responsibilities

Project organization and key personnel applied to each project task are outlined in Section 2.0; Organization Responsibilities and Contacts.

7.3 Quality Assurance Objectives For Measurement

The overall QA objectives are to develop and implement procedures for obtaining and evaluating data in an accurate, precise, and complete manner so that analytical data, sampling procedures, and field characterization provide information that is internally comparable and representative of actual field conditions. Furthermore, it is an objective of the QA program that data collection procedures will be sufficiently documented so that data are traceable and legally defensible in a court of law.

This DCQAP establishes procedures necessary to produce technical products of consistent quality. This uniformity will be accomplished through the formal standardization and documentation of field and laboratory techniques and activities. In addition, project deliverables will be distributed and reviewed in accordance with specific guidelines. All field and laboratory activities will be coordinated and reviewed to ensure consistency with overall project objectives. Actual field and laboratory activities will be performed by properly trained and qualified personnel and will conform to specific procedures outlined in this DCQAP and the Field Sampling Plan (Section 6.0).

Project deliverables resulting from these activities will be submitted to QA personnel to be reviewed for accuracy, precision, completeness, comparability, and representativeness. The definitions of these terms are as follows:

- Accuracy - The degree of agreement of a measurement with an accepted reference or true value.

- Precision - A measure of mutual agreement among individual measurements of the same property, usually under prescribed similar conditions. Usually expressed in terms of the standard deviation.

- Completeness - The amount of valid data obtained from a measurement system compared to the amount that was expected and needed to be obtained to meet the project data goals.

- Comparability - Expresses the confidence with which one data set can be compared to another.

- Representativeness - Refers to a sample or group of samples that reflects the characteristics of the media at the sampling point. It also includes how well the sampling point represents the actual parameter variations that are under study.

Project goals for accuracy and precision are established for the results of chemical analyses of field and laboratory QC samples. Refer to the Quality Assurance Program included in Appendix G. These goals have been subdivided by sample medium and analytical method. The goals are consistent with the standard QA/QC goals referenced for each method. If precision and accuracy goals are not specified for an analytical method in the respective published manuals, laboratory-defined criteria will be adopted. The actual precision and accuracy of the chemical analysis results will be calculated using the analytical results of field and laboratory QC samples specified in Section 7.8 and using Appendix G.

As the attainment of project precision and accuracy goals is reviewed, project goals may be revised to address site- and media-specific concerns. Such site- and media-specific QC goals may be developed, for example, in cases where complex sample matrices and sample heterogeneity prevent attainment of original precision and accuracy goals for laboratory and field QC samples.

Comparable data are obtained by consistently using standard analytical and characterization methods and standard sampling procedures, and by reporting all values in consistent units. For example, no mixtures of standard and metric units will be reported for depths, distances, elevations, etc. Results of standard and nonstandard analyses will not be compared without taking into account the potential influence of differences in methodology on sample results.

Representative data are obtained by following proper and consistent procedures for sample collection and as well as application of approved standard analytical methods. Additionally, the sampling points will adequately reflect the characteristics of the medium that is sampled.

In striving to meet the QA objectives outlined above, HLA will implement data reduction and validation procedures described in Section 7.8. QC measurements for these activities are addressed in Appendix G.

In the event of a "nonconforming" item occurrence (an occurrence that could render the quality of an item or activity unacceptable or indeterminate with respect to specific requirements), a nonconformance report will be initiated and processed in accordance with Appendix G. This procedure addresses the identification, documentation, segregation, tracking, review, approval, disposition, and notification of affected organizations concerning nonconforming items and activities. If deemed necessary, corrective action, in accordance with Section 7.13, will also be initiated.

7.4 Sampling Procedures and Field Measurements

Sampling procedures are described in detail in the SAP Field Sampling Plan (FSP) Section 6.0. The FSP provides a general description of collection and preservation methods; sample storage, shipping, and sample custody; analytical test methods; and the sample identification system.

Field parameters will be measured using instruments that have been calibrated and are operated according to the manufacturers' guidelines and recommendations. Field measurements will be recorded by a qualified HLA engineer/scientist who has been trained in the use and calibration of each instrument.

7.5 Sample Custody

To comply with the guidelines outlined in the EPA *Users Guide to the Contract Laboratory Program*, sample possession must be documented. Because samples collected during any investigation could be used as evidence in a court of law, their possession must be traceable from the time the samples are collected until they are introduced as evidence in legal proceedings. To document sample possession, chain-of-custody (COC) procedures will be followed.

In collecting samples for evidence, enough of a quantity will be collected to provide a good representation of the medium being sampled. Quantities of samples collected are predetermined by the test method for the particular analyte of interest.

The Site Chemist and the Site Supervisor will be responsible for the custody of the samples collected until they are transferred or properly dispatched. The Site Supervisor will assess whether proper custody procedures were followed during the field work and will decide if additional sample collection is required.

Samples will be accompanied by a COC record. During transfer, individuals relinquishing and receiving the samples will sign, date, and note the time on the record. The COC form will document the sample custody transfer from the sampler, through a courier, to the laboratory.

- Samples will be packaged properly for shipment and dispatched to the Del Mar Analytical Laboratory for analysis, with a separate chain-of-custody record accompanying each shipment. A copy of the COC record will be retained in the project files.

- Del Mar Analytical Laboratory will accept custody of the shipped samples and verify that the information on the sample identification tags matches that on the COC records.

- Del Mar Laboratory will use the sample identification number or assign a unique laboratory number to each sample, and ensure that all samples are transferred to the proper analyst or stored in the appropriate secure area.

- Del Mar's laboratory custodian will distribute samples to the appropriate analysts. Laboratory personnel will be responsible for the care and custody of samples from the time they are received until the sample is either exhausted or is returned to the custodian.

7.6 Calibration Procedures

The equipment used in collecting field data will include a variety of instruments. Proper maintenance, calibration, and operation of each instrument will be the responsibility of the HLA personnel assigned to each task. Instruments and equipment used during the study will be maintained, calibrated, documented for calibration, and operated according to the manufacturers' guidelines and recommendations. A list of instruments requiring calibration will be maintained for the duration of the study in a calibration notebook (see Exhibit A). A record of all instrument calibration activities also will be maintained in a Site calibration notebook. Any required service, repairs, or replaced parts will be noted.

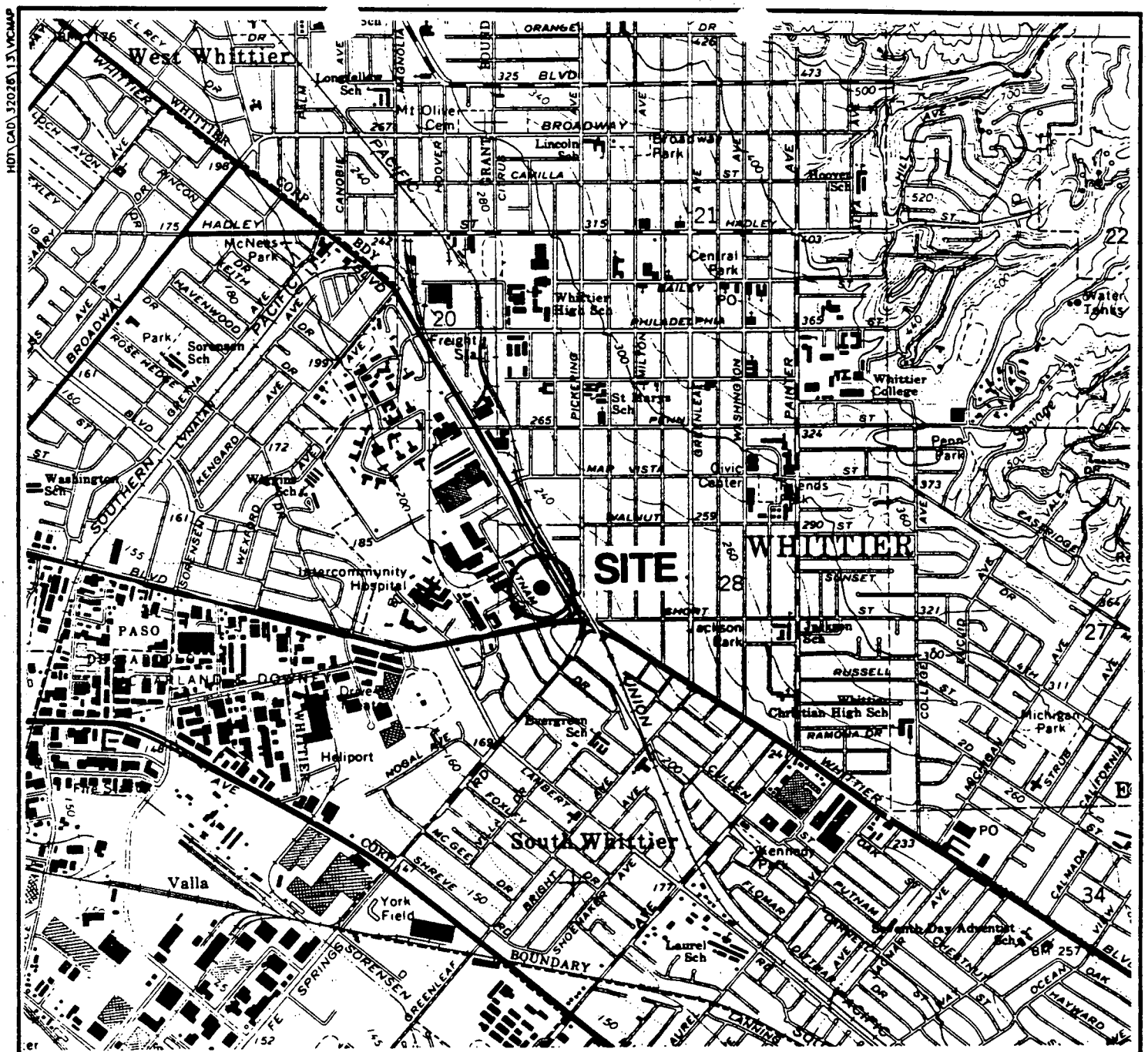
If an instrument is found, upon calibration, to have been used when it was out of calibration limits (to the extent that resultant data would be invalid), the occurrence will be considered unusual and subject to corrective action in accordance with Section 7.13.

Laboratory calibration procedures will be conducted in accordance with the approved EPA QA/QC guidelines and laboratory policies.

7.7 Analytical Procedures

In general, Del Mar Analytical will adhere to the following:

- "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," EPA Publication SW-846 [Third Edition (November, 1986), as amended by Updates I (July, 1992), II (September, 1994), and IIA (August, 1993)].



Reference: USGS 7.5-minute quadrangle, Whittier, California (photorevised 1981)

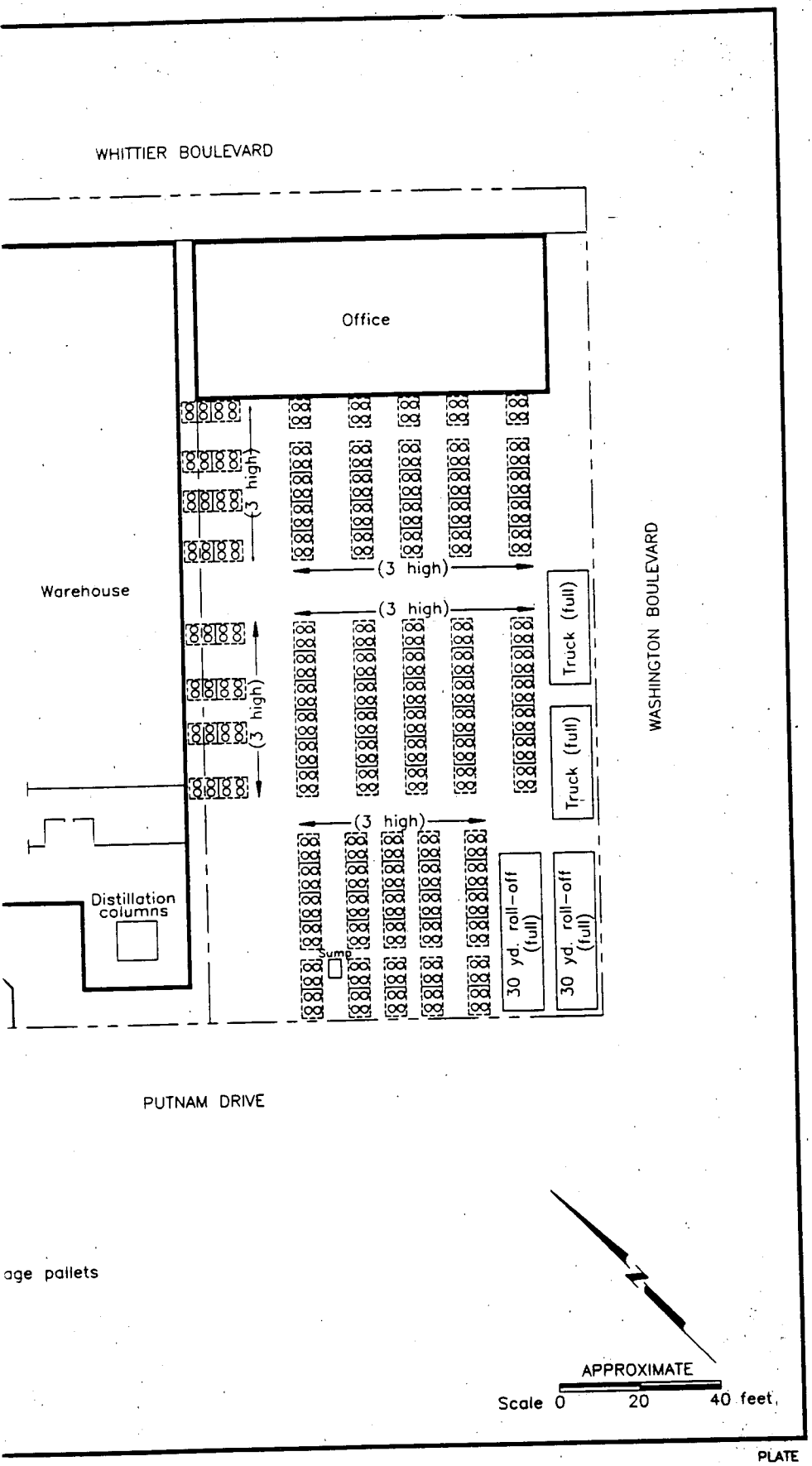
HARDING LAWSON ASSOCIATES
Engineering and Environmental Services

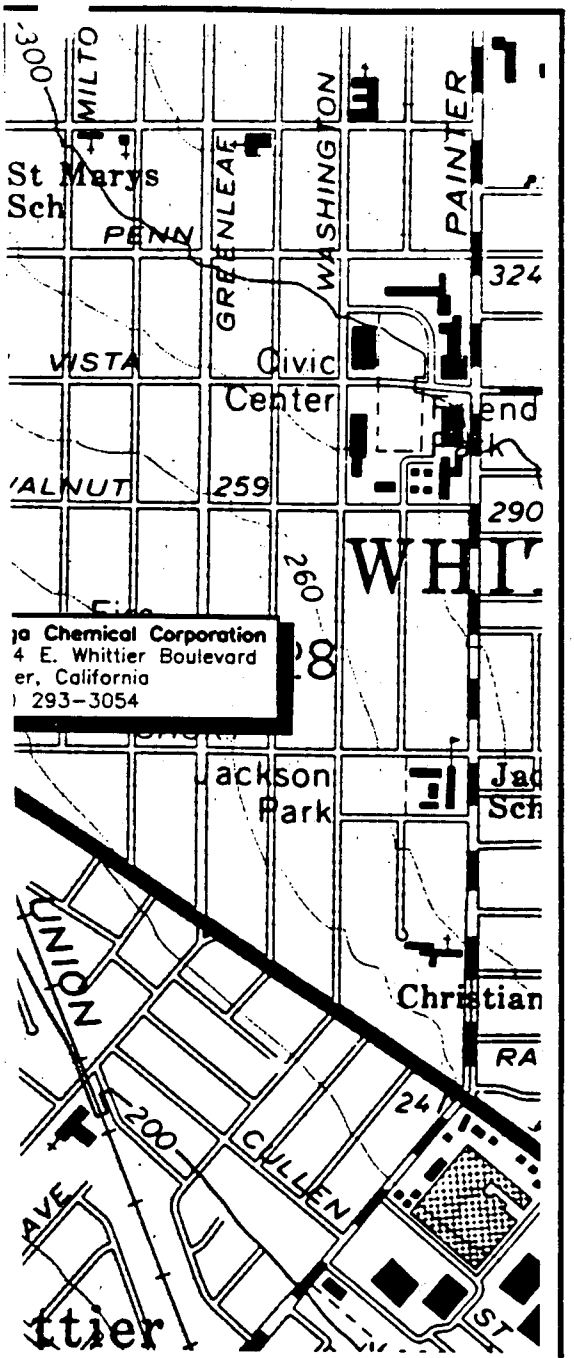
VICINITY MAP
Omega Chemical Corporation
Whittier, California

PLATE **1**

DRAWN	PROJECT-TASK NUMBER	APPROVED	DATE	REVISED DATE
JTL	32026-12		6/95	

169





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SITE PLAN
Omega Chemical Corporation
Whittier, California

PLATE **2**

CT-TASK NUMBER 2026-12 | APPROVED | DATE 6/95 | REVISED DATE

ROUTE TO HOSPITAL
Chemical Corporation
California

PLATE **3**

DATE 6/95 | REVISED DATE

170

SCALE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

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Reference: USGS 7.5-minute quadrangle, Whittier, California (photorevised 1981)

HARDING LAWSON ASSOCIATES
Engineering and
Environmental Services

TRANSPORTATION ROUTE MAP
Omega Chemical Corporation
Whittier, California

PLATE

4

DRAWN	PROJECT-TASK NUMBER	APPROVED	DATE	REVISED DATE
JTL	32026-12	(initials)	6/95	

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APPENDIX A

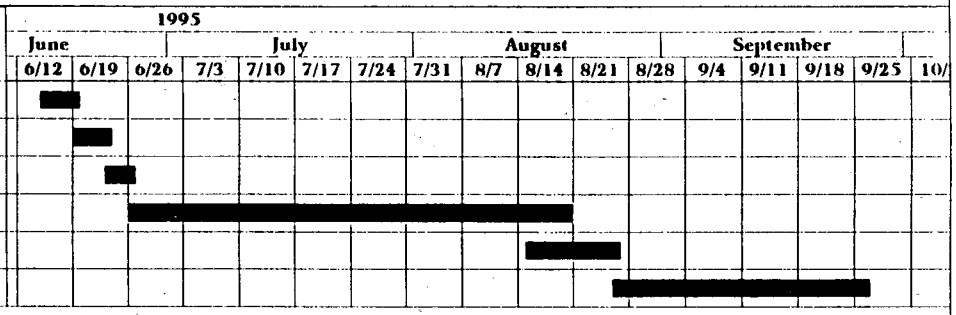
PROJECT SCHEDULE

OMEGA CHEMICAL CORPORATION

DRUM REMOVAL ACTION

Project Schedule

Task Name	Sched Start	Sched Fin
Preparation of Phase I Work Plan	06/15/95	06/19/95
EPA Approval of Work Plan	06/19/95	06/23/95
Initiate Field Activities	06/23/95	06/26/95
Drum Removal	06/26/95	08/20/95
Equipment Decontamination	08/15/95	08/26/95
Phase I Report Preparation	08/26/95	09/26/95



Harding Lawson Associates
Engineering and
Environmental Services

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APPENDIX B

ORGANIZATIONAL RESPONSIBILITIES CHART

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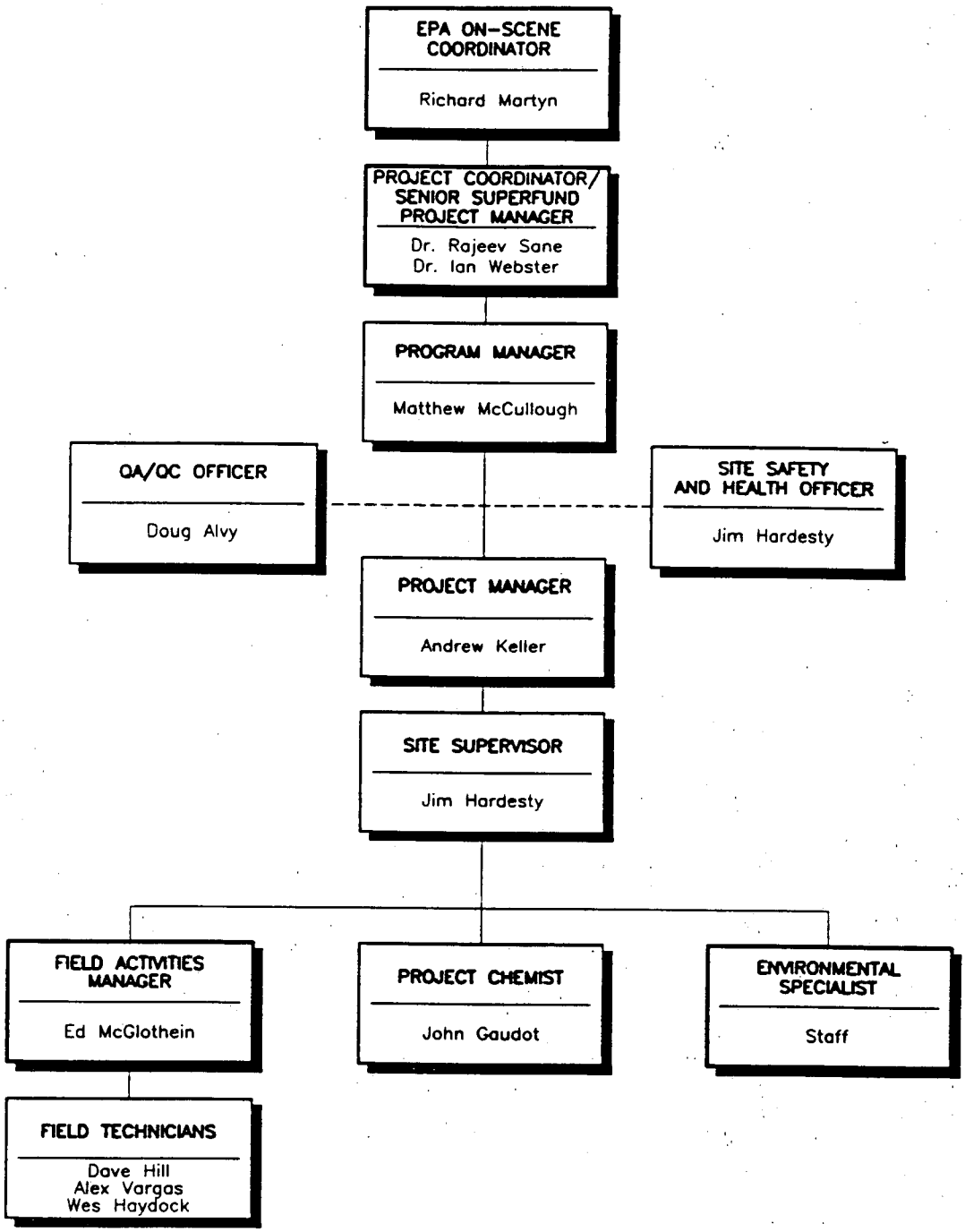

HARDING LAWSON ASSOCIATES
Engineering and
Environmental Services

ORGANIZATIONAL RESPONSIBILITIES WORKCHART
Omega Chemical Corporation
Whittier, California

PLATE

DRAWN	PROJECT-TASK NUMBER	APPROVED	DATE	REVISED DATE
JTL	32026-13		6/95	

APPENDIX C

DRUM HANDLING AND OPENING PROCEDURES

APPENDIX C

DRUM HANDLING AND OPENING PROCEDURES

1. **Identify Chemical and Physical Hazards Present when Handling Drums.**

   a. Weight - A 55-gallon steel drum filled completely with water weighs approximately 450 lbs.

   b. Equipment - Several hazards exist when using drum handling equipment. These hazards may include:

      - Falling drums
      - Personnel being struck by equipment
      - Personnel getting their hands caught between the drum and the handling equipment resulting in a pinch point injury, and
      - Drum damage (dents, punctures, lids being stripped off resulting in a spill).

2. **Procedures Required Before Drum Movement Begins.**

   a. Damaged drums that cannot be handled safely will be overpacked. The decision to overpack the drums currently onsite will be based upon the appearance of the drum. Each drum will be inspected critically for any signs of failure. Such indications as rust, pitting, paint blisters, material weeping from seams or any other irregularities will be an adequate indicator to overpack the drum. The personnel inspecting the drums will be instructed to error on the side of caution and overpack any drum which they are unsure.

   b. It is important to select a transport route that impacts the least amount of people possible.

   c. Review the need to identify spill control equipment along the transport route or the need to have a spill control station with the material as it is being transported. An appropriate spill control station may be as little as an overpack drum with absorbent material inside.

3. **Drum Handling**

   a. Drum movement crews will generally use one of the following types of drum management tools available for moving drums:

      - The use of the forks on a lift truck, provided the pallet, holding the drums is in good shape. Slings will be available to rope the drums together on the pallet when determined appropriate.
      - Drums which appear to have sufficient side wall integrity will be lifted with a "clam" drum grabber which is designed to hold the drum without excess side wall pressure. This equipment will be the preferred drum handling device.
      - Drum holders designed to grasp the top ring with a single point or two point suspension system will be available. Their use for movement of drums from storage will be minimized due to the potential crushing action of the handling equipment.

- A man lift cage for the forklifts will be available, if necessary. It's use will be minimized to avoid hazards to personnel.

b. Drum slings and barrel grabbers will not to be used to move drums over long distances.

c. Inspection of material handling equipment is essential. Damaged equipment will not be used.

d. Personnel handling drums will stay at least an arms length away from drums in order to avoid physical injury.

e. Drums will be carefully placed to minimize damage during transport

- Drums will be placed so ring bolts, valves, etc., are faced away from other drums to prevent punctures or damage.

- Palletized drums may be bound together to prevent movement which could cause damage.

4. Drum Opening Procedures

a. Approach the drum under level "B" conditions.

b. Observe the condition of the drum.

c. Look specifically for any indication of pressure.

- Does the lid bulge?

- Does the sidewall appear to be under strain?

d. If either condition is apparent - **DO NOT** open the drum until a carbon scrubber is available. Follow the pressurized drum opening procedure at that time (Step #8).

e. All opening operations are to be made **slowly**, signs of pressure release should be observed closely. Halt any operation which is releasing pressure until all signs of release stop.

f. If the drum is not under pressure and has bung type opening:

- **Slowly** open the bung away from your body and monitor the vented gas within 6 inches of the bung opening with a PID or FID. If the meter exceeds 500 ppm, close the bung and obtain a carbon scrubber unit to control the gas release.

- With a carbon scrubber pulling from the bung area, **slowly** open the bung and sample the drum. Monitor the bung area and the carbon scrubber with the meter. Hold the bung area below 500 ppm. If the scrubber exhaust exceeds 400 ppm, replace the carbon canister.

- If the meter reads less than 500 ppm, **slowly** open the bung and sample the drum with a glass rod.

- After the sample is obtained, reseal the bung and mark the drum and sample with a unique code and complete the sampling form.

g. If the drum is not under pressure and has an open top design:

- **Slowly** loosen the closure bolt. Monitor the area within 6 inches around the ring with a PID or FID meter. If the meter exceeds 500 ppm, reseal the drum and obtain a carbon scrubber.

- With a carbon scrubber pulling from the drum ring area, **slowly** release the bolt and remove the drum lid. Monitor the drum and carbon scrubber exhaust throughout the opening operation. If the drum reading exceeds 500 ppm, allow the drum to vent to the carbon and wait for the meter reading to decrease before completing the opening operation. If the scrubber exhaust exceeds 400 ppm, replace the carbon canister before proceeding.

- Complete the sampling operation as noted for a drum with bungs.

- If the meter reading remains below 500 ppm, **slowly** release the closure bolt and open the drum. Complete the sampling procedure as before.

h. Drums under pressure will be handled on a case by case basis. If the drum is equipped with a bung in good condition, it may be slightly opened and allowed the vent to a carbon scrubber. Open top drums will require a remote opening device. No pressurized drum will be processed until a full review of the condition of the drum is made.

APPENDIX D

CONFINED SPACE POLICY AND PROCEDURES

CONFINED SPACE ENTRY POLICY AND PROCEDURES

1.0 PURPOSE

To establish a program for the safe entry of confined spaces in accordance with applicable federal, state, and local requirements. This policy and procedure is taken from the federal confined space standard. For more information, please refer to the federal permit-required confined spaces standard 29 CFR 1910.146, which is included as Attachment A of this policy.

2.0 GENERAL

A. **Application.** This policy applies to all HLA operations to protect our employees from the hazards of entry into permit-required confined spaces.

B. **Definitions:**

Attendant means an individual stationed outside one or more permit spaces who monitors the personnel authorized entry into the space and who performs all attendant's duties assigned in the employer's permit space program.

Authorized entrant means an employee who is authorized by the Site Supervisor to enter a permit space.

Confined space

1. Is large enough and so configured that an employee can bodily enter and perform assigned work; and

2. Has limited or restricted means for entry to exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and

3. Is not designed for continuous employee occupancy.

Emergency means any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.

Entry means the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

Entry permit (permit) means the written or printed document that is provided by the Site Supervisor to allow and control entry into a permit space.

Entry supervisor means the person (such as the Site Supervisor, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section.

Hazardous atmosphere means an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

1. Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL) or lower explosive limit (LEL);

2. Airborne combustible dust at a concentration that meets or exceeds its LFL or LEL;

   Note: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52 m) or less.

3. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;

4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, *Occupational Health and Environmental Control*, or in Subpart Z, *Toxic and Hazardous Substances*, of 29 CFR 1910 and which could result in employee exposure in excess of its dose or permissible exposure limit;

   Note: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision of the standard.

5. Any other atmospheric condition that is immediately dangerous to life or health.

   Note: For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Material Safety Data Sheets that comply with the Hazard Communication Standard, §1910.1200 of 29 CFR, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

Immediately dangerous to life or health (IDLH) means any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

Isolation means the process by which a permit space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages.

Non-permit confined space means a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

Oxygen deficient atmosphere means an atmosphere containing less than 19.5 percent oxygen by volume.

Oxygen enriched atmosphere means an atmosphere containing more than 23.5 percent oxygen by volume.

Permit-required confined space (permit space) means a confined space that has one or more of the following characteristics:

1. Contains or has a potential to contain a hazardous atmosphere;

2. Contains a material that has the potential for engulfing an entrant;

3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross section; or

4. Contains any other recognized serious safety or health hazard.

Permit-required confined space program (permit space program) means the Site Supervisor's overall program for controlling, and, where appropriate, for protecting employees from, permit space hazards and for regulating employee entry into permit spaces.

Permit system means the Site Supervisor's written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

Retrieval system means the equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.

Testing means the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

Note 1. All employees, including standby persons required to enter confined spaces as identified in the project's Job Safety Plan (JSP) shall be trained in the operating and rescue procedures for safe entry of confined spaces.

Note 2. In addition to the requirements defined in this HLA procedure, HLA employees shall comply with all client rules, other more stringent government (i.e., OSHA) regulations, and permit requirements for confined space entry.

Note 3. Where client rules or more stringent regulations that govern confined space entry do not exist, HLA employees shall comply with the requirements of this procedure as a minimum.

C. **General requirements**

1. The HLA Site Supervisor shall evaluate the workplace to determine if any spaces are permit-required confined spaces.

2. If the workplace contains permit spaces, HLA shall inform exposed employees, by posting danger signs or by any other equally effective means, of the existence and location of and the danger posed by the permit spaces.

   Note: A sign reading "DANGER–PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER" or using other similar language would satisfy the requirement for a sign.

3. If the Site Supervisor decides that site employees will not enter permit spaces, the Site Supervisor shall take effective measures to prevent its employees from entering the permit spaces.

4. If the Site Supervisor decides that its employees will enter permit spaces, the employees will enter only after completing a written permit space entry. The written program shall be available for inspection by employees and their authorized representatives.

5. Entry procedures:

   a. Before an employee enters the space, the internal atmosphere shall be tested, with a calibrated direct-reading instrument, for the following conditions in the order given:

      1) Oxygen content,

      2) Flammable gases and vapors, and

      3) Potential toxic air contaminants.

   b. There may be no hazardous atmosphere within the space whenever any employee is inside the space.

   c. Continuous forced air ventilation shall be used as follows:

      1) An employee may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere;

      2) The forced air ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space;

      3) The air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.

   d. The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.

   e. If a hazardous atmosphere is detected during entry:

      1) Each employee shall leave the space immediately;

2) The space shall be evaluated to determine how the hazardous atmosphere developed; and

3) Measures shall be implemented to protect employees form the hazardous atmosphere before any subsequent entry takes place.

f. The Site Supervisor shall verify that the space is safe for entry, through a written certification that contains the date, the location of the space, and the signature of the person providing the certification. The certification shall be made available to each employee entering the space.

6. When there are changes in the use or configuration of a non-permit confined space that might increase the hazards to entrants, the Site Supervisor shall reevaluate the space and, if necessary, reclassify it as a permit-required confined space.

7. A space classified by the Site Supervisor as a permit-required confined space may be reclassified as a non-permit confined space under the following procedures:

a. If the permit space poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated without entry into the space, the permit space may be reclassified as a non-permit confined space for as long as the non-atmospheric hazards remain eliminated.

b. If it is necessary to enter the permit space to eliminate hazards, entry shall be made using the procedures set forth in paragraphs d-k of this policy. If testing and inspection during the entry demonstrate that the hazardous within the permit space have been eliminated, the permit space may be reclassified as a non-permit confined space.

Note: Control of atmospheric hazards through forced air ventilation does not constitute elimination of the hazards.

c. The Site Supervisor shall document the basis for determining that all hazards in a permit space have been eliminated, through a certification that contains the date, the location of the space, and the signature of the person making the determination. The certification shall be made available to each employee entering the space. Should HLA arrange to have employees of another employer (contractor) perform work involving permit entry, HLA will communicate known hazards and check that the subcontractor has a written permit required confined spaces program.

8. In addition to complying with the permit space requirements, the HLA Site Supervisor shall:

a. Obtain any available information regarding permit space hazards and entry operations from the host client;

b. Coordinate entry operations with the host client; and

c. Inform the host client of the permit space program that the contractor will follow and of any hazards confronted or created in permit spaces, either through a debriefing or during the entry operation.

D. **Permit-required confined space program.** The HLA Site Supervisor will

1. Implement the measures necessary to prevent unauthorized entry;

2. Identify and evaluate the hazards of permit spaces before employees enter them;

3. Develop and implement the means, procedures, and practices necessary for safe permit space entry operations;

4. Provide

   a. Testing and monitoring equipment

   b. Ventilating equipment needed to obtain acceptable entry conditions;

   c. Communications equipment

   d. Personal protective equipment insofar as feasible engineering and work practice controls do not adequately protect employees;

   e. Lighting equipment as needed

   f. Barriers and shields

   g. Equipment, such as ladders, needed for safe ingress and egress by authorized entrants;

   h. Rescue and emergency equipment as needed.

   i. Any other equipment necessary for safe entry into and rescue from permit spaces.

5. Evaluate permit space conditions as follows when entry operations are conducted:

   a. Test conditions in the permit space to determine if acceptable entry conditions exist before entry is authorized to begin using the Entry Permit (see attachment);

   b. Test or monitor the permit space as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations; and

   c. When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.

6. Provide at least one attendant outside the permit space into which entry is authorized for the duration of entry operations.

7. Develop procedures for summoning rescue and emergency services, for rescuing entrants from permit spaces, and providing necessary emergency services to rescued employees, and for preventing unauthorized personnel from attempting a rescue.

8. Review entry operations when the Site Supervisor has reason to believe that the measures taken under the permit space program may not protect employees and revise the program to correct deficiencies found to exist before subsequent entries are authorized.

9. Review the permit-required confined space program, using the canceled permits, **within 1 year** after each entry and revise the program as necessary, to ensure that employees participating in entry operations are protected from permit space hazards.

E. **Permit system**

1. Before entry is authorized, the Site Supervisor shall document the completion of measures required by completing the entry permit (see Attachment B).

F. **Entry permit.** The entry permit that documents compliance with this section and authorizes entry to a permit space shall identify:

1. The permit space to be entered;

2. The purpose of the entry;

3. The date and the authorized duration of the entry permit;

4. The authorized entrants within the permit space, by name;

5. The personnel, by name, currently serving as attendants;

6. The individual, by name, currently serving as entry supervisor, with a space for the signature or initials of the entry supervisor who originally authorized entry;

7. The hazards of the permit space to be entered;

8. The measures used to isolate the permit space;

9. The results of initial and periodic tests performed by an indication of when the tests were performed;

10. The communication procedures used by authorized entrants;

11. Equipment, such as personal protective equipment and testing equipment.

G. **Training.**

1. The employer shall provide training so that all employees engaged in confined space work acquire the understanding, knowledge, and skills necessary for the safe performance of their duties.

2. The employer shall certify that the training has been accomplished. The certification shall contain each employee's name, the signatures or initials of the trainers, and the dates of training. The certification shall be available for inspection by employees and their authorized representatives.

H. **Duties of authorized entrants.** The authorized entrants shall:

1. Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;

2. Properly use equipment;

3. Communicate with the attendant as necessary;

4. Alert the attendant when

   a. The entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or

   b. The entrant detects a prohibited condition; and

   c. Exit from the permit space as quickly as possible whenever:

      1) An order to evacuate is given

      2) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation;

      3) The entrant detects a prohibited condition; or

      4) An alarm is activated.

I. **Duties of attendants.** The Site Supervisor ensures that each attendant:

1. Knows the hazards that may be faced during entry;

2. Is aware of possible behavioral effects of hazard exposure in authorized entrants;

3. Continuously maintains an accurate count of authorized entrants in the permit space;

4. Remains outside the permit space during entry operations until relieved by another attendant;

5. Communicates with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space;

6. Monitors activities inside and outside the space to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately under any of the following conditions;

   a. If the entrant detects a prohibited condition;

   b. If the attendant detects the behavioral effects of hazard exposure in an authorized entrant;

   c. If the attendant detects a situation outside the space that could endanger the authorized entrants; or

   d. If the attendant cannot effectively and safely perform all the duties required.

7. Summon rescue and other emergency services;

8. Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway:

   a. Warn the unauthorized persons that they must exit immediately if they have entered the permit space; and

   b. Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.

9. Performs non-entry rescues as specified by the Site Supervisor's rescue procedure; and

10. Performs no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

J. **Duties of entry supervisors.** The Site Supervisor shall ensure that each entry supervisor shall:

1. Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;

2. Verify, by checking that the appropriate entries have been made on the permit;

3. Verify that rescue services are available and that the means for summoning them are operable;

4. Remove unauthorized individuals who enter or who attempt to enter the permit space;

5. Determine that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.

K. **Rescue and emergency services.**

1. The following requirements apply to Site Supervisors who have employees enter permit spaces to perform rescue services.

   a. The Site Supervisor shall ensure that each member of the rescue service is provided with, and is trained to use properly, the personal protective equipment and rescue equipment necessary for making rescues from permit spaces.

   b. Each member of the rescue service shall be trained to perform the assigned rescue duties. Each member of the rescue service shall also receive the training required of authorized entrants.

   c. Each member of the rescue service shall practice making permit space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, manikins, or actual persons from the actual permit spaces or from representative permit spaces. Representative permit spaces shall, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which rescue is to be performed.

   d. Each member of the rescue service shall be trained in basis first-aid and in cardiopulmonary resuscitation (CPR). At least one member of the rescue service holding current certification in first aid and CPR shall be available.

2. When a Site Supervisor arranges to have persons other than the Site Supervisor's employees perform permit space rescue, the Site Supervisor shall:

   a. Inform the rescue service of the hazards they man confront when called on to perform rescue at the Site Supervisor's facility, and

   b. Provide the rescue service with access to all permit spaces from which rescue may be necessary so that the rescue service can develop appropriate rescue plans and practice rescue operations.

3. To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. Retrieval systems shall meet the following requirements.

   a. Each authorized entrant shall use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, or above the entrant's head. Wristlets may be used in lieu of the chest or full body harness if the Site Supervisor can demonstrate that the use of a chest or full body harness is infeasible or creates a greater hazard and that the use of wristlets is the safest and most effective alternative.

b. The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet deep.

4. If an injured entrant is exposed to a substance for which a Material Safety Data Sheet (MSDS) or other similar written information is required to be kept at the work site, that MSDS or written information shall be made available to the medical facility treating the exposed entrant.

6.1 Confined Space Policy

Attachment A

(Confined Space Entry Permit)
(2 pages)

All copies of permit will remain at job site until job is completed

CONFINED SPACE ENTRY PERMIT

Date _____ Job Number _____

Location _____

Description _____

Purpose of Entry _____

Effective date(s) and time(s) _____ Expiration date(s) and time(s) _____

	Signatures	Date
Site supervisor		
Entry supervisor		
Site Safety and Health Officer		
E[illegible]nt name(s)		
[illegible]rtification of training current		
Stand-by name(s) (Must have current first aid and CPR)		

NOTE: Signatures indicate understanding of hazards as well as an understanding and acceptance of entry procedures. The Entry Supervisor signature also authorizes the entry.

J6494

All copies of permit will remain at job site until job is completed

CONFINED SPACE ENTRY PERMIT (continued)

HAZARDOUS WORK	Yes	No
Burning (Hot work permit required)		
Welding (Hot work permit required)		
Brazing (Hot work permit required)		
Open Flame (Hot work permit required)		
Steam Cleaning		
Other		

SPECIAL REQUIREMENTS	Yes	No
Lockout - De-energize/Tag-out		
Lines Broken - Capped or Blanked		
Purge - Flush and vent		
Ventilation		
Secure Area/Barricading		
Resuscitator - Inhalator		
Buddy System		
Shields/Barriers		
Emergency Egress Procedures in SSHP		
Tripod Emergency Escape Unit		
Lifelines and Escape Harness		
Fire Extinguishers		
Lighting		
Communications (e.g., hand signals and emergency)		
Protective Clothing as specified in SSHP		
Respirator as specified in SSHP		
Supplied Air as specified in SSHP		
Evacuation Alarm		
Other		

HAZARDS EXPECTED LISTED IN SSHP	Yes	No
Corrosive Materials		
Hot Equipment		
Flammable Materials		
Toxic Materials		
Drains Open		
Cleaning (e.g., chemical or water lance)		
Spark Producing Operations		
Spilled Liquids		
Pressure Systems		
Other		

TEST(S) TO BE TAKEN	Action Level	Yes	No
% Oxygen	<19.5% or >23.5%		
% LEL	Any % over 10		
Hydrocarbon/Volatile	5 ppm		
Carbon Monoxide	50 ppm		
Hydrocyanic Acid	10 ppm		
Hydrogen Sulfide	10 ppm		
Sulfur Dioxide	5 ppm		
Ammonia	25 ppm		
Dust	Meet/Exceed LEL		
Other			

NOTE: All confined spaces shall be tested for oxygen, % LEL, and toxic contaminants before entry. Continuous/periodic tests shall be conducted while person is inside the confined space.

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CONFINED SPACE ENTRY PERMIT (continued)

Original is kept in DSHO's office. All field copies are to be returned to DSHO at job completion

Air Monitoring Log
Annotate pre-entry and post-entry air test results

Date	Time	Instrument (include model number)	Reading Location	Reading	Tester

Monitoring Diagram

Emergency Numbers

Ambulance_____

Fire_____

Hospital_____

Signatures Date
(Acknowledgement of intent to enter confined space)

_____
Project Manager

_____
Site Supervisor

_____
Site Safety and Health Officer

_____
DSHO

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APPENDIX E

SAFETY CHECKLIST

DRIVER'S INSPECTION REPORT

(SEE INSTRUCTIONS ON REVERSE SIDE)

MAINTENANCE CHECK DEFECTS ONLY. Explain under REMARKS C 338501

COMPLETION OF THIS REPORT REQUIRED BY FEDERAL LAW, 49CFR 396.11 & 396.13.

Truck or Tractor No. _____ Mileage (No Tenths) | | | | | | | Trailer No. _____

Dolly No. _____ Trailer No. _____ Location: _____

ATA/VMRS System Code Numbers for Shop Use Only

© 1980 American Trucking Associations, Inc.

POWER UNIT

GENERAL CONDITION

- ☐ 02 Cab/Doors/Windows
- ☐ 02 Body/Doors
- ☐ __ Oil Leak _____
- ☐ __ Grease Leak _____
- ☐ 42 Coolant Leak
- ☐ 44 Fuel Leak
- ☐ __ Other _____ (IDENTIFY)

ENGINE COMPARTMENT

- ☐ 45 Oil Level
- ☐ 42 Coolant Level
- ☐ __ Belts _____
- ☐ __ Other _____ (IDENTIFY)

IN-CAB

- ☐ 03 Gauges/Warning Indicators
- ☐ 02 Windshield Wipers/Washers
- ☐ 54 Horn(s)
- ☐ 01 Heater/Defroster
- ☐ 02 Mirrors
- ☐ 15 Steering
- ☐ 23 Clutch
- ☐ 13 Service Brakes
- ☐ 13 Parking Brake
- ☐ 13 Emergency Brakes
- ☐ 53 Triangles
- ☐ 53 Fire Extinguisher
- ☐ 53 Other Safety Equipment
- ☐ 34 Spare Fuses
- ☐ 02 Seat Belts
- ☐ __ Other _____ (IDENTIFY)

EXTERIOR

- ☐ 34 Lights
- ☐ 34 Reflectors
- ☐ 16 Suspension
- ☐ 17 Tires
- ☐ 18 Wheels/Rims/Lugs
- ☐ 32 Battery
- ☐ 43 Exhaust
- ☐ 13 Brakes
- ☐ 13 Air Lines
- ☐ 34 Light Line
- ☐ 49 Fifth-Wheel
- ☐ 49 Other Coupling
- ☐ 71 Tie-Downs
- ☐ 14 Rear-End Protection
- ☐ __ Other _____ (IDENTIFY)

☐ NO DEFECTS

TOWED UNIT(S)

- ☐ 71 Body/Doors
- ☐ 71 Tie-Downs
- ☐ 34 Lights
- ☐ 34 Reflectors
- ☐ 16 Suspension
- ☐ 17 Tires
- ☐ 18 Wheels/Rims/Lugs
- ☐ 13 Brakes
- ☐ 77 Landing Gear
- ☐ 59 Kingpin/Upper Plate
- ☐ 59 Fifth-Wheel (Dolly)
- ☐ 59 Other Coupling Devices
- ☐ 79 Rear-End Protection
- ☐ __ Other _____ (IDENTIFY)

☐ NO DEFECTS

REMARKS: _____

REPORTING DRIVER: Date _____ Name _____ Emp. No. _____

REVIEWING DRIVER: Date _____ Name _____ Emp. No. _____

MAINTENANCE ACTION: Date _____

Repairs Made ☐ No Repairs Needed ☐

R.O.#'s _____

Certified By: _____

Location: _____

SHOP REMARKS: _____

Reorder From: American Trucking Associations, 2200 Mill Road, Alexandria, VA 22314 1 800 ATA LINE

ATA FORM C0830 (REV. 1-80)

3. The pump may be handled during operation (weighing from 8 to 11 ounces) or it may be an automatic type (weighing about 4 pounds) that collects a sample using a preset number of pump strokes. A full pump stroke of either type of short-term pump has a volume of about 100 cubic centimeters (cm^3).

4. In most cases where only one pump stroke is required, sampling time is about on minute. Determinations for which more pump strokes are required take proportionately longer.

Leakage Test

1. Each day before use, perform a pump leakage test by inserting an unopened detector tube into the pump and attempt to draw in 100 ml of air. After a few minutes, check for pump leakage by examining pump compression for bellows-type pumps or return to resting position for piston-type pumps. Automatic pumps should be tested according to the manufacturer's instructions.

2. In the event of leakage that cannot be repaired in the field, notify the DSHO to expedite repairs.

3. Record leakage test on the HLA Air Monitoring Calibration Form.

Calibration Test

1. Calibrate the detector tube for proper volume measurement at least quarterly.

2. Simply connect the pump directly to the bubble meter with a detector tube in-line. Use a detector tube and pump from the same manufacturer.

3. Wet the inside of the 100 cm^3 bubble meter with soap solution.

4. For volume calibration, experiment to get the soap bubble even with the zero mark of the buret.

   a. For piston-type pumps, pull the pump handle all the way out (full pump stroke) and note where the soap bubble stops; for bellows-type pumps, compress the bellows fully; for automatic pumps, program the pump to take a full pump stroke. For either type pump, the bubble should stop between the 95 cm^3 and 105 cm^3 marks. Allow four minutes for the pump to draw the full amount of air (This time interval varies with the type of detector tube being used in-line with the calibration setup).

   b. Also check the volume of 50 cm^3 (1/2 pump stroke) and 25 cm^3 (1/4 pump stroke) if pertinent. As in Section 1 above, a ± 5 percent error is permissible. If error is greater that ± 5 percent, send the pump for repair and recalibration.

5. Record the calibration information required on the Calibration Log.

6. It may be necessary to clean or replace the rubber bung or tube holder if a large number of tubes have been taken with the pump.

Additional Information

1. Draeger, Model 31 (bellows)

   When checking the pump for leaks with an unopened tube, the bellows should not be completely expanded after 10 minutes.

2. Draeger, Quantimeter 1000, Model 1 (automatic)

   A battery pack is an integral part of this pump. The pack must be charged before initial use. One charge is good for 1000 pump strokes. During heavy use, it should be recharged daily. If a "U" (undervoltage) message is continuously displayed in the readout window of this pump, the battery pack should be immediately recharged.

3. Mine Safety Appliances, Sampler Pump, Model A, Part No. 463998 (piston)

   The pump contains a flow rate control orifice protected by a plastic filter that periodically needs to be cleaned or replaced. To check the flow rate, the pump is connected to a buret and the piston is withdrawn to the 100-ml position with no tube in the tube holder. After 24 to 26 seconds, 80 ml of air should be admitted to the pump. Every six months, the piston should be relubricated with the oil provided.

4. Sensidyne-Gastec, Model 800, Part No. 7010657-1 (piston)

   This pump can be checked for leaks as mentioned for the Kitagawa pump; however, the handle should be released after one minute. Periodic relubrication of the pump head, the piston gasket, and the piston check valve is needed and is use-dependent.

Special Considerations

1. Detector tubes should be refrigerated when not in use to prolong shelf life.
2. Detector tubes should not be used when cold. They should be kept at room temperature or in a shirt pocket for one hour before use.
3. Lubrication of the piston pump may be required if volume error is greater than 5 percent.

COMBUSTIBLE GAS INDICATOR (Model 361 or equivalent)

Theory of Operation

The Model 361 Hydrogen Sulfide combustible gas and oxygen sensors operate simultaneously. Each sensing circuit is equipped with an individual, visual alarm descriptor. There is a common, pulsating audible alarm. One position of the FUNCTION switch enables the audible alarm to be turned off, if so desired. The alarm descriptors will remain on until the concentration returns to within the alarm setpoints and the reset button is depressed.

A low-battery alarm will activate the BATT descriptor on the display and a continuous, steady-sounding audible alarm. This steady sound indicates that the Model 361 must be removed from service and charged in a nonhazardous area.

> WARNING: Exposure of the combustible gas sensor to a concentration high enough to cause the readout to indicate a reading higher that 100 percent Lower Explosive Limit (LEL) will cause the readout to latch. When latched, the LEL readout will be blank and the descriptors for OVER and LEL ALARM will appear. This latching circuit is a warning that the gas concentration has exceeded the LEL and that all personnel must evacuate the area.

This latching circuit can be reset by removing the Model 361 to an area known to be free of combustible gas (fresh air) and turning off the instrument. The Model 361 can then be turned on and rezeroed in fresh air. This latch circuit does not operate during the first 30 seconds after turning on the instrument, thus providing sufficient time for sensor warm-up and rezeroing.

Toxic Gas Sensor

The toxic gas sensor used in the Model 361 is a membrane-sealed electrochemical cell. The cell requires an external voltage source to function and produces a current output that is proportional to the amount of H_2S present. The H_2S diffuses through the front membrane of the cell and is oxidized at the working electrode. Current flows through the liquid electrolyte (acid solution) to the counter/reference electrode where oxygen reduction occurs. The amount of current produced for a concentration of H_2S is dependent on the voltage across the working reference electrodes as well as the electrode materials and the electrolyte. The choice of the particular noble metal electrodes and the setting of the cell voltage optimizes the sensor for the detection of H_2S.

The current from the cell is fed to a current-to-voltage converter. This voltage signal is applied to an amplifier that drives the toxic gas readout and provides and input for an alarm comparator circuit.

Combustible Gas Sensor

The flammable properties of combustible gases are used as the basis of detection. The sensor consists of a pair of pelletized filaments called Pelements™ arranged in an electrically balanced bridge circuit. The detector pelement is treated with a catalyst that causes the combustible gases to combine with oxygen at much lower temperatures than would be required for normal burning. The inactive compensator pelement is also exposed to the sample flow and acts to offset any electrical changes caused by flow conditions, sample temperature, pressure, and/or humidity.

Combustible gases in the sample combine with oxygen in the air at the surface of the catalyzed detector pelement. Heat is liberated by this chemical reaction, thus increasing the temperature of the pelement and causing an associated increase in the pelement electrical resistance.

Increased resistance of the detector pelement unbalances the bridge circuit, causing a voltage change at the mid-point connection between the detector pelement and the compensating pelement. This voltage signal is applied to an amplifier that drives the combustible gas readout and provides an input for an alarm comparator circuit.

Oxygen Sensor

The oxygen sensor is a galvanic type cell containing gold and lead electrodes in a potassium hydroxide solution. The cell is sealed with a membrane that allows oxygen to diffuse into the active area. The current generated by the cell is proportional to the oxygen partial pressure in the atmospheric sample passing over the face of the membrane. The generated current passes through a resistance to provide a voltage input signal for an amplifier. The output of the amplifier drives the oxygen readout and also serves as an input to the alarm comparator circuit.

The following instructions detail the procedures for operation and calibration of the MSA Model 361 Combustible Gas Indicator.

Operating Instructions

The Model 361 oxygen calibration and toxic and combustible zero checks must be made in fresh air or with the inlet end of the sampling line in fresh air.

1. Turn the FUNCTION control to the HORN OFF position; the HORN OFF indicator will light and the descriptor percent LEL will show in the readout.
2. Set the readout to zero (00) by adjusting the LEL ZERO control (NOTE: this must be done within 30 seconds of turning ON to prevent the possibility of activating the off-scale LEL latching alarm).
3. Press the SELECT button firmly to obtain percent OXY on the readout; then set the readout to 20.8 percent by adjusting the OXY CALIBRATE control.
4. Press the SELECT button firmly to obtain PPM TOX on the readout; then set the readout to zero (00) by adjusting the TOX ZERO control.
5. Press the RESET button.
6. Turn the FUNCTION control to MANUAL for continuous readout of any one gas or to SCAN for automatic scanning of the three gas readings. (NOTE: All alarm functions operate in either position.)

7. Momentarily place a finger over the sample inlet fitting or the end of the sample line, if one is used. Observe that the FLOW indicator float drops, indicating no flow. If it does not, check the flow system and sample line for leaks.

8. The instrument is ready for calibration.

   WARNING: If an alarm is indicated by an ALARM or OVER sign in the readout or a pulsing horn, evacuate personnel from the area and notify the safety officer.

   A low battery condition is indicated by a BATT sign in the readout or by a steady horn; remove the Model 360 or 361 and recharge in a nonhazardous area to prevent potential ignition of combustible atmospheres.

Model 361 Calibration

1. Attach the flow control to the 0.75 percent pentane/15 percent oxygen calibration gas tank.

2. Connect the adapter-hose to the flow control.

3. Open the flow control valve.

4. Connect the adapter-hose fitting to the inlet of the instrument; within 30 seconds, the LEL meter should stabilize and indicate between 47 and 55 percent. If the indicator is not in the correct range, remove the right end of the indicator and adjust the LEL SPAN control to obtain 50 percent.

5. Verify the oxygen reading; it should be between 13 and 17 percent.

6. Disconnect the adapter-hose fitting from the instrument.

7. Close the flow control valve.

8. Remove the flow control from the calibration gas tank.

9. Attach the flow control to the 10 ppm hydrogen sulfide calibration gas tank (40 ppm gas may be used; the choice of H_2S calibration will depend on concentrations anticipated in the work place).

10. Open the flow control valve.

11. Connect the adapter-hose fitting to the inlet of the instrument; after approximately one minute, the TOX readout should stabilize and indicate between 7 to 13 ppm (35 to 45 ppm for 40 ppm H_2S). If the indication is not in the correct range, remove the right end of the indicator and adjust the TOX SPAN control to obtain 10 ppm (40 ppm for 40 ppm H_2S).

12. Disconnect the adapter-hose fitting from the instrument.

13. Close the flow control valve.

14. Remove the adapter-hose from the flow control.

15. Remove the flow control from the calibration gas tank.

CAUTION: Calibration gas tank contents are under pressure. Do not use oil, grease, or flammable solvents on the flow control or the calibration gas tank. Do not store calibration gas tank near heat or fire, nor in rooms used for habitation. Do not throw in fire, incinerate, or puncture. Keep out of the reach of children. It is illegal and hazardous to refill this tank. Do not attach any gas tank other than MSA calibration tanks to the flow control.

APPENDIX F

INSTRUMENT CALIBRATION PROCEDURES

APPENDIX F
INSTRUMENT CALIBRATION PROCEDURES

This appendix presents Harding Lawson Associates' (HLA's) standard operating procedures for field calibration and maintenance of direct reading instruments, personal sampling pumps, and detector tubes that may be used during field activities. Each equipment item is described and the calibration, operation, and maintenance procedures are detailed to the extent necessary to ensure proper care and use. Detailed procedures are provided in instrument-specific manuals from each manufacturer.

These standard operating procedures are intended to ensure that equipment is properly maintained and operated. These procedures were developed on the basis of the following assumptions:

- Procedures are consistent with the manufacturer's calibration, operation, and maintenance guidelines.
- Equipment calibration, operation, and maintenance procedures will be performed by properly trained HLA personnel.
- Only designated personnel will calibrate, operate, and maintain certain instruments.
- Records will be maintained to allow tracking of the calibration, operation, and maintenance of a given instrument.

PHOTOIONIZATION DETECTOR (HNU PI 101/HNU DL101/PHOTOVAC MICROTIP)

Theory of Operation

The portable photoionization detector (PID) detects the concentration of organic gases as well as a few inorganic gases. The basis for detection is the ionization of gaseous species. Every molecule has a characteristic ionization potential (IP) that is the energy required to remove an electron from the molecule, yielding a positively charged ion and the free electron. The incoming gas molecules are subjected to ultraviolet (UV) radiation, which is energetic enough to ionize many gaseous compounds. Each molecule is transformed into charged ion pairs, creating a current between two electrodes.

Three lamps, each containing a different UV light source, are available for use with most PIDs. Ionizing energies of the lamp are 9.5, 10.2, and 11.7 electron volts (eV). All three detect many aromatic and large molecule hydrocarbons. The 10.2 eV and 11.7 eV probes, in addition, detect some smaller organic molecules and some halogenated hydrocarbons. The 10.2 eV lamp is the most useful for environmental response work because it is more durable than the 11.7 eV lamp and detects more compounds than the 9.5 eV lamp. The following sections detail the proper calibration and field maintenance methods to be used with these PIDs.

HNU PI 101

The HNU PI 101 PID is designed for trace gas analysis in ambient air. The HNU PI 101 is factory-calibrated with certified standards of benzene, vinyl chloride, and isobutylene, with the reference standard being benzene. Because of the inherent toxicological risks associated with benzene and vinyl chloride, the primary calibration standard to be used should be isobutylene. When calibrating the unit with 100 parts per million (ppm) isobutylene, the SPAN control should be set at 9.8 and the unit should read approximately 70 ppm. This method of calibration converts the response of the unit to isobutylene to yield a direct reading of benzene that is based on the response factor of the unit using a 10.2 eV probe at a span setting of approximately 9.8. More simply stated, the required reading for calibration will be as follows:

$$= \text{Isobutylene ppm} \times \frac{\text{photoionization sensitivity (isobutylene)}}{\text{photoionization sensitivity (benzene)}}$$

$$= 100 \times 7/10$$

$$= 70 \text{ ppm}$$

When using probes with 9.5 eV or 11.7 eV lamps, consult the user's manual for photoionization sensitivities and required SPAN control settings because these units may change for each individual lamp.

In cases where hazardous chemicals have been identified, the HNU PI 101 can also be calibrated to provide direct reading results of these chemicals. Please consult the user's manual and the Designated Safety and Health Officer (DSHO) to select chemicals for concern of appropriate calibration. The steps calibration method for the HNU PI 101 with a 10.2 eV lamp follows:

1. Identify the probe by the lamp label. If a question exists, disassemble the probe and inspect the lamp. The energy of the lamp should be etched into the glass envelope.
2. Connect the probe to the readout assembly, making sure the red interlock switch is depressed by the ring on the connector
3. Set the SPAN control potential to 9.8.
4. Battery check - turn the function switch to BATT. The needle should be in the green region. If it is not, recharge the battery.
5. Zero set - turn the function switch to STANDBY. In this position, the lamp is off and no signal is being generated. Allow the unit to sit for a minute to warm the parts. Set the ZERO point with the ZERO set control.
6. Fill a dedicated tedlar bag with the 100 ppm isobutylene in air SPAN gas.
7. Turn the function switch to the 0 to 200 range position. Attach the sampling bag to the probe inlet. Adjust the SPAN control setting to read approximately 70 ppm at a span setting of 9.8.

8. Record the units achieved at the set SPAN control and the calibration phase used.

9. Lamp cleaning - if calibration cannot be achieved at the desired span potential, the lamp must be cleaned. (See specific instrument manual for instructions)

HNU DL-101-2

The HNU DL-101-2 applies microprocessor capabilities to the basic photoionization detection principles exhibited by the HNU PI 101. The microprocessor provides electronic zeroing, site and time data logging, and the ability to store up to 12 calibrations. The unit provides two basic modes of operation, the first being the survey mode and the second being the hazardous waste mode. Like the PI 101, the DL-101-2 is also factory-calibrated using benzene as the reference standard. The primary method of calibration will also use 100 ppm isobutylene in air (the calibration gas standard) with the unit in the survey mode. If several compounds are suspected, the hazardous waste mode may be utilized to store the needed amount of calibration curves. In either case, it is essential to identify the lamp voltage being used and the photoionization sensitivities of the chemical species of interest.

To calibrate in the survey mode, follow these instructions:

1. Identify the lamp energy. If this information is not available on the outside of the probe, disassemble the probe and inspect the lamp. The energy of the lamp should be etched into the glass envelope.

2. Press the power button to start the unit. Wait one minute to allow the unit to warm up.

3. Fill a dedicated tedlar bag completely with isobutylene calibration standard.

4. Press the CALIBRATE key on the front panel. "Calibrate" should appear on the liquid crystal display (LCD).

5. Press ENTER. "Zeroing Unit" will appear on the LCD. The unit will display the unit concentration before the electronic zero. The display will then prompt: CE/ENT/EXIT Conc = ___ppm. Enter the concentration of the calibration gas and press enter. "Attach gas to probe and /ENTER/" should appear on the LCD.

6. Attach the tedlar bag to the probe and press ENTER. Allow the sample to be naturally drawn into the unit. Press ENTER when ready. "xxxx ppm" should appear on the LCD. When the readings reach 100 ppm (± 10 percent), press ENTER. The LCD should then display "Calibrating...please wait."

In the survey mode, the unit will save the calibration and then the LCD reverts to the operation screen. When additional calibrations are called for, utilize the hazardous waste mode and cross reference calibration responses with the DL-101-2 user's manual.

Photovac MicroTIP

The MicroTIP must be calibrated to display concentrations in units equivalent to ppm. First, a supply of zero gas (total hydrocarbon concentration <1 ppm) is used to set the zero point. Then Span Gas (100 ppm isobutylene in air) is used to set the sensitivity.

Following these steps for MicroTIP calibration:

1. Turn the MicroTIP on and allow five minutes for warm up.
2. Fill the dedicated zero gas tedlar bag with zero gas calibration standard.
3. Fill the dedicated span gas tedlar bag with 100 ppm isobutylene in air calibration standard.
4. Press SETUP and select the desired Cal Memory (i.e., 100 ppm) with the arrow keys and press ENTER. Press EXIT to leave setup.
5. Press CAL and attach the filled zero gas bag to the MicroTIP probe. Press ENTER and the MicroTIP sets its zero point.
6. MicroTIP then asks for the span gas concentration. Enter 100.0 and then connect the span gas bag to the MicroTIP probe.
7. Press ENTER and MicroTIP sets its sensitivity.
8. When the display reverts to normal, the unit is calibrated and ready for use. Remove the span gas bag from the inlet.
9. Record applicable calibration information.

ORGANIC VAPOR ANALYZER FOXBORO MODEL 128 (OVA/FID)

Theory of Operation

The Foxboro Model 128 organic vapor analyzer (OVA) is designed to detect and measure hazardous vapors and gases. The instrument utilizes the principle of hydrogen flame ionization for detection and measurement of organic vapors. The instrument measures organic vapor concentration by producing a response to an unknown sample, which can be related to a gas of known composition to which the instrument has been previously calibrated. During normal survey mode operation, a continuous sample is drawn into the probe and transported to the detector chamber by an internal pumping system.

The sample stream is metered and passed through particulate filters before reaching the detector chamber. Inside the detector chamber, the sample is exposed to a hydrogen flame that ionizes the organic vapors. When most organic vapors burn, they leave positively charged carbon-containing ions. An electric field drives the ions to a collecting electrode. As the positive ions are collected, a current

corresponding to the collection rate is generated. This current is measured with a linear electrometer preamplifier that has an output signal proportional to the ionization current. A signal conditioning amplifier is used to amplify the signal from the preamp and to condition for display on the probe/readout assembly.

The OVA will primarily be used in the survey mode. In the survey mode, the OVA is internally calibrated to methane by the manufacturer. When the instrument is adjusted to manufacturer's instructions, it indicates the true concentration of methane in air. In response to all other detectable compounds, however, the instrument reading may be higher or lower than the true concentration.

The following procedures detail the operation, calibration, hydrogen refilling, and recharging methods to be used with the OVA:

1. Startup Procedures

   a. Connect the probe/readout assembly to the sidepack assembly by attaching the sample line and electronic jack to the sidepack.

   b. Select the desired sample probe (close area sample or telescoping probe) and connect the probe handle. Before tightening the knurled nut, check that the probe accessory is firmly seated against the flat seals in the probe handle and in the tip of the telescoping probe.

   c. Move the INST/BATT switch to the test position. The meter needle should move to a point beyond the white line, indicating that the integral battery has more than four hours of operating life before recharging is necessary.

   d. Move the INST/BATT switch to the "ON" position and allow a five-minute warm up.

   e. Turn the PUMP switch on.

   f. Use the Calibrate Adjust knob to set the meter needle to the level desired for activating the audible alarm. If this alarm level is other than zero, the CALIBRATE switch must be set to a appropriate range.

   g. Turn the Volume knob fully clockwise (optional).

   h. Using the Alarm Level Adjust knob, turn the knob until the audible alarm is activated (optional).

   i. Move the Calibrate Switch to x1 and adjust the meter reading to zero using the Calibrate Adjust (zero knob).

   j. Open the hydrogen Tank Valve one or two turns and observe the reading on the Hydrogen Tank Pressure Indicator. (Approximately 150 pounds per square inch [psi] of pressure is required for each hour of operation.)

   k. Open the Hydrogen Supply Valve one or two turns and observe the reading on the Hydrogen Supply Pressure Indicator. The reading should be between 8 and 12 psi.

l. After approximately one minute, depress the IGNITER BUTTON until the hydrogen flame lights. The meter needle will travel upscale and begin to read "Total Organic Vapors." Caution: Do not depress igniter for more than six seconds. If flame does not ignite, wait one minute and try again.

m. The instrument is ready for use. NOTE: If the ambient background organic vapors are "zeroed out" using the Calibrate Adjust knob, the meter needle may move off-scale in the negative direction when the OVA is moved in a location with lower background. If the OVA is to be used in the 0 to 10 ppm range, it should "zeroed" in an area with very low background. A charcoal filter (Part No. 510095-1) can be used to generate the clean background sample.

2. Calibration Using Known Samples for Each Range

The accuracy is obtained when the instrument is calibrated with known concentrations for each range. Prepare separate samples of methane-in-air in these concentration ranges: 7 to 10 ppm, 90 to 100 ppm, and 900 to 1000 ppm. Calibrate the instrument as follows:

a. Place the instrument in normal operation and allow a minimum of 15 minutes for warm-up and stabilization.

b. Set the Gas Select control to 300.

c. Set the Calibrate switch to x1.

d. Set the Calibrate Adjust (Zero) knob so that the meter reads zero.

e. Check that the meter reads zero on the x10 and x100 ranges.

f. Set the Calibrate switch to x1 and introduce the sample with known concentration in the 7 to 10 ppm range.

g. Adjust R31 so the meter reading corresponds to the sample concentration.

h. Set the Calibrate switch to x10 and introduce the sample with known concentration in the 90 to 100 ppm range.

i. Adjust R32 so that the meter reading corresponds to the sample concentration.

j. Set the Calibrate switch to x100 and introduce the sample with known concentration in the 900 to 1000 ppm range.

k. Adjust R33 so that the meter reading corresponds to the sample concentration.

l. The instrument is now calibrated for methane and ready for service.

If the flame-out alarm is actuated, check that the pump is running, then press the IGNITER button. Under normal conditions, flame-out results from sampling a gas mixture that is above the lower explosive level, which causes the hydrogen flame to extinguish. If this is the case, reignition is all that is required to resume monitoring. Another possible cause for flame-out is restriction of the sample flow line, which would not allow sufficient air into the chamber to support combustion. The normal cause for such restriction is a clogged particle filter.

It should be noted that the chamber exhaust port is on the bottom of the case and blocking this port with the hand will cause fluctuations and/or flame-out.

5. Battery Charging

Warning: Never charge in a hazardous environment.

a. Plug charger connector into mating connector on battery cover and insert alternating current (AC) plug into 115V AC wall outlet.

b. Move the battery charger switch to the ON position. The lamp above the switch button should illuminate.

c. Battery charge condition is indicated by the meter on the front panel of the charger; meter will deflect to the left when charging. When fully charged, the pointer will be in line with the "charged" marker above the scale.

d. Approximately one hour of charging time is required for each hour of operation. However, an overnight charge is recommended. The charger can be left on indefinitely without damaging the batteries. When finished, move the battery charger switch to OFF and disconnect from the Side Pack Assembly.

It has been established that these battery charging procedures may not be effective when the battery has completely discharged. When this happens and the above procedures fail to charge the battery, perform the following additional steps:

e. Remove the battery from the instrument case.

f. Connect to any variable direct current (DC) power supply.

g. Apply 40 volts at 1/2 ampere (A) maximum.

h. Observe the power supply meter. As soon as the battery begins to draw current, gradually reduce the power maintaining 1/2 A maximum until the meter reads approximately 15 volts.

Note: The time required to reach the 15-volt reading will depend on degree of discharge.

i. Repeat steps (a), (b), (c), and (d) above to complete the charging cycle.

SAMPLING PUMPS (SKC, MSA, or Gillian)

Sampling pumps utilized to collect personal and area samples will be calibrated before and after sampling. In each case, the sampling pumps will be calibrated in accordance with parameters established in National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods (1984). Calibration will be performed onsite using a primary standard (i.e., electronic bubble meter or 1-liter glass buret). Calibrations of sampling trains will be conducted with the collection media (i.e., charcoal tubes, XAD-2 tubes, tenax, cyclone separators, impingers, etc.) in line with the primary standard to ensure quality data.

The following calibration procedures should be followed when calibrating sampling trains:

1. Electronic Bubble Meter Method

   a. Allow the pump to run five minutes before voltage check and calibration.

   b. Connect the collection media to the bottom of the calibration meter by Tygon tubing. Then connect the pump and the tubing to be used to the top of the meter. This will allow the sampling train to be calibrated as it is to be used.

   c. Visually inspect all Tygon tubing connections.

   d. Wet the inside of the electronic flow cell with the supplied soap solution by pushing on the button several times.

   e. Turn on the pump and adjust the pump rotameter, if available, to the appropriate flow rate setting.

   f. Press the button on the electronic bubble meter. Visually capture a single bubble and electronically time the bubble. The accompanying printer will automatically record the calibration reading in liters per minute.

   g. Repeat step f until two readings are within 5 percent.

   h. While the pump is still running, adjust the pump, if necessary.

   i. Repeat the procedure for all pumps to be used for sampling. The same cassette and filter may be used for all calibrations involving the same sampling method.

Bubble-meter Method

Perform calibration using the bubble-meter method as follows:

1. Allow sampling pumps to run for five minutes before calibration. Check voltage after five minutes. If the voltage is below the level specified by the manufacturer, the pump needs to be recharged. Check the manufacturer's instructions for proper charging procedures.

2. Wet the inside of the burette with the soap solution before setup.

3. Assemble the bubble meter and connect the sampling pump and the type of collection device intended for the field sampling.

4. Momentarily submerge the opening of the burette to capture a film of soap.

5. Draw two or three bubbles up the burette to ensure that they will reach the top.

6. Visually capture a single bubble and time (with a stopwatch) the bubble from 0 to 1000 milliliter (ml) or 0 to 100 ml, depending on the pump being calibrated.

7. Adjust the pump flow rate until the desired flow rate is achieved. For example, for a flow rate of 2 liters per minute, the bubble must travel from 0 to 1000 ml in 30 seconds. Verify the flow rate at least twice.

8. For pumps with rotameters, mark or record the position of the float (ball) when the pump is running at the desired flow rate. This will allow the industrial hygienists to adjust the pump flow rate back to the correct rotameter position if the float moves off the marked setting during sampling.

DETECTOR TUBES/PUMPS (Sensidyne/Gastech, Draeger, MSA)

Principle/Description

1. Detector tubes/pumps, when used with a variety of commercially available detector tubes, are capable of measuring the concentrations of a wide variety of compounds in industrial atmospheres.

2. Operation consists of using the pump to draw a known volume of air through a detector tube designed to measure the concentration of the substance of interest. The concentration is determined by a calorimetric change of an indicator that is present in the tube contents.

Applications/Limitations

1. Detector tubes/pumps can measure more than 200 organic and inorganic gases and vapors or for leak detection. Some aerosols can also be measured.

2. Detector tubes of a given brand are to be used only with a pump of the same brand. The tubes are calibrated specifically for the same brand of pump and may give erroneous results if used with a pump of another brand.

3. A limitation of many detector tubes is the lack of specificity. Many indicators are not highly selective and can cross-react with other compounds. Manufacturer's manuals describe the effects of interfering contaminants.

4. Another important consideration is sampling time. Detector tubes give only an instantaneous interpretation of environmental hazards. This may be beneficial in potentially dangerous situations or when ceiling exposure determinations are sufficient. When long-term assessment of occupational environments is necessary, short-term detector tube measurements may not reflect time-weighted average levels of the hazardous substances present.

5. Detector tubes normally have a shelf-life at 25 degrees Celsius (°C) of one to two years. Refrigeration during storage lengthens the shelf-life. Outdated detector tubes (i.e., beyond the printed expiration date) should never be used.

Performance Data

1. The specific tubes are designed to cover a concentration range that is near the Permissible Exposure Limit (PEL). Concentration ranges are tube-dependent and can be anywhere from one one-hundredth to several thousand ppm. The limits of detection depend on the particular detector tube.

2. Accuracy ranges vary with each detector tube ($\pm$ 25 percent).

APPENDIX G

QUALITY ASSURANCE PROGRAM

Del Mar Analytical

2852 A ve., Irvine, CA 92714 (714) 261-1022 FAX (714) 261-122
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046
16525 Sherman Way, Suite C-11, Van Nuys, CA 91406 (818) 779-1844 FAX (818) 779-1843
2465 W. 12th St., Suite 1, Tempe, AZ 85281 (602) 968-8272 FAX (602) 968-1338

QUALITY ASSURANCE PROGRAM

DEL MAR ANALYTICAL

JANUARY 1995

Del Mar Analytical
2852 Alton Avenue
Irvine, CA 92714
(714) 261-1022
FAX (714) 261-1228

Del Mar Analytical
1014 E. Cooley Dr.
Suite A
Colton, CA 92324
(909) 370-4667
FAX (909) 370-1046

Del Mar Analytical
16525 Sherman Way
Suite #C-11
Van Nuys, CA 91406
(818) 779-1844
FAX (818) 879-1843

Del Mar Analytical
2465 W. 12th Street
Suite #1
Tempe, AZ 85281
(602) 968-8272
FAX (602) 968-1338

Prepared by:

Debbie Ranck
Quality Assurance Officer

Approved by:

Gary Steube
Laboratory Director

Wendy Thomas
Laboratory Manager-Van Nuys

Mark Weiner
Laboratory Manager-Irvine

Mike Giles
Laboratory Manager-Tempe

Alma Borcuk
Laboratory Manager-Colton

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3.0 INTRODUCTION

Del Mar Analytical is committed to providing quality environmental analytical services to all of its clients. To maintain this high level of quality, an extensive Quality Assurance (QA) Program has been implemented within the Del Mar Analytical Network. Del Mar Analytical's goal is to provide legally defensible analytical data of known and supportable quality.

3.1 DEFINITION

A Quality Assurance Program is a company-wide system designed to ensure that data produced by Del Mar Analytical conforms to the highest standards set by state and/or federal regulations. The program functions at the management level through company goals and management policies, and at the analytical level through standard operating procedures and quality control. These two levels are administered through data control and review processes. The final result is a data package that is reproducible, technically accurate, and useful to the client.

3.2 SCOPE

Del Mar Analytical analyzes thousands of environmental and industrial samples every month. Sample matrices vary between air, drinking water, effluent water, groundwater, hazardous waste, sludge and soils. The Quality Assurance Program contains specific procedures and methods to test samples of differing matrices for chemical, physical and biological parameters. The Program also contains guidelines on maintaining documentation of analytical process, reviewing results, servicing clients and tracking samples through the laboratory.

3.3 PURPOSE

The Quality Assurance Program provides a means by which the integrity of data can be verified. Since engineering, environmental and industrial decisions are based on the data produced, it is essential that clear and extensive verification procedures exist. Accuracy, appropriate representation, completeness and precision are all aspects of a data package that verify the integrity of the analysis.

The Quality Assurance Program is also a useful historical document. The chronological development of any Quality Assurance Program relies on the adequate documentation of previous programs. Improvements and modifications can be instituted only if an established frame of reference exists and the comparative benefits of such changes can be judged.

The Quality Assurance Program is the format through which Del Mar Analytical can express its goals, policies, and commitment to generating data of the highest quality. The Quality Assurance Program outlines how the laboratory will meet those goals through time, resources, and its employees.

3.4 GOALS

Del Mar Analytical is dedicated to the production of high quality data at reasonable cost and turn-around-time. State-of-the-art analytical equipment is combined with professional client services so that projects, both large and small in scope, are successfully completed. Emphasis is placed upon meeting the clients' needs through the experience and flexibility of dedicated professionals. The company's organization, management policies, and routine activities are all designed to meet these goals.

3.5 MANAGEMENT REVIEW OF THE QUALITY ASSURANCE PROGRAM

Annually, a review of the Quality Assurance Program is conducted by the management of Del Mar Analytical. Included in this review is the Laboratory Director, Laboratory Manager, Technical Manager, Quality Assurance Officer, Marketing Manager, and Office Manager. This review helps to ensure that the laboratory's quality system is capable of meeting Del Mar Analytical's goal of producing quality data. All aspects of the Quality Assurance Program are reviewed. In general, results of audits, both internal and external, are reviewed along with proficiency evaluation results and staff training. In addition, future plans regarding staff, equipment and facility resources are reviewed. The Quality Assurance Officer is responsible for ensuring that the review occurs, and that all review findings are documented. Documentation consists of meeting minutes, along with written documentation of any necessary corrective actions revealed during the review of the quality system. The Quality Assurance Officer is also responsible for implementing the corrective actions, and for documenting that implementation had occurred. All review findings and corrective action documentation are kept on file with the Quality Assurance Officer.

4.0 PROJECT ORGANIZATION

Del Mar Analytical is structured to facilitate communications between management and analytical levels, and to ensure that the final data package produced for the client meets or exceeds regulatory standards. An example of Del Mar Analytical's organization chart may be found in Figure 4-1. The following are brief descriptions of the major organizational levels.

4.1 PRESIDENT/LABORATORY DIRECTOR

The President/Laboratory Director works closely with the Vice-President/Laboratory Manager and is responsible for all major financial decisions, including the expansion of satellite laboratory facilities, staff selection, promotion, and major instrument acquisition. The President/Laboratory Director is also ultimately responsible for the entire laboratory operation, final technical review, approval of analytical reports, and all aspects of client services.

4.2 VICE PRESIDENT/LABORATORY MANAGER

The Vice President/Laboratory Manager is responsible for all internal laboratory operations, which include Manager and Group Leader supervision, staff promotion and discipline, cross-training, and method interpretation. The Vice President/Laboratory Manager is also responsible for administering the Quality Assurance Program and has direct authority over the Quality Assurance Officer.

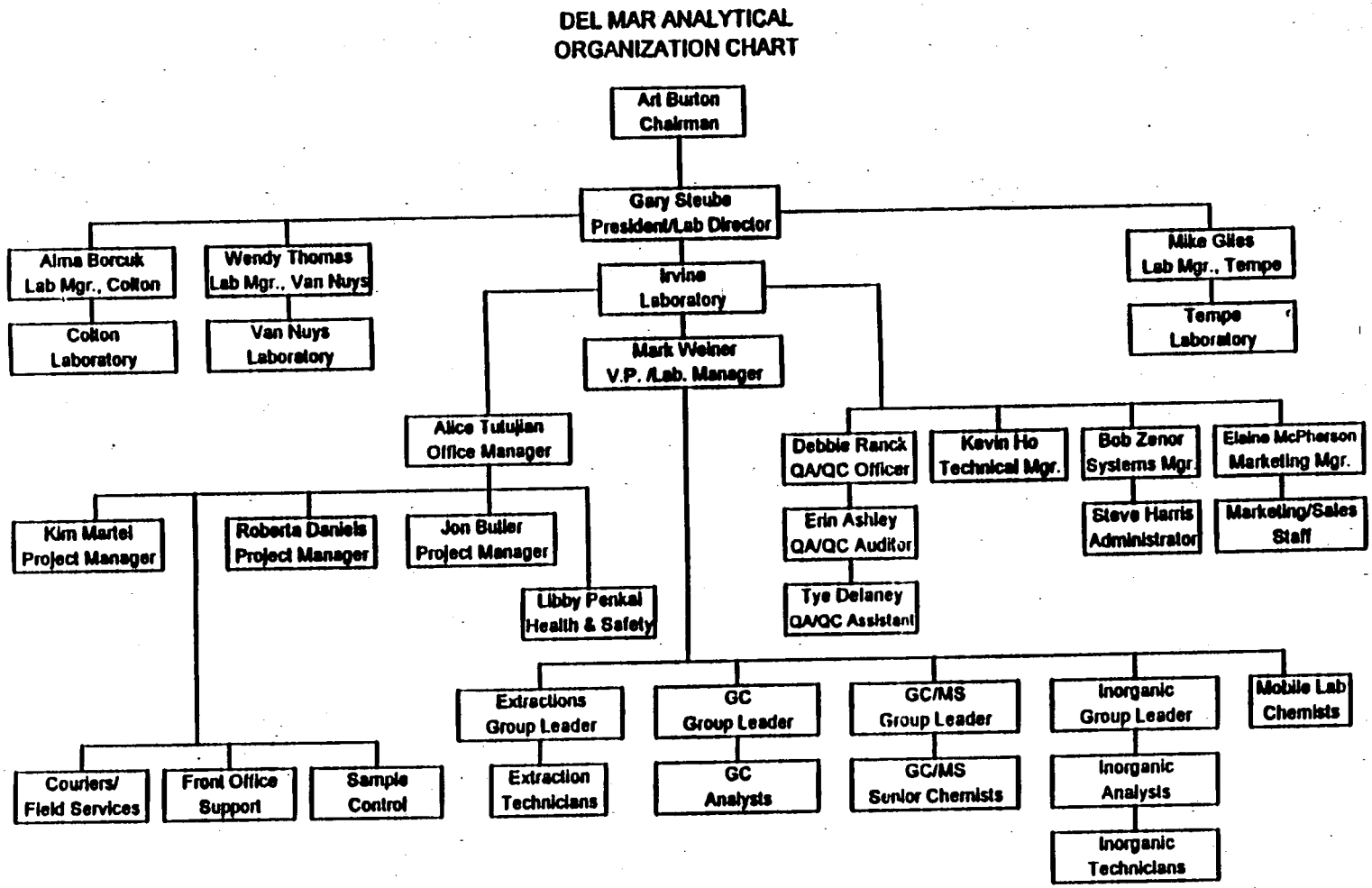
4.3 QUALITY ASSURANCE OFFICER

The Quality Assurance Officer is responsible for the implementation and review of the Quality Assurance Program, all quality control procedures, internal checks and audits, QC data reporting, and overseeing the Internal Quality Assurance Auditor. The QA/QC Officer has direct authority to request re-analysis of samples and to discontinue or suspend work on projects if deemed necessary. The QA/QC Officer answers directly to the Laboratory Director and the Laboratory Manager.

4.4 INTERNAL QUALITY ASSURANCE AUDITOR

The Internal Quality Assurance Auditor is responsible for reviewing the Analyst's files, notebooks, and raw data for documentation of all quality control measurements. In addition, it is the responsibility of the Internal Quality Assurance Auditor to control and maintain all documentation pertaining to the Quality Assurance Program, such as Standard Operating Procedures, Method Detection Limits Studies, and Performance Evaluation Studies. The Internal Quality Assurance Auditor maintains historical files of all quality system documents, as well as current, authorized

Figure 4-1
Del Mar Analytical Organization Chart



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copies of quality system documents. Furthermore, the Internal Quality Assurance Auditor performs annual performance audits which are documented to assure that the requirements of the Quality Assurance Program are met.

Follow-up audits are scheduled as needed until corrective actions are fully implemented. Copies of all Performance Audits are given to the QA/QC Officer and the Laboratory Manager for review and input. The issuance and tracking of individual Analyst performance on blind check samples is also the Internal QA Auditor's responsibility. These results are provided to the appropriate Department Supervisor for review and inclusion with individual training records. The Internal QA Auditor reports directly to the QA/QC Officer.

4.5 QUALITY ASSURANCE/QUALITY CONTROL ASSISTANT

The Quality Assurance/Quality Control Assistant is responsible for the timely and accurate transcription of client/sample documentation, and QC Matrix Spike/Matrix Spike Duplicate data into final analytical reports. He or she works closely with the QA/QC Officer and the Project Managers to insure that proper QA/QC is followed during data transcription and report origination. The QA/QC Assistant generates and reviews, in conjunction with the QA/QC Officer, all QA/QC analytical reports and assists with the preparation of Control Charts.

4.6 HEALTH & SAFETY OFFICER

The Health and Safety Officer is responsible for administering the Health and Safety Program. This includes routine internal health and safety audits of the facility as well as management of the Hazardous Waste program. The Health and Safety Officer is also responsible for the execution of the Chemical Hygiene Program, which involves educating and training all personnel. He or she is responsible for monitoring and recording OSHA compliances and insuring the proper storage and disposal of laboratory hazardous and non-hazardous wastes.

4.7 SAMPLE CONTROL LEADER

The Sample Control Leader is responsible for receiving and entering samples into the LIMS log-in computer, recording sample condition and reviewing all Chain-of-Custody forms, as well as the review and coordination of the Sample Control staff's duties. He or she acts as a liaison between Project Managers and Analysts in respect to handling rush orders, resolving inconsistencies and problems with Chain-of-Custody forms, and routing of sub-contracted analyses.

4.8 MARKETING MANAGER

The Marketing Manager is responsible for developing new clients and proper company image, identifying and targeting potential markets, making presentations to clients, and updating and generating company literature. The Marketing Manager is directly responsible for the supervision and management of Del Mar Analytical's marketing staff.

4.9 SYSTEMS MANAGER

The Systems Manager is directly responsible for the design, implementation, and maintenance of Del Mar Analytical's GC Turbochrom program, LIM systems, QC computer programs, Telecation software for CLP data packages, and other related software. He or she also designs and writes programs for the company when commercial programs are not appropriate or applicable, and generates all electronic data deliverables as requested by clients.

4.10 TECHNICAL MANAGER

The Technical Manager is responsible for the development and implementation of new methods, maintenance and repair of all instruments and equipment, trouble-shooting, and the acquisition of new instruments. He or she is also responsible for training new personnel and cross-training current employees to operate in other departments. He or she works closely with the QA/QC Officer to insure proper calibration and operation of all analytical equipment. He or she also works directly with the Systems Manager to help implement new computer analytical programs, maintain current system, and develop ideas for future improvements.

4.11 PROJECT MANAGERS

Project Managers are responsible for thoroughly coordinating internal projects, maintaining clients' satisfaction and reviewing laboratory reports. All project status and technical questions generated by the client are directed to the Project Manager.

4.12 OFFICE MANAGER

The Office Manager oversees the Sample Control Group and is responsible for personnel supervision and promotion. The Office Manager directly supervises and manages the accounting, clerical and courier staff. He or she also conducts employee hiring, employee discipline, and performance reviews for the non-technical staff.

4.13 DATA PROCESSORS

The Data Processors are responsible for the timely and accurate transcription of client/sample documentation and analytical results into final analytical reports. They work closely with the Project Managers to insure that proper QA/QC is followed during data transcription and report generation. They prepare a variety of Deliverable Packages, such as: Los Angeles Region Water Quality Control Board Well Investigation Program (WIP) reports, NEESA Level III and IV reports, and custom report formats requested by clients.

4.14 SAMPLE CONTROL

The Sample Control Group is responsible for checking for sufficient sample volume, ensuring that bottles are properly prepared and preserved, receiving and entering samples into the log-in computer system, recording sample condition, and reviewing Chain-of-Custody forms. They act as a liaison between Project Managers and Analysts in respect to handling rush orders, resolving inconsistencies and problems with Chain-of-Custody forms, and routing of sub-contracted analyses.

4.15 COURIERS/SAMPLING TECHNICIANS/FIELD SERVICE TECHNICIANS

This group is responsible for general courier duties, water sampling by the grab method, and the proper installation of automatic ISCO 24 hour water sampling equipment.

4.16 ORGANICS SUPERVISOR

The Organics Supervisor is responsible for the supervision of operations within the GC Organics and GC/MS Organics Groups, secondary data review generated by group Analysts, maintenance of all group records and logs, and performance of Semi-Volatiles analyses by GCMS--8270/625 analyses.

4.17 INORGANICS SUPERVISOR

The Inorganics Supervisor is responsible for the supervision of operations within the Inorganics Group, which includes the Metals Group and Wet Chemistry Group, secondary data review generated by the group Analysts, maintenance of all group records and logs, and performance of AA and ICP Metals analyses.

4.18 EXTRACTIONS SUPERVISOR

The Extractions Supervisor is responsible for the daily functions of the Extractions Group, including evaluation of analyses and extractions, secondary data review, maintenance of all group record and activity logs, equipment operations, and employee performance.

4.19 ANALYSTS - GC, GC/MS, METALS, WET CHEMISTRY

The Analysts are responsible for all aspects of assigned analytical procedures, including overseeing sample preparation and preservation, performing the analyses, and reporting the results within the specified turn-around-times. They must adhere to all QC procedures specified in the analytical method and the full documentation of these procedures. In addition, they are responsible for routine maintenance of their equipment and ensuring sufficient supplies for analyses.

- Extractions
- Gas Chromatography
- GC/MS
- Metals
- Wet Chemistry

5.0 CERTIFICATION

Del Mar Analytical is certified by the State of California Department of Health Services under the Environmental Laboratory Accreditation Program (ELAP) for the analyses of drinking water, wastewater, and hazardous waste. Del Mar Analytical's ELAP certificate numbers are as follows:

- 1197 for the Irvine laboratory
- 1169 for the Colton laboratory
- 1855 for the Van Nuys laboratory
- 1794 for the Mobile laboratory

Del Mar Analytical is also certified by the State of Arizona Department of Health/Division of State Laboratory Services. Certificate numbers are as follows:

- AZO426 for the Tempe, AZ laboratory
- AZM426 for the Tempe, Mobile laboratory
- AZ0062 for the Colton, CA laboratory
- AZ0428 for the Irvine, CA laboratory

To keep informed of new technologies and regulations, many of our employees are active in professional organizations, which include the following:

- actLabs (Association of California Testing Laboratories)
- American Chemical Society
- American Council of Independent Laboratories
- American Water Works Associations
- Association of California Testing Laboratories
- Association of Hazardous Testing Materials
- California Water Pollution Control Association
- IAETL (International Association of Environmental Testing Laboratories)
- Water Pollution Control Federation

5.1 PERSONNEL SUMMARY

Total Staff.....83

Total Scientific Staff.....52

5.2 CERTIFICATES AND UNDERGRADUATE AND GRADUATE DEGREES HELD BY DEL MAR ANALYTICAL EMPLOYEES

- Analytical Chemistry
- Biology
- Chemical Engineering
- Drug and Chemical Technology
- Engineering
- Environmental Science
- Geology
- Health Science
- Petroleum Chemistry
- Physics
- Sociology
- Zoology
- Biochemistry
- Business Administration
- Chemistry
- Ecology
- English
- Forensic Sciences
- Hazardous Materials Management
- Mathematics
- Pharmacy
- Psychology
- Supervisor Training

6.0 CONFIDENTIALITY STATEMENT

The protection of confidential client information, business information and trade secrets is vital to the interests and the success of this organization. Such confidential information includes, but is not limited to the following:

- Client contact representatives
- Client lists
- Del Mar Analytical's organizational structure
- Financial Information
- Marketing Strategies
- Pending projects and proposals
- Scientific Data
- Specific client/project information

As a condition of employment, all employees are required to sign a non-disclosure agreement similar to the one shown in Figure 6-1.

Client data can be released to third parties only if requested in writing by Del Mar Analytical's client. Under certain circumstances and depending on client relationships, a verbal request by a client to release data to a third party may be honored. However, a verbal request must be approved by the President/Laboratory Director and documented in writing.

Figure 6-1
Non-Disclosure Agreement

MEMO TO ALL DEL MAR ANALYTICAL EMPLOYEES REGARDING CONFIDENTIAL COMPANY INFORMATION

This is an informational memo which is distributed annually in order to remind you that the work we do is confidential. Items listed below are not to be discussed with people who are not Del Mar Analytical employees.

Client Related Items

1. Our client's laboratory reports are confidential. We have legally binding contracts with many clients in which we agree to maintain the confidentiality of their data. In all cases, the client's permission is required before data can be reported to someone other than the client (including regulators and the client's client). A written record of the verbal permission being given by the client must be maintained.

2. The names of sites and contracts we are working on are confidential.

3. Client lists, client codes, client files, addresses, phone numbers and key contacts are all confidential information, as are any particular likes or dislikes of a client. In addition, billing information, including special pricing structures and quotes are confidential.

Operations Items

1. Del Mar Analytical's organization structure is confidential. Titles and job descriptions are not confidential, but specifics about the hierarchy and the printed organization charts are confidential.

2. Details about compensation are confidential. Employees are advised to refrain from discussing their compensation with each other. Employees who have access to payroll information are not permitted to discuss that information with any employee or non-employee except the Laboratory Director, Laboratory Manager, or Office Manager.

3. Performance reviews and personnel information/data are confidential. Employees who have information regarding employee's personal life, financial situation and/or the employee's career objectives are to consider the information confidential. The information is not to be disclosed to non-employees, nor should it be discussed with employees other than the Laboratory Director, Laboratory Manager, or Office Manager.

4 References on the performance of former employees are confidential and can only be given by the Laboratory Director, Laboratory Manager, or Office Manager.

5. Marketing strategies are confidential.

6. Technical improvements to methods, instruments or data reduction techniques are confidential.

7. Software applications authored by Del Mar Analytical employees are company property and are not to be removed from the building by any employee, including the author, without written permission. This restriction includes but is not limited to the programs for invoicing, sample control, report generation and QA/QC reports.

Please acknowledge that you have received this notice by signing below.

Signature: _____ Date: _____

7.0 EQUIPMENT AND FACILITIES

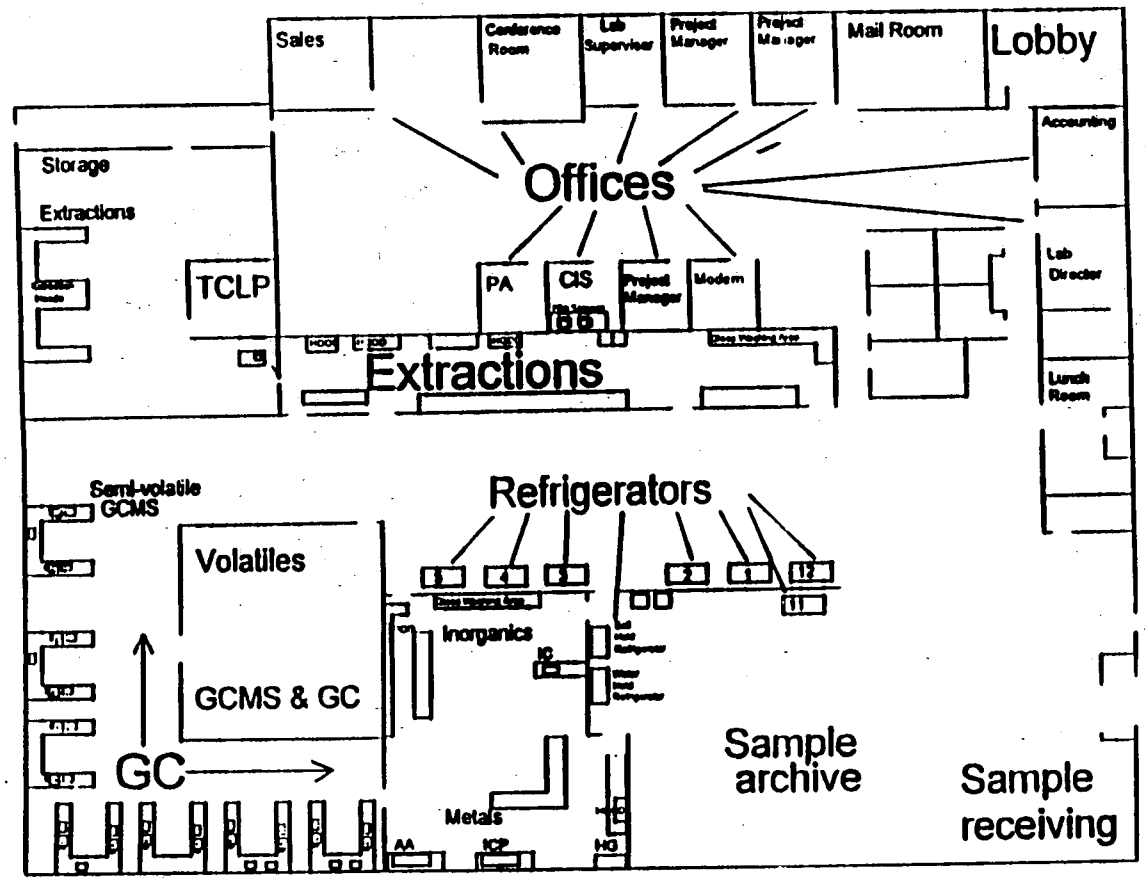
At approximately 24,000 square feet, Del Mar Analytical's Irvine Laboratory is one of the largest environmental laboratories in California. Del Mar Analytical's satellite laboratories include the Colton laboratory at approximately 3,500 square feet, the Van Nuys laboratory at approximately 4,800 square feet, and the Tempe laboratory at approximately 2,500 square feet. The square footage of each laboratory is comprised of both laboratory and office space. Within each laboratory are areas dedicated to specific functions including sample receipt, sample preparation, sample analysis, sample storage, sample archive, data archive, and report preparation. Laboratory floorplans are presented in Figures 7-1 through 7-4.

Each laboratory facility is equipped with safety equipment, including emergency showers, eye wash stations, fire blankets, fire extinguishers, fume hoods, respirators, safety glasses, spill cleanup kits and warning signs.

Del Mar Analytical purchases state-of-the-art analytical instrumentation for sample analyses. With multiple gas chromatograms (GC), gas chromatogram/mass spectrometers (GC/MS), atomic absorption spectrophotometers (AA), inductively coupled plasma spectrophotometers (ICP), infra-red spectrophotometers (IR) and many other analytical instruments, Del Mar Analytical can meet most project needs without subcontracting work to other laboratories. Del Mar Analytical has a policy of upgrading older analytical equipment to minimize down-time and to ensure that samples are analyzed by the best available technology. A list of the major laboratory instrumentation for each Del Mar Analytical laboratory is presented in Tables 7-1 through 7-4.

Figure 7-1
Irvine Floorplan

DEL MAR ANALYTICAL - Irvine Floorplan



APPROX. 25,000 Square Feet

233

Figure 7-2
Colton Floorplan

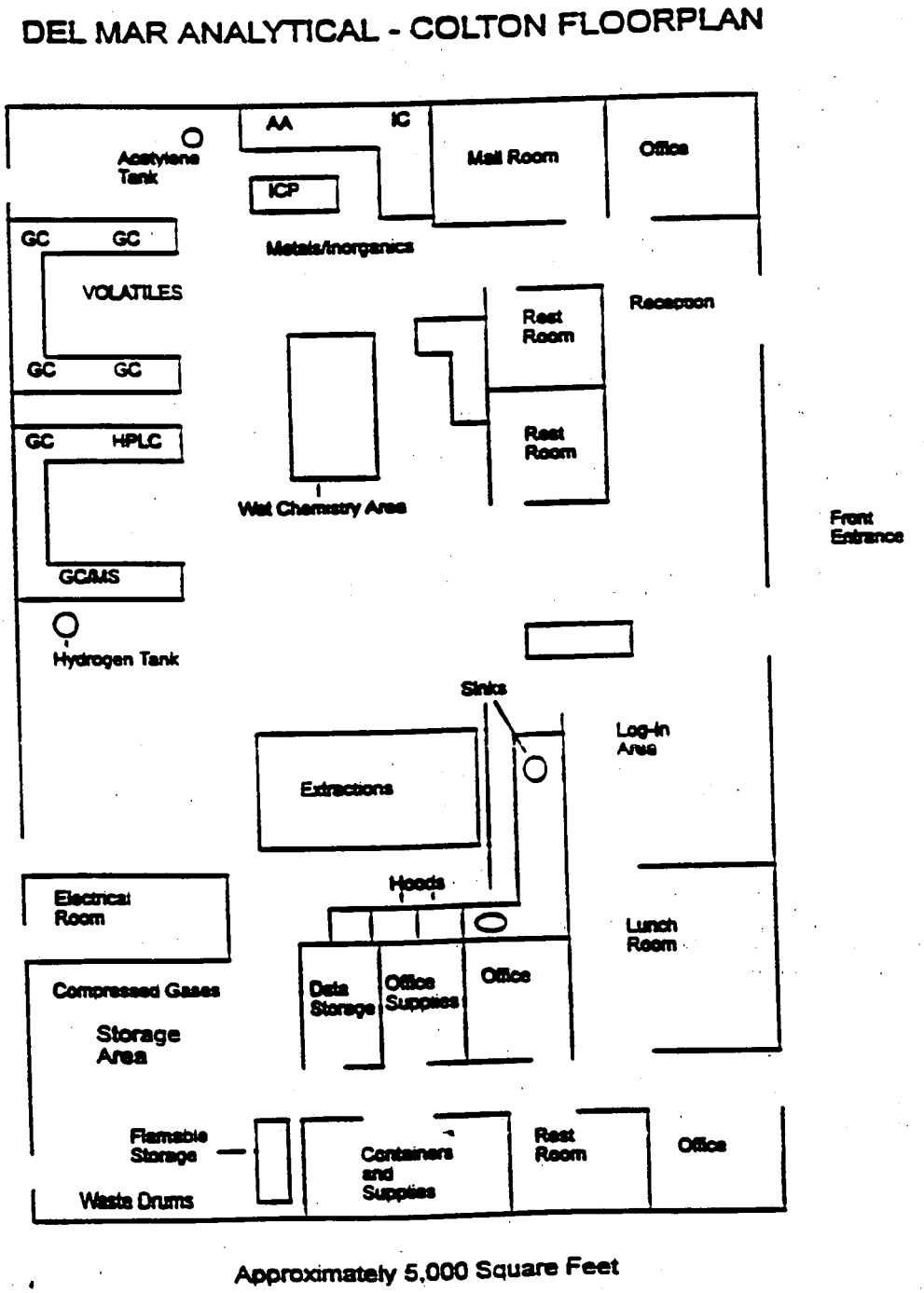
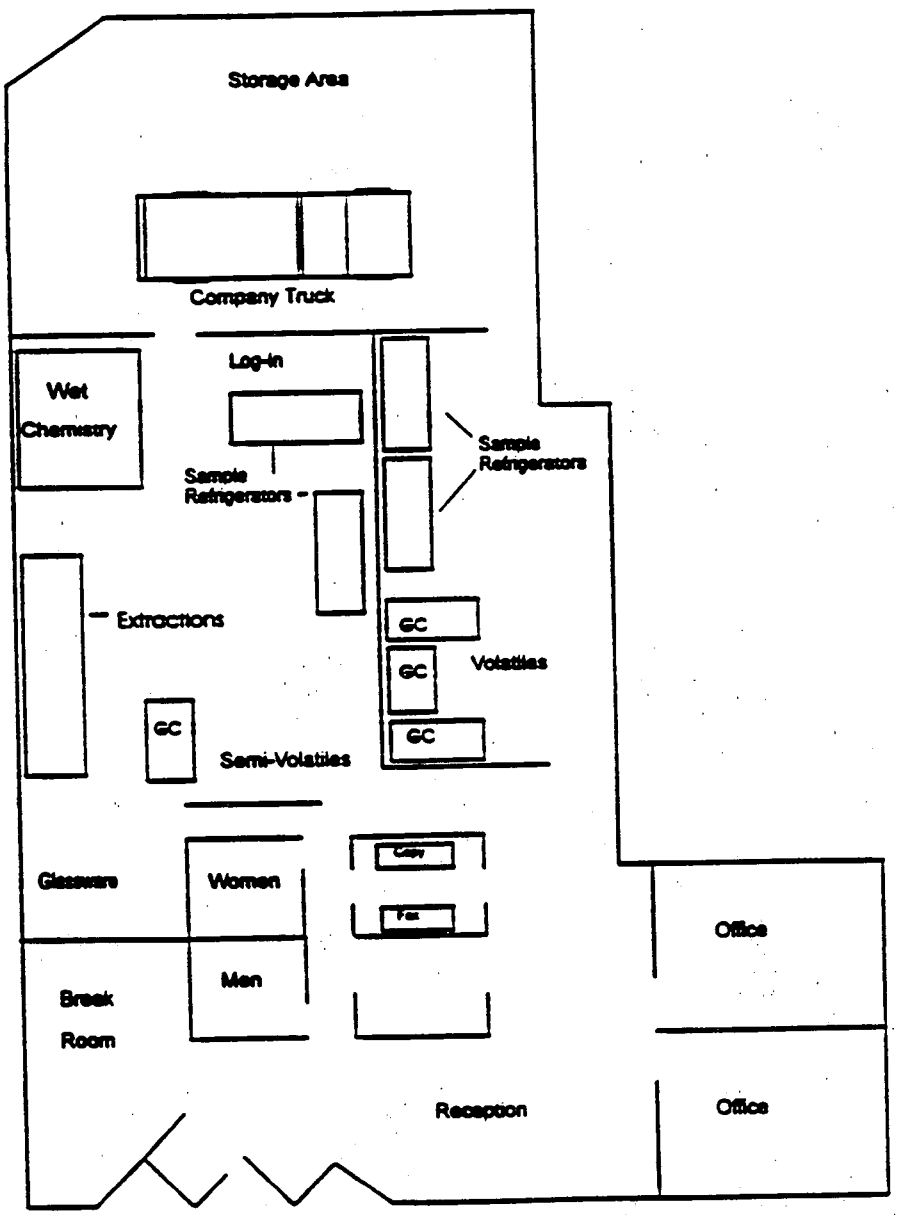


Figure 7-3
Van Nuys Floorplan

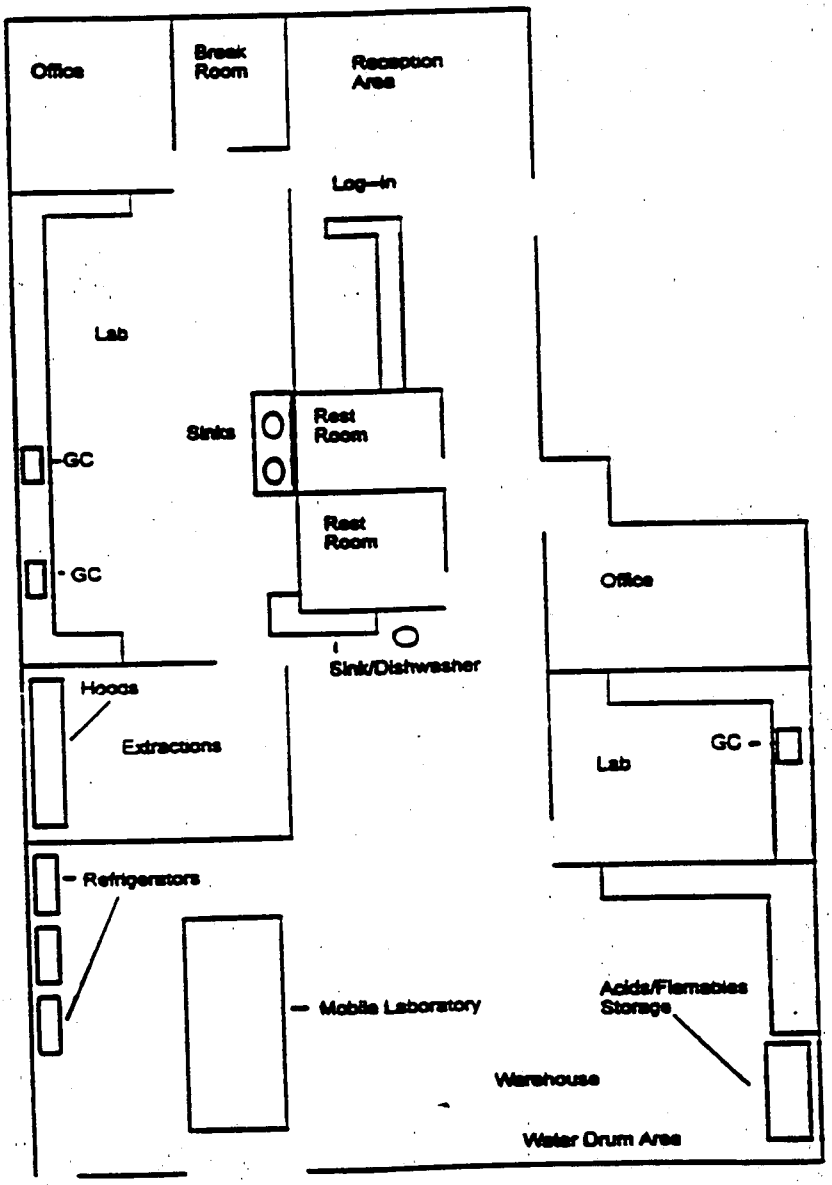
DEL MAR ANALYTICAL - VAN NUYS FLOORPLAN



Approximately 4,800 Square Feet

Figure 7-4
Tempe Floorplan

DEL MAR ANALYTICAL - TEMPE FLOORPLAN



Approximately 3,670 Square Feet

Table 7-1
Irvine Laboratory Instrumentation

Equipment List

Del Mar Analytical, Irvine

ITEM	BRAND	MODEL
Gas Chromatograph #1	Varian	3400
Mass Spectrometer #1	Finnigan	Incos50
Purge & Trap Concentrator #1	Tekmar	LSC2000
Auto Sampler #1	Tekmar	ALS2016
Gas Chromatograph #2	Varian	3400
Mass Spectrometer #2	Finnigan	Incos50
Purge & Trap Concentrator #2	Tekmar	LSC2000
Auto Sampler #3	Tekmar	ALS2016
Gas Chromatograph	Hewlett Packard	5890A
MSD Mainframe	Hewlett Packard	5971
Auto Sampler	Hewlett Packard	7673a
Gas Chromatograph #1	Hewlett Packard	5890
Auto Sampler #1	Hewlett Packard	7673A
Gas Chromatograph #2	Hewlett Packard	5890
Auto Sampler #2	Hewlett Packard	7673A
Gas Chromatograph #3	Perkin Elmer	8500
Auto Sampler #3	Perkin Elmer	AS8300
Gas Chromatograph #6	Perkin Elmer	Sigma 300
Purge & Trap Concentrator #6	Tekmar	LSC2000
Gas Chromatograph #7	Perkin Elmer	8500
Headspace Autosampler #7	Perkin Elmer	HS-101
Gas Chromatograph #8	Hewlett Packard	5890
Gas Chromatograph #9	Hewlett Packard	5890
Purge & Trap Concentrator #9	O.I. Analytical	4460A

Table 7-1 (continued)

Equipment List
Del Mar Analytical, Irvine

ITEM	BRAND	MODEL
Auto Sampler #9	O.I. Analytical	MPM16
Gas Chromatograph #10	Hewlett Packard	5890
Purge & Trap Concentrator #10	O.I. Analytical	4460A
Auto Sampler #10	O.I. Analytical	MPM-16
Gas Chromatograph #11	Hewlett Packard	5890
Purge & Trap Concentrator #11	O.I. Analytical	4460A
Auto Sampler #11	O.I. Analytical	MPM-16
Gas Chromatograph #12	Hewlett Packard	5890
Auto Sampler #12	Hewlett Packard	7673A
Gas Chromatograph #14	Hewlett Packard	5890
Purge & Trap Concentrator #14	O.I. Analytical	4460A
Auto Sampler #14	O.I. Analytical	MPM-16
TOC Analyzer	O.I. Analytical	700
Auto Sampler	Dionex	AS
Balance	Mettler	AE100
Conductance Meter	Yellow Springs	32
Ion Chromatograph	Dionex	4500
pH Meter	Beckman	PH140
Turbidity Meter	Shaban	20010
UV/VIS Spectrophotometer	Milton Roy Co.	Spec. 200
Atomic Absorption Spectrophotometer	Perkin Elmer	5100PC
Atomic Absorption Spectrophotometer	Perkin Elmer	3100
Auto Sampler	Perkin Elmer	AS900
Auto Sampler	Perkin Elmer	AS-60

Table 7-1 (continued)

Equipment List
Del Mar Analytical, Irvine

ITEM	BRAND	MODEL
Cold Vapor System	Perkin Elmer	FIAS200
Mercury Analyzer	Perkin Elmer/FIMS	
Inductively Coupled Plasma Spectrophotometer	Perkin Elmer	P-40
Inductively Coupled Plasma Spectrophotometer	Optima 3000XL	
Balance	Sartorius	8610-OUR
Balance	Mettler	PJ3600
Conductivity Meter	Corning	M90
Fixed Wavelength Infrared Spectrophotometer	Foxboro	Miran1FF
Flashpoint Tester	Koehler	K-162
Fourier Transform Infrared Spectrophotometer	Analect	RFX-30
Muffle Furnace	Lindberg	51442/59344
pH Meter	Beckman	PHL-32
Recirculating Bath	Lauda	RM90
Rotary Evaporator	Buchi	RE111
Sonic Disruptor	Tekmar	TM500
Turbo Evaporator	Zymark	ZW640-3R
Turbo Evaporator	Zymark	ZW640-1
Waterbath	Buchi	B-461

Table 7-2
Colton Laboratory Instrumentation

Equipment List
Del Mar Analytical, Colton

ITEM	BRAND	MODEL
Atomic Absorption Spectrophotometer	Perkin Elmer	Flame: 2380
Atomic Absorption Spectrophotometer	Perkin Elmer	Furnace: HGA220
Atomic Absorption Spectrophotometer	Perkin Elmer	Hydride: MHS-10
Ion Chromatograph	Wescan	
Inductively Coupled Plasma Spectrophotometer	Baird	ICP-2000
Spectrophotometer	Milton Roy	Spectronic-20D
pH Meter	Beckman	PH41
Fixed Wavelength Infrared Spectrophotometer	Foxboro	Miran1FF
Flashpoint Tester	Herzog	Tag Closed Cup
Sonicator	Fisher Scientific	50
Nephelometer	HF Instruments	DRT100B
Conductivity Meter	YSI	35
Rotator	Millipore	
Balance #1	American Scientific Products	S/P 180
Balance #2	Sartorius	PT-600-OUR
Balance #3	Sartorius	PT-600-00VI
Vortex	Baxter Scientific	SuperMixer2
Centrifuge	International Equipment	HN
Zero Headspace Extract	Gelman Scientific	
Turbo Evaporator	Zymark	ZW640-1
High Performance Liquid Chromatograph	Hewlett Packard	HPLC 1050
Ultra Violet Detector	Hewlett Packard	
Fluorescence Detector	Hewlett Packard	1046A

Table 7-2 (continued)

Equipment List
Del Mar Analytical, Colton

ITEM	BRAND	MODEL
Auto Sampler		
Pickering Reaction Module		
Gas Chromatograph #1	Hewlett Packard	5890
Purge & Trap Concentrator #1	Tekmar	LSC2000
Auto Sampler #1	Tekmar	ALS2016
Gas Chromatograph #2	Hewlett Packard	5890 Series II
Auto Sampler #2	Hewlett Packard	
Gas Chromatograph #3	Hewlett Packard	5890 Series II
Purge & Trap Concentrator	O.I. Analytical	MPM16
Purge & Trap Concentrator #3		4460A
Gas Chromatograph #4	Hewlett Packard	5890 Series II
Auto Sampler #4	Hewlett Packard	7673
Gas Chromatograph #5	Hewlett Packard	5890
Gas Chromatograph/Mass Spectrometer	Varian	3400
Purge & Trap Concentrator	Tekmar	LSC2000
Auto Sampler	Tekmar	ALS2016
Mass Spectrophotometer	Finnigan	INCOS50
Auto Sampler	Finnigan	A200S

Table 7-3
Van Nuys Laboratory Instrumentation

Equipment List

Del Mar Analytical, Van Nuys

ITEM	BRAND	MODEL
Gas Chromatograph #1	Hewlett Packard	5890
Controller	HNU	PI-52
Auto Sampler #1	O.I. Analytical	MPM-16
Link #1	Perkin Elmer Nelson	900 Series
Purge & Trap Concentrator	O.I. Analytical	4560
Gas Chromatograph #4	Hewlett Packard	5890 Series II
Auto Sampler #4	O.I. Analytical	MPM-16
Purge & Trap Concentrator	O.I. Analytical	4460A
Link #2	Perkin Elmer Nelson	600 Series
Gas Chromatograph #2	Hewlett Packard	5890 Series II
Auto Sampler #2	O.I. Analytical	MPM-16
Purge & Trap Concentrator	O.I. Analytical	4560
Lamp Power #1	O.I. Analytical	4430
Lamp Power #2	O.I. Analytical	4430
Integrator	Hewlett Packard	3396A
Gas Chromatograph #3	Hewlett Packard	5890 Series II
Auto Sampler #3A	Hewlett Packard	7673
Auto Sampler #3B	Hewlett Packard	7673
Link #3	Perkin Elmer Nelson	600 Series
Controller	Hewlett Packard	7673
Centrifuge	Fisher Scientific	Turbo
Mult. Probe	Jenco	6071
Fixed Infrared Spectrometer	Foxboro	Miran1FF
Turbo Evaporator	Zymark	Turbo II

Table 7-3 (continued)

Equipment List

Del Mar Analytical, Van Nuys

ITEM	BRAND	MODEL
Vortex	Baxter Scientific	S8223-1
Orbiter	Lab-Line	Constant
Balance #1	Sartorius	Portable
Balance #2	Sartorius	Handy

Table 7-4
Tempe Laboratory Instrumentation

Equipment List

Del Mar Analytical, Tempe

ITEM	BRAND	MODEL
Gas Chromatograph #1	Hewlett Packard	5890
Gas Chromatograph #2	Hewlett Packard	5890
Purge & Trap Concentrator	O.I. Analytical	MPM-16
Auto Sampler #2	Hewlett Packard	7573
Purge & Trap Concentrator	Zymark	Turbovap
Balance	Mettler	AE260
Fixe Wavelength Infrared Spectrophotometer	Horiba	OCMA220
Gas Chromatograph #1	Perkin Elmer	8500
Sample Concentrator	Various	
Gas Chromatograph #2	Hewlett Packard	5890 II
Purge & Trap Concentrator	O.I. Analytical	4460A
Auto Sampler	O.I. Analytical	MPM-16
Sonicator	Sonics & Materials	VC600-2
Ultrasonic Bath	Brasonic	5200
pH Meter	Orion	501
Conductivity Meter	YSI	35
Hot Plate	VWR Scientific	Dylatherm
Hot Plate	Fisher Scientific	200T
Mechanical Shaker	Lab-Line	3506
Gas Chromatograph #3	Hewlett Packard	5890
Fixed Wavelength Infrared Spectrophotometer	Horiba	OMCA220
Purge & Trap Concentrator	Tekmar	2000
Auto Sampler	Tekmar	2016

8.0 SAMPLING

Sampling is an important part of any analysis. The result may be only as useful as the quality of the sampling effort. While the majority of Del Mar Analytical's clients assume the responsibility for developing and implementing a sampling plan. Del Mar Analytical is capable of a variety of field sampling procedures.

8.1 SAMPLING CONTAINERS AND PRESERVATION

Containers are purchased in large lots from various commercial sources and are equivalent, in terms of construction materials and cleaning protocols, to those listed in the Federal Register, October 26, 1984 and SW-846 Revision 1 December 1987. Containers are prepared in a designated area, labelled with a sample label which indicates the added preservative and then stored. Samples brought to Del Mar Analytical by clients who have done their own sampling, are appropriately preserved and stored in refrigerators upon arrival. Preparation of containers is done by technicians relying on Standard Operating Procedures for Bottle Preservation. Bottles for organics analyses are purchased from suppliers who certify the containers to have been cleaned by protocols as prescribed in the EPA methods for organics analyses. As part of the analytical process, sample containers are provided to clients with the appropriate preservatives free of charge. A sample container and preservative guide can be found in Table 8-1.

8.2 SAMPLE COLLECTION

Del Mar Analytical technicians collect samples under the direction of the client or the regulating authority. There are standard operating procedures for sampling of monitoring wells, 24-hour automatic composite sampling, bacteriological sampling, and basic field parameters. Standard operating procedures include a list of all the equipment necessary to perform the sampling, detailed instructions about the use and calibration of the instruments and sampling procedures, as well as instructions on decontaminating the equipment and necessary field quality control measures. The field technician takes a copy of the standard operating procedures along with his field sampling data sheets as part of his reference materials.

Equipment is inspected before each use to ensure that it functions properly. Field instruments are calibrated in the laboratory before each sampling event. Appropriate sample containers, personal safety gear, sampling devices and temporary storage coolers are checked for cleanliness and proper working conditions before each use.

Table 8-1
Sample Container and Preservative Guide

SAMPLE CONTAINER AND PRESERVATIVE GUIDE

	METHOD	CONTAINER	VOLUME	PRESERVATIVE	HOLDING TIME
Volatile Organic Chemistry					
(VFH) Gasoline	8015 Mod./BLS-191	VOA-glass	2 40ml vials	Cool 4°C	7 days*/14 soil
(VFH) Gasoline/BTEX	8015 Mod./8020	VOA-glass	2 40ml vials	Cool 4°C	7 days*/14 soil
Halocarbons	601/8010	VOA-glass	2 40ml vials	Cool 4°C	14 days
Aromatics	602/8020	VOA-glass	2 40ml vials	Cool 4°C	7 days*/14 soil
Purgeables	624/8240/8260	VOA-glass	2 40ml vials	Cool 4°C	7 days*/14 soil
Trihalomethanes	502.2	VOA-glass	2 40ml vials	Cool 4°C	7 days*/14 soil
Volatile Organic Compounds	524.2	VOA-glass	2 40ml vials	Cool 4°C	7 days*/14 soil
* To extend the Holding Time to 14 days, prepare bottle with HCL to pH<2.					
Semi-Volatile Organic Chemistry					
(EFH) Diesel	8015 Mod./BLS-191	glass-amber	1L	Cool 4°C	7 days**/14 soil
EDB & DBCP	504	VOA-glass	3 40ml vials	Cool 4°C, HCl	28 days
Semi-Volatiles (BNAs)	625/8270	glass-amber	1L	Cool 4°C	7 days**/14 soil
Pesticides & PCBs	608/8080	glass-amber	1L	Cool 4°C	7 days**/14 soil
Phosphorous Pests.	614/622/8140	glass-amber	1L	Cool 4°C	7 days**/14 soil
Herbicides	615/8150	glass-amber	1L	Cool 4°C	7 days**/14 soil
Polynuclear Aromatics	8310	glass-amber	1L	Cool 4°C	7 days**/14 soil
Carbamate Pesticides	632	glass-amber	1L	Cool 4°C	7 days**
** Holding Times shown are days until extraction. Samples have a 40 day Holding Time after extraction.					
Organic Chemistry					
Total Organic Carbon	415.2/9060	VOA-glass	1 40ml vial	Cool 4°C, H_2SO_4 pH<2	28 days
Total Organic Halides (TOX)	9020	poly or glass	500ml	Cool 4°C, H_2SO_4 pH<2	28 days
Metal Analyses					
Mercury	245.2/7471	poly	500ml	HNO_3 to pH<2	28 days
Chromium VI	218.4/7196	poly	500ml	Cool 4°C	24 hours***
Organic Lead	CA DHS (LUFT)	glass-amber	1L	Cool 4°C	14 days
All Other Metals	200/6000/7000	poly	500ml	HNO_3 to pH<2	6 months
*** Indicates 24 hour Holding Time from extraction or sample preparation					

Table 8-1 (continued)

SAMPLE CONTAINER AND PRESERVATIVE GUIDE

	METHOD	CONTAINER	VOLUME	PRESERVATIVE	HOLDING TIME
Inorganic & Wet Chemistry					
Alkalinity	310.1	poly or glass	500ml	Cool 4°C	14 days
Ammonia (as N)	350.3	poly or glass	500ml	Cool 4°C, H_2SO_4 to pH<2	28 days
BOD	405.1	poly or glass	1L	Cool 4°C	48 hours
COD	410.4	poly or glass	500ml	Cool 4°C, H_2SO_4 to pH<2	28 days
Chloride	300.0	poly or glass	None	None	28 days
Chlorine Residual	330.5	poly or glass	200ml	None	Immediate
Cyanide	335.1/335.2/9010	poly or glass	1L	Cool 4°C, NaOH to pH>12****	14 days
Flashpoint	1010	poly or glass	100ml	Cool 4°C	NA
Fluoride	300.0/340.2	poly or glass	500ml	None	28 days
Hardness	SM2340B	poly or glass	500ml	HNO_3 or H_2SO_4 to pH<2	6 months
MBAS (Surfactants)	425.1	poly or glass	500ml	Cool 4°C	48 hours
Nitrate or Nitrite	300.0	poly or glass	500ml	Cool 4°C	48 hours
Oil & Grease	413.1/413.2	glass-amber	1L	Cool 4°C, HCl to pH<2	28 days
Ortho Phosphate	300.0	poly or glass	100ml	Cool 4°C, Filter	48 hours
Phenols	420.1	glass-amber	1L	Cool 4°C, H_2SO_4 to pH<2	28 days
Phosphorous	365.2	poly or glass	500ml	Cool 4°C, H_2SO_4 to pH<2	28 days
pH	150.1	poly or glass	500ml	None	Immediate
Solids (TDS.TSS.TS)	160.1/160.2/160.3	poly or glass	1L	Cool 4°C	7 days
Specific Conductance	120.1	poly or glass	500ml	Cool 4°C	28 days
Specific Gravity	SM2710F	poly or glass	500ml	None	NA
Sulfate	300.0	poly or glass	500ml	Cool 4°C	28 days
Sulfide	376.2	poly or glass	500ml	Cool 4°C, Zn Acetate+NaOH pH>9	7 days
Surfactants or MBAS	425.1	poly or glass	500ml	Cool 4°C	48 hours
TKN	351.4	poly or glass	500ml	Cool 4°C, H_2SO_4 to pH<2	28 days
TOC	415.2	VOA-glass	40ml	Cool 4°C, H_2SO_4 to pH<2	28 days
TRPH	418.1/BLS-181	glass-amber	1L	Cool 4°C, HCl to pH<2	28 days
Turbidity	180.1	poly or glass	100ml	Cool 4°C	48 hours
Microbiological Chemistry					
Bioassay (Effluent)	600/4-85/01	poly or glass	10 Gallons	Cool 4°C	36 hours
Bioassay (Haz. Waste)	Title 22/26	poly or glass	1L†	Cool 4°C	36 hours

**** If chlorinated, add 0.6g Ascorbic Acid. † For oral or hazardous waste samples, at least 100g are needed.

Soil samples are typically collected in brass tubes and wide mouth jars (4 oz. and 9 oz. are available).

After collection, the samples are placed in a cooler with blue ice and temporarily stored until returned to the laboratory. When requested, a trip blank is prepared before sampling and accompanies the containers out to the sampling site and back to the laboratory in the same cooler.

9.0 CHAIN OF CUSTODY

The chain-of-custody form is the written documented history of any sample. This form is completed at the site by the sampling personnel and accompanies the samples to the laboratory where it is received and stored under the laboratory's custody. The purpose of the chain-of-custody form is to provide a legal written record of the handling of samples from the time of collection until they are received at the laboratory. An example of Del Mar Analytical Analytical's chain-of-custody form may be found in Figure 9-1.

9.1 FIELD DOCUMENTATION

At the sampling site, each sample is labelled with the client's sample identification, the date and time of sampling, the name of the client, the name of the sampler, and any other pertinent information. During the sampling process, the chain-of-custody form is completed with the address and phone number of the client, the analyses requested, the containers and preservatives used, and the sampling date and time. The samples are stored in a cooler with blue ice and remain solely in the possession of the field technician until the samples are returned to the laboratory. The field technician relinquishes the samples in writing on the chain-of-custody form to the sample control personnel.

9.2 LABORATORY RECEIPT DOCUMENTATION

When the samples are received at the laboratory, Sample Control personnel check to ensure that all samples listed on the chain-of-custody are present and in acceptable condition. After inspecting the samples, the sample control personnel sign and date the Chain-of-Custody form, make any necessary notes of the samples' conditions (see section 9.3) and store them in appropriate refrigerators.

If samples are received without a chain-of-custody form, Del Mar Analytical will provide a generic chain-of-custody form to be completed by the client when the samples are brought to the laboratory. The client is always provided with a copy of the completed chain-of-custody form for his or her records.

9.3 SAMPLE INTEGRITY DOCUMENTATION

Sample Control personnel check all samples to ensure that method criteria are met. This criteria includes sample volumes, sample containers, preservatives, temperature, and presence of headspace. If analyses with short holding times are required, the dates are inspected to ensure that holding times have not been already violated.

Figure 9-1
Chain-of-Custody Form

Del Mar Analytical

29576

CHAIN OF CUSTODY/REQUEST FOR ANALYSIS

Client Name/Address

Project Manager

Project

Computer

Analysis Requested

Sample Description	Sample Matrix	Container Type	# of Cont	Sampling Date/Time	Preservatives									Special Instructions

Relinquished By — Date/Time
Relinquished By — Date/Time
Relinquished By — Date/Time

Received By — Date/Time
Received By — Date/Time
Received For Lab By — Date/Time

Turnaround Time (check)
Same day ____ 72 hours ____
24 hours ____ 5 days ____
48 hours ____ normal ____

Sample Integrity (check)
intact ____ other ____

Note: Samples will be disposed after 30 days

Sample Control personnel are also responsible for the compositing of samples and splitting of samples which have multiple analyses or subcontracted analyses requested. These parameters are documented on the form shown in Figure 9-2. Problems with sample integrity or paperwork inconsistencies are reported to the Project Manager for corrective action.

9.4 SAMPLE LOG-IN

Upon receipt at Del Mar Analytical, each sample is given a unique sample number and stored appropriately in matrix specific refrigerators. Separate refrigerators exist for drinking water samples and volatile samples. Each of these unique sample numbers are entered in a Laboratory Information Management System (LIMS) along with the client's name, the project name, the analyses requested, the turnaround status, the due date and any specific instructions regarding detection limits, hazardous materials, QC, or other pertinent information. The LIM system cross references the information in a variety of formats. Each Analyst can print out his or her own work list at any time. Furthermore, the Project Managers have access to the same information.

9.5 SAMPLE STORAGE

From the time of receipt until all analyses are complete, samples are stored in matrix specific refrigerators. Analysts and technicians retrieve the sample container allocated to their analysis from the designated refrigerator, analyze the sample, and return the remaining sample or empty container to the refrigerator from which it originally came. All samples are kept in the refrigerators for four weeks, which meets or exceeds most sample holding times. After four weeks the samples are moved to a dry sample archive area where they are stored for four additional weeks before they are disposed. This eight week holding period allows samples to be checked if a discrepancy or question arises. Upon request, samples may be stored in excess of six months at the laboratory. This extended holding period allows additional metal analyses to be performed on the archived sample and assists clients in dealing with legal matters or regulatory issues.

9.6 HAZARDOUS SAMPLES

To minimize exposure to personnel and to avoid potential accidents, hazardous samples are stored in an isolated area designated for hazardous waste only. Hazardous samples are divided according to hazard, and labelled with a strip of red sticker on the container. After analysis, the level of the contaminant is written on the red sticker and on a Hazardous Sample Notice form like the one presented in Figure 9-3. All hazardous samples are either returned to the client or disposed of appropriately through a hazardous waste disposal firm that lab-packs all hazardous samples and removes them from the laboratory.

Figure 9-2
Sample Receipt Form

SAMPLE RECIEPT FORM

CLIENT NAME: _____ PROJECT: _____ DATE: _____

DMA PROJECT MANAGER: _____ RECEIVED BY: _____

Check the Appropriate Response(s):	SAMPLE DESCRIPTION	SAMPLE I.D. #	REMARKS: (CONDITION, ETC.)
_____ Custody Seals Broken			
_____ Absent Chain of Custody			
_____ Absent Sample Labels			
_____ Sample Labels not Listed on C.O.C.			
_____ Sample Labels do not Correspond with C.O.C.			
_____ Sample has Headspace			
_____ Sample is Leaking			
_____ Sample is Broken			
_____ Collection Dates not Listed on C.O.C.			
_____ Collection Dates do not Correspond With C.O. C			
_____ Improper Sample Container			
_____ Insufficient Amount of Sample			
_____ Improper Preservatives Used			
_____ Expired Holding Time			
_____ Other			

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17.0 TRAINING

At the start of their employment at Del Mar Analytical, all new employees receive a copy of the Employee Handbook, the Chemical Hygiene Plan and a copy of the Quality Assurance Manual. These are his or hers to keep as reference materials. It is the responsibility of the new employee to read, understand and acknowledge the contents of these manuals. Once the new employee has read and understood the contents of the manual, he or she must sign a document that states that he or she agrees to adhere to the requirements prescribed therein. These records are kept on file with the Laboratory Director.

The Employee Handbook contains information about the company's history and objectives, administrative scheduling, benefits, and general administrative policies. The Chemical Hygiene Plan contains pertinent information about the possible hazards of chemicals to which employees may be exposed and how to properly interact with those chemicals. The Quality Assurance Manual contains information about the goals of the Quality Assurance Program and its implementation.

To aid in the training of a new Analyst, each department has a reference binder which includes copies of the methods, all related extraction, cleanup, dilution methods, analytical Standard Operating Procedures, all relevant quality control documentation forms and corrective action reports. The Analyst must read and understand the contents of the binder and be able to answer questions to demonstrate his/her understanding. Additional verbal instruction from an experienced Analyst, the group leader, Technical Manager and the Quality Assurance Officer is provided to ensure a working understanding of the requirements set out by the analytical methods, Quality Assurance Program Manual, Employee Handbook and Chemical Hygiene Plan.

An experienced Analyst introduces the new Analyst to all the instrumentation involved in his or her analyses. Standard Operating Procedures, preventative maintenance, and troubleshooting for the instrument are reviewed by both the experienced and new Analyst. A maintenance logbook explaining any previous history specific to each instrument is reviewed by both the experienced and the new Analyst.

Once the new Analyst feels comfortable with all the analytical and documentation requirements and demonstrates the ability to operate the instrumentation satisfactorily, he or she will spend time observing the actual performance of the analysis by the experienced Analyst. Gradually, the new Analyst will help at various steps in the process in the presence of the experienced Analyst. Eventually, the new Analyst will perform the entire analysis in the presence of the experienced Analyst to ensure adequate proficiency. Once the new Analyst has

demonstrated proficiency in the analytical procedures and has demonstrated the ability to maintain quality assurance documentation. he or she will begin to analyze samples on his or her own.

Once the new Analyst has assumed responsibility for the analysis, routine review of data by the new Analyst's Supervisor continues as part of regular data review processes. Regular auditing by the Internal Quality Assurance Auditor ensures continued compliance with Quality Assurance requirements.

Please see Figure 17-1 as an example of training guidelines for 8240 analyses.

Figure 17-1
Training Guidelines for 8240 Analyses

TRAINING SUMMARY

The following training summary is provided as a guideline for training individuals in Volatile Organic Analysis. specifically EPA methods 624 and 8240.

I. Introduction
   A. Equipment
      1. Purge and Trap
      2. GC
      3. MS
      4. Data System
   B. Data System
      1. MSDS
      2. IDOS
   C. Method
      1. Overview of volatile analysis
      2. Method exceptions

II. Documentation
   A. Instrument analysis logbook
   B. Instrument maintenance logbook
   C. Standard preparation logbook

III. Start-up Procedure
   A. Bootstrapping

IV. Mass Assignment Calibration
   A. FC-43
   B. Scan parameters
      1. Mass range FC-43,35-525

V. Manual Tune
   A. Parameters
      1. Defined
      2. Adjustments
   B. "Ideal" Tune
      1. Ratios of masses 69:131:219
      2. Resolution
   C. Documentation
      1. Hardcopy of manual time
      2. File

Figure 17-1 (continued)

TRAINING SUMMARY (Continued)

VI. Creating FC-43 Calibration Table
- A. Acquisition
- B. Check Fit
- C. Documentation
  1. Hardcopy fit
  2. File

VII. Gas Chromatograph Parameters
- A. Temperature programs
  1. BFB
     a. Isothermal run (170)
  2. Standards, blanks, and samples
     a. Temperature ramp

VIII. Bromofluorobenzene (BFB) Tune
- A. Scan parameters
  1. Mass range BFB.35-260
- B. Acquire BFB
- C. Check for pass or fail
  1. View chromatogram (CHRO)
  2. Select scan (S)
     a. Identify and explain mass relationship of 50:95:174:177
  3. List mass (L)
  4. Get report (B)
- D. If BFB fails to meet criteria
  1. Document why in logbook
  2. Reshoot
  3. After 3-4 attempts, manual tune again
- E. If BFB meets criteria
  1. Run on a 12 hour curve
  2. After 12 hours, re-run BFB

IX. Preparation for analysis
- A. Explain sample lists
  1. Sample numbers
  2. Sample due dates
  3. Sample holding times
  4. Special notes

Figure 17-1 (continued)

TRAINING SUMMARY (Continued)

B. Explain matrix
   1. Water, drinking water
   2. Soil, medium soil
   3. Sludge
   4. Air
C. Finding samples in refrigerator
   1. Volatile room
   2. Main hall

X. Acquisition of standard
   A. Glassware
   B. Standards
      1. Internal standard and surrogate
      2. Volatile standard
      3. Miscellaneous standards
   C. Analysis of standard
      1. Water
      2. Low soil
      3. Medium soil
   D. Quantitation of standard
      1. TCA (DOVO)
      2. Mapping in missed compounds
      3. Editing quantitation list
      4. Updating standard (R:T;S)
   F. Check standard for compliance
      1. 5-Point calibration
      2. Daily calibration

XI. Acquisition of VOA blank
   A. Glassware
   B. Standards
      1. Internal standard and surrogate
   C. Analysis
      1. Same conditions as standard
   D. Quantitation of blank
      1. Check IS area
      2. Check surrogate recovery
      3. Check for compliance (<D.L.)
      4. Check for quantitation against correct standard

Figure 17-1 (continued)

TRAINING SUMMARY (Continued)

E. Write up of blank
   1. Quantitation list
   2. Chromatograms
   3. CSPECs
      a. Spectral matches
      b. Nonspectral matches
   4. Library searches

XII. Analysis of samples
   A. Soils
      1. Identify if sample requires dilution
         a. Observe physical characteristics
            i. Color
            ii. Matrix
            iii. Odor (DO NOT smell directly)
         b. Client history
      2. Sample weights
      3. Dilution factors
      4. Extractions
   B. Waters
      1. Refer to XII A-1
      2. Dilution factors
   C. Analysis of samples
   D. Quantitation of samples
   E. Check for compliance
      1. Internal standards
      2. Surrogates
      3. Acceptable limits for amounts
         a. Calibration curve
         b. Dilutions
   F. Write up of samples
      1. Refer to XI E

XIII. Review final data package
   A. BFB
   B. DCAL
   C. Blank
   D. Samples

Figure 17-1 (continued)

TRAINING SUMMARY (Continued)

XIV. Shutdown procedure

XV. QA/QC
- A. Forms to turn in
- B. Nonconformance

XVI. Reporting data

XVII. Miscellaneous section
- A. Stop acquisition
- B. ACQU/O
- C. SAMPLR
- D. Changing number of scans while acquiring
- E. Taping data
- F. Standard preparation
- G. 5-Point calibration
- H. Instrument maintenance
- I. Troubleshooting

_____ has been successfully trained in the above procedures and has demonstrated the ability to perform the analysis, maintain all QA/QC requirements, and report results on his or her own.

Supervisory Signature: _____ Date: _____

QA/QC Officer Signature: _____ Date: _____

18.0 GLOSSARY OF TERMS

ACCREDITATION: Accreditation is awarded to a laboratory which meets the prescribed standards of a recognized accreditation organization. Environmental laboratory accreditation is available from the American Association for Laboratory Accreditation (A_2LA) and the California Department of Health Services Environmental Laboratory Accreditation Program.

ACCURACY: The measure of how close a result is to the true value. It is usually expressed as the percent difference between the true value and the value obtained by an analytical determination. (See Matrix Spike/Matrix Spike Duplicate)

AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION (A,LA): The American Association for Laboratory Accreditation is an organization which accredits laboratories based upon internationally accepted criteria for competence described in the ISO/IEC Guide 25-1990, "General Requirements for the Competence of Calibration and Testing Laboratories".

ANALYTICAL BATCH: A group of no more than 20 samples of similar matrix which is extracted and/or analyzed together. The chemical reagents and the analytical process is kept constant for each analytical batch. A specific set of quality control samples are analyzed with each analytical batch and are used to estimate the quality of the results of the entire batch.

ATOMIC ABSORPTION SPECTROPHOTOMETER (AA): An instrument which is used to detect and quantify metals. Typically this instrument can analyze only one metal per analysis.

BLANK: A blank is a quality control sample designed to monitor the introduction of contamination into the sampling and analytical process. There are several types of blanks:

Calibration Blank: An organic or aqueous solution that is as free of analytes as possible and prepared with the same volume of reagents used in the preparation of calibration standards. The calibration blank is used to give the "0" reading for the calibration of the instrument.

Equipment Blank: Reagent Grade Water which is opened in the field, poured over and through the sample collection device, and returned to the lab as a sample. Equipment blanks are a check of the cleanliness of the sampling device.

Field Blank: An organic-free aqueous solution that is transferred from one preserved vessel to another at the sampling site. This serves as a check on reagent and environmental contamination.

Method Blank: An organic or aqueous solution that is as free of analyte as possible and is processed in the same manner as an environmental sample. The method blank is used to assess contamination originating from preparation and analytical procedures.

Trip Blank: Reagent Grade Water which is transported to the sampling site in an appropriate sample container and returned to the laboratory without being opened. The trip blank is analyzed to assess contamination originating from sample transport, shipping and site conditions.

Travel Blank: See TRIP BLANK

CERTIFICATION: A state issued document certifying that a laboratory may officially perform environmental analyses for the purpose of determining compliance with environmental regulations. California certification is divided into categories of Drinking Water, Hazardous Waste, Wastewater, Bulk Asbestos Testing, Proposition 65 Analyses, Shellfish Sanitation, Radiochemistry and Pesticide Residues in Food. Each category is further subdivided into "Fields of Testing" which include specific methods. California laboratories are certified for individual fields of testing only after applying for certification and passing an audit.

CHAIN-OF-CUSTODY FORM: The document which includes the signatures of each person who has had custody of the environmental samples from the source to the laboratory. The chain-of-custody form is critical evidence of sample integrity if the laboratory data must be defended in court.

CONTRACT LABORATORY PROGRAM (CLP): A program administered by the EPA which defines the Data Quality Objectives for commercial laboratories hired by the EPA. Acceptance as a CLP laboratory is an EPA vendor approval.

DATA QUALITY: The ability of a specific set of data to satisfy a given purpose. Data quality is affected by sample collection procedures, sample transportation, sample storage integrity, quality control of sample analysis and data reporting.

DATA QUALITY OBJECTIVES (DQO): A description of the factors which define the acceptability of data for a specific project or assessment program.

DATA VALIDATION: A systematic process to review data and to identify outliers, omissions or suspect values in order to assure the validity of the data.

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM (ELAP): The program administered by the California State Department of Health Services which audits and certifies environmental laboratories.

ENVIRONMENTAL SAMPLE: A sample originating from the project site which is analyzed for the purpose of site or process assessment.

GAS CHROMATOGRAPH (GC): An instrument which uses separation technology to detect and quantify organic components of a sample.

GAS CHROMATOGRAPH/MASS SPECTROMETER (GC/MS): A gas chromatograph linked to a mass spectrometer which is capable of identifying chemical compounds based upon their unique ion fragmentation pattern.

HIGH PERFORMANCE LIQUID CHROMATOGRAPH (HPLC): An instrument which uses separation technology to detect and analyze organic compounds. This instrument is typically used to detect and quantify the presence of high molecular weight compounds (semi-volatile) and polar compounds.

ION CHROMATOGRAPH (IC): An instrument which uses separation technology to detect and quantify anions.

INDUCTIVELY COUPLED ARGON PLASMA SPECTROPHOTOMETER (ICP): An instrument used to measure metals. Typically this instrument is used to detect and quantify multiple metals in each analysis.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD): A quality control technique used to measure the accuracy and precision of an analytical batch (an analytical batch includes samples of the same matrix). One sample is chosen as a representative of the matrix and is divided into two portions. Each portion of the sample is spiked (fortified) with a known concentration of analyte. One of the spiked portions is the matrix spike (MS), the other portion is the matrix spike duplicate (MSD). The MS and MSD samples are then analyzed in the same manner as the environmental samples in the analytical batch. Accuracy is estimated by subtracting the original, non-spiked sample result from the spiked sample result, and comparing that number to the concentration of spike added. Precision is estimated by comparing the percent of spike recovery of the matrix spike to the matrix spike duplicate.

METHOD DETECTION LIMIT (MDL): The Method Detection Limit is the minimum concentration of an analyte which can be measured and reported with 99% confidence that the value is greater than zero, as performed under ideal operating conditions on a sample with a clean matrix.

MIDPOINT STANDARD: A standard which is analyzed to determine the validity of the multi-point calibration of an instrument. The calibration check standard evaluates the instrument calibration prior to sample analysis. The midpoint standard is also referred to as the "calibration check standard".

PRACTICAL QUANTITATION LIMIT (PQL): The Practical Quantitation Limit is the lowest level to be reliably detected within specified limits of precision and accuracy during routine laboratory operating conditions on environmental samples.

PERFORMANCE AUDIT: The planned independent check of the operation of a measurement system to obtain a quantitative measure of the quality of the data generated.

PRECISION: The measure of the repeatability of a determination. Precision is frequently expressed as the relative percent difference between duplicate samples analyzed in the same manner. (See Matrix Spike/Matrix Spike Duplicate).

PURGE AND TRAP: A sample preparation device which is used to extract and concentrate volatile components from a sample. The sample is placed in a sealed vessel, then purged with a stream of inert gas. The stream of gas and volatiles from the sample are swept onto a solid adsorbent trap. After purging the sample

for the prescribed time period, the trap is rapidly heated and back flushed into the gas chromatograph for analysis.

QUALITY ASSURANCE: The integrated program for assuring the reliability of laboratory data. Quality Assurance incorporates quality control of the procedures for field sampling, sample handling and storage, analytical processes and document preparation and review.

QUALITY CONTROL: The routine application of procedures for obtaining prescribed standards of performance and rejecting performance which does not meet the prescribed standards.

QUALITY CONTROL SAMPLE: A sample originating in the field or in the laboratory which is analyzed for the purpose of assessing quality control.

REAGENT GRADE: Analytical Reagent (AR) Grade, ACS Reagent Grade and Reagent Grade are synonymous terms for reagents which conform to the current specifications of the Committee on Analytical Reagents of the American Chemical Society.

SAMPLE: A discreet representative part or a single item from a larger group presented to the laboratory for analysis.

Duplicate Sample: A replicate sample which is intended to be identical to the original sample. A duplicate sample can originate from the project site and be in a separate sample container or may be generated in the laboratory by splitting a sample into two portions.

Laboratory Control Sample (LCS): A blank sample which has been spiked (fortified) with the method analytes and analyzed in the same manner as the environmental samples. The standard mixture used to spike the LCS must be obtained from a source other than the primary calibration standard mixture. The LCS is sometimes referred to as a "blank spike" and is used to determine the overall performance of the instrument, as well as to determine the validity of the calibration standards.

REAGENT WATER: Distilled or de-ionized water which is free of contaminants that may interfere with the analytical test.

SEMI-VOLATILE ANALYTES (EXTRACTABLES): A general term used to describe a group of compounds which are not volatile at ambient temperature. These analytes are extracted from samples using organic solvents.

STANDARD: A solution of known concentration which contains the method analytes. Standards are used to calibrate the instruments and to create quality control samples of known concentration.

Calibration Standard: Dilutions of stock standard solutions prepared at various concentrations which are used to generate a calibration curve for an analysis.

Calibration Check Standard: A standard which is analyzed to determine the validity of the multi-point calibration of an instrument. The calibration check standard evaluates the instrument calibration prior to sample analysis. The calibration check standard is also referred to as the "daily midpoint standard".

STANDARD CURVE: A graph of the calibration standard concentration versus instrument response for an analyte. The standard curve illustrates the quantitation range for an analyte. The concentration of analyte in an environmental sample can then be determined by taking the sample instrument response and calculating the appropriate concentration from the standard curve.

STANDARD METHODS: Standard Methods for the Examination of Water and Wastewater, is a reference book of analytical methods prepared and published jointly by the American Public Health Association, the American Water Works Association and the Water Environment Federation. The methods are very similar to EPA methods and are recognized by most regulatory agencies for drinking water and wastewater. Unlike the EPA methods, each Standard Method begins with a discussion of the method principles and its application to water samples.

STANDARD OPERATING PROCEDURE (SOP): A written procedure for performing an operation, analysis or protocol. An SOP is prepared for each extraction and analysis in the laboratory which consists of the published method to be used and includes any method exceptions.

SURROGATE: Surrogate compounds are similar in chemical composition to the target analytes and are spiked into every sample prior to analysis. The surrogate compounds selected are not found in environmental samples. Surrogates are spiked into both environmental samples and quality control samples prior to analysis. The percent

recoveries of the surrogates are calculated and are the primary data used to assess the recovery of target analytes.

SW-846: The EPA document "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods". This is the source document for hazardous waste analytical methods.

TITLE 22: California Code of Regulations, Title 22. Social Security, Division 4. Environmental Health, is the group of California laws which apply to water quality and hazardous waste management.

VOLATILE ORGANIC ANALYTE (VOA): A general term used to describe a range of organic compounds which are volatile at ambient temperature. These compounds are usually extracted from samples by purging with a stream of inert gas and trapping the volatiles on a solid adsorbent (purge and trap).

DISTRIBUTION

Phase I Work Plan
Drum Removal Action
Omega Chemical Facility
12504 East Whittier Boulevard
Whittier, California

June 16, 1995

Copy 1:	Mr. Richard Wm. Martyn Federal On-Scene Coordinator Emergency Response (H-8-3) U.S. Environmental Protection Agency 75 Hawthorne Street San Francisco, California 94105-3901
Copy 2:	Mr. Michael K. Schwennesen Ecology and Environment, Inc. 11 Golden Shore Long Beach, California 90802
Copies 3 - 5:	Dr. Ian A. Webster Senior Superfund Project Manager Unocal Corporation 1201 West 5th Street Los Angeles, California 90017
Copy 6:	Project File
Copy 7:	HLA Library

QA/QC Reviewer:

Matthew L. McCullough, P.E.
Principal Engineer

Figure 9-3
Hazardous Sample Notice

HAZARDOUS SAMPLE NOTICE

DATE:_____

LOG#:_____

CLIENT:_____

PROJECT:_____

___ SAMPLE POTENTIALLY HAZARDOUS

___ SAMPLE HAZARDOUS

SAMPLE ID	SAMPLE DESCRIPTION	HAZARD: COMPOUND & RESULT

These samples need to be tagged and separated accordingly.

Initials:_____

9.7 SAMPLE SHIPPING

In the event that Del Mar Analytical needs to ship samples, the samples are placed in a cooler with enough blue ice to ensure the that the samples remain at 4°C. The samples are carefully surrounded by packing material to avoid breakage, and a trip blank is enclosed for those samples requiring volatile organic analyses. The chain-of-custody form is signed by the courier and attached to the shipping paperwork. Samples are generally shipped overnight express or hand-delivered by a Del Mar Analytical courier to maintain sample integrity. Del Mar Analytical staffs full-time couriers at each facility. These couriers are trained to maintain the proper chain-of-custody documentation and to keep the samples intact and on ice. Courier service is provided free of charge.

10.0 ANALYTICAL METHODS AND STANDARD OPERATING PROCEDURES

Del Mar Analytical adheres to the test methods as prescribed in EPA SW-846 Revision 1, 1987 for the majority of its analytical procedures. Other method references may include the EPA Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater (EPA 600 Series), EPA Methods for the Determination of Organic Compounds in Drinking Water (EPA 500 Series), California Title 22 Code, California AB 1803, Code of Federal Regulations 40, Luft Manual and Standard Methods, 18th Edition, 1992. Some of these methods have been modified and documented in the standard operating procedures used by Del Mar Analytical. It is our policy to modify methods only when the modification has shown to increase the efficiency and/or accuracy of the method without affecting the quality control. Any modification is tested to determine viability, and is only used after being approved by the Quality Assurance Officer. Major modifications are approved by all agencies governing the certification of Del Mar Analytical before being implemented.

Standard operating procedures are created for use as a reference for Analysts, and for documenting modifications to established methods. When approved, all standard operating procedures are signed and dated by the Quality Assurance Officer or Department Supervisor. All standard operating procedures are written in a standard format to maintain consistency. Any time a standard operating procedure is amended a new revision is issued with the new date it becomes effective. Table 10-1 is a directory of standard operating procedures for laboratory and clerical personnel.

Table 10-1
Standard Operating Procedures Directory

STANDARD OPERATING PROCEDURES DIRECTORY

STANDARD OPERATING PROCEDURES FOR LABORATORY PERSONNEL

EXTRACTION PROCEDURES

EPA Method 504, EDB & DBCP
EPA Method 608, Pesticides and PCBs in Water
EPA Method 615, Herbicides in Water
EPA Method 625, Semi-Volatile Organic Compounds: Continuous Extraction
EPA Method 625, Separatory Funnel Extraction
EPA Method 8015, Diesel Extraction
EPA Method 8015, Diesel in Water
EPA Method 8015, Jet Fuel Extraction
EPA Method 8080, Florisill Clean-up
EPA Method 8080, Pesticides and PCBs in Soil
EPA Method 8150, Herbicides
EPA Method 8270, Semi-Volatile Organic Compounds Extraction

METHOD EXCEPTIONS

EPA Method 160.1, Total Dissolved Solids
EPA Method 160.2, Total Suspended Solids
EPA Method 160.5, Settleable Solids
EPA Method 300, The determination of inorganic anions in water by Ion Chromatography
EPA Method 418 Modified soil, Total Recoverable Petroleum for SCL 418 Hydrocarbons (Soil)
EPA Method 418 Water, Total Recoverable Petroleum Hydrocarbons (Water)
EPA Method 502.2, Volatile Organic Compounds
EPA Method 601 & 602, Halogenated Volatile Organics (601), Aromatic Volatile Organics (602)
EPA Method 602, Purgeable Aromatics
EPA Method 624, Purgeables
EPA Method 625, Base/Neutral and Acids, Semi-Volatiles by GC/MS
EPA Method 3060, Alkaline Digestion to determine the total conc. of hexavalent chromium in solid wastes
EPA Method 7196, Hexavalent Chromium (Colorimetric Method)
EPA Method 7470, Mercury in liquid waste (Manual cold vapor technique)
EPA Method 7471, Mercury in solid waste (Manual cold vapor technique)
EPA Method 8000, SW-846 Quality Control: Organics
EPA Method 8010/8020, Halogenated Volatile Organics (8010), Aromatic Volatile Organics (8020)
EPA Method 8015 Modified for DHS LUFT Manual, Non-Halogenated Volatile Organics (Modified for TPH as gasoline)
EPA Method 8015 Modified for DHS LUFT Manual, Total Petroleum Hydrocarbons as Diesel

Table 10-1 (continued)

STANDARD OPERATING PROCEDURES DIRECTORY (Continued)

METHOD EXCEPTIONS (Continued)

EPA Method 8015 Modified for DHS LUFT Manual, Total Petroleum Hydrocarbons Jet Fuel
EPA Method 8020, Aromatic Volatile Organics
EPA Method 8080, Organochlorine Pesticides and PCB's
EPA Method 8240, GC/MS for Volatile Organics
EPA Method 8270, GC/MS for Semi-Volatile Organics (Capillary Column)

MISCELLANEOUS

ASTM D-1946-90, Standard Practice for the Analysis of Reformed Gas by G.C.
Bottle Preservation
EPA Method 415.1, Total Organic Carbon
EPA Method 6010, ICP Metal Analyses
EPA Method 8010/8020 & 601/602, Halogenated Volatile Organics (Supplement)
EPA Method 8015 Modified, Alcohol Scan by GC/FID
EPA Method 8015 Modified Air, Gas/BTEX by G.C. (based on EPA mod-8015/8020)
Glassware Cleaning
Ion Chromatographic Method for Determination of Sulfur
Laboratory Waste Disposal
Purge Water Preparation
Reagent Preparation
Sample Control
Sample Control Training Manual
Sample Result Reporting
Sample Weighing
Significant Figures
Statistician
SW-846 Method 9060, Total Organic Carbon

STANDARD OPERATING PROCEDURES FOR CLERICAL PERSONNEL

Courier
Data Processor
Project Management
Purchasing Agent
Report Processor

11.0 ANALYTICAL QUALITY CONTROL

Quality control measurements verify the integrity of the analytical results. While the goal of all quality control procedures remains constant, specific quality control procedures vary from method to method, and to some extent, with matrix type. Every Analyst is responsible for a thorough understanding of the goals of each quality control measurement and the control analyses as required per method. The Analyst is also responsible for the documentation of all quality control measurements associated with a particular method. All documentation is kept on file and securely stored for a minimum of ten years.

Del Mar Analytical adheres to the quality control procedures as prescribed in EPA SW-846 Chapter 1, Revision 1, 1992 for the majority of its analytical procedures. For projects which require a more in-depth validation of the data, Del Mar Analytical can provide different levels of documentation. For special regulatory or legal defensibility issues, custom data packages can be prepared.

11.1 CALIBRATION

Calibration of analytical instrumentation is essential to the production of quality data. Strict calibration procedures are followed for each method. These procedures are designed to determine and document the detection limits, the working range of the analytical instrumentation and any fluctuations which occur from day to day.

11.1.1 CALIBRATION FOR ORGANIC ANALYSES

EPA Method 8000, from EPA SW-846, Revision 1, December 1987, is a general introduction to the quality control requirements for gas chromatography analyses. Del Mar Analytical follows the quality control measures of EPA Method 8000 for all organic analyses as well as any additional measures required by specific EPA methods. Standard operating procedures for analytical methods and all quality control documentation measures are kept in the Analysts' notebooks and reference binders.

The majority of organic instrumentation is calibrated with internal standards. Because of the complex nature of the multipeak chromatograms produced by the method, some instruments necessitate the use of external standard calibration. Surrogate compounds are included in the calibration processes for all appropriate organic analyses.

Initially, each instrument is calibrated for the appropriate method. Once the operating parameters have been established according to the method, the Analyst prepares five or more standard solutions containing all the analytes of interest, internal standards, and surrogates that are appropriate for the method. These standard solutions are prepared at five different concentrations. One of the concentrations is at, or just above, the detection limit, and the other four should define the linear range for the instrument. All of the standard solutions are prepared using volumetric glassware and the highest quality solvents and stock standards commercially available. Volatile analyses are calibrated approximately every four weeks, or as necessary to maintain accurate calibration. Semi-volatile analyses are calibrated every six to eight weeks, or as necessary to maintain accurate calibration.

Standards for instrument calibration are obtained from a variety of sources. Dilution standards are prepared from stock standards purchased from commercial suppliers. Any stock standard purchased "neat" (>96% pure) is diluted by weight on an analytical balance using volumetric glassware. A standard log is maintained for each department, containing concentration, date of receipt, date of standard preparation, any dilutions made, lot number, supplier, type of solvent and a unique code number to identify the standard. A standard log is presented in Figure 11-1.

The five standard solutions are introduced into the instrument in the same manner as the sample extract whether it be by direct injection, by headspace analysis, or by purge and trap. The calibration factor (CF) for methods that use external standards, and the response factor (RF) for methods that use internal standards are calculated for the five standards. Calibration Factors and Response Factors for each analyte are calculated as follows:

$$\text{Calibration Factor} = \frac{\text{Total Area of Peak}}{\text{Concentration of Analyte}}$$

$$\text{Response Factor} = \frac{(\text{Area of Analyte})(\text{Conc. of Internal Standard})}{(\text{Area of Internal Standard})(\text{Conc. of Analyte})}$$

The CF or RF for each analyte at each concentration is tabulated to determine the graphical linearity of concentration versus response factor or calibration factor. The five CFs or RFs for each analyte must have a % Relative Standard Deviation (% RSD) of less than 20% for the GC methods and less than 30% for volatile GC/MS methods. The % Relative Standard Deviation is calculated as follows:

$$\%RSD = (SD/x) \times 100$$

Figure 11-1
Standard Log

ANALYST	DATE MADE	COMP.	DATE OPENED	SOURCE	LOT #	INITIAL CONC.	VOLUME DILUTED	FINAL VOLUME	MEOH LOT#	FINAL CONC	DMA CODE #	DATE DISPOSED	COMMENTS

Where

SD = Standard Deviation of initial 5 CFs or RFs for each compound calculated as follows:

$$SD=\sqrt{\frac{1}{n-1}\left[\sum_{i=1}^{n} x_i^2-\frac{\left(\sum_{i=1}^{n} x_i\right)^2}{n}\right]}$$

and

x = Mean of initial 5 CFs or RFs for each compound.

Alternatively, the least squares method may be used to determine linearity. A five point line must result in .999 or better using the least squares method to be considered linear. The CFs or RFs for each compound are calculated and kept in the Analysts' files.

The validity of the calibration curve must be checked daily for each instrument and more frequently for instruments with particularly sensitive detectors. The Analyst prepares a daily calibration check standard solution in the same manner as the initial calibration standard solution. The concentration of the daily calibration check standard is near the middle of the instrument's linear range. It is, therefore, sometimes referred to as a midpoint standard. If the calibration check standard differs from the calibration curve by more than 15% for the GC methods, 25% for the volatile GC/MS methods or 30% for the semi-volatile GC/MS methods, then the Analyst must take corrective action before samples are analyzed. The percent difference is calculated as follows:

$$\%\ \text{Difference}=\frac{(\text{Average CF or RF}) - (\text{Calibration Check CF or RF}) \times 100}{(\text{Average CF or RF})}$$

The initial calibration curve is further verified by the use of a Laboratory Control Sample (LCS). The LCS is a standard from either a different lot number from the same supplier as the calibration standard or a different supplier altogether. The LCS is prepared and analyzed in the same manner as a sample for the same analysis. The LCS result is calculated and compared to the true value of the LCS. The percent difference (% D) between the result and true value is calculated as follows:

$$\%\ \text{Difference} = \frac{\text{True Value - Result} \times 100}{\text{True Value}}$$

The acceptance limits for LCS are different for each method. In each method of EPA SW-846, Revision 1, 1992, tables of QA/QC criteria indicate method acceptance limits which may be applied to the LCS. Del Mar Analytical uses these tables as guidelines for LCS acceptance limits. In addition, LCS Control charts are maintained as well. These control Charts track the recovery of the LCS over time. Warning limits are set at two times the standard deviation of the mean recovery and control limits are set at three times the standard deviation of the mean recovery.

Some methods have prescribed limits for the CF, RF, % RSD and % Difference that may differ from the limits in EPA Method 8000. It should be noted that individual method specifications would take precedence over general procedures. In addition, there may be calibration procedures prescribed in the method, like GC/MS tuning with BFB (4,4-bromofluorobenzene) or DFTPP (decafluorotriphenylphosphine), which are not described here in detail but are described in detail in the standard operating procedures for the method.

11.1.2 CALIBRATION FOR INORGANIC ANALYSES

EPA Method 7000 from EPA SW-846, Revision 1, December 1992, is a general introduction to the quality control requirements for metal analyses. Del Mar Analytical follows the quality control measures established in EPA 7000 for metal analyses. Quality control measures for other inorganic and wet chemistry methods are set out in the individual methods of SW-486, 1992, and in Standard Methods for the Examination of Water and Wastewater" 18th Edition 1992 and Methods for Chemical Analysis of Water and Wastes, 1983. Standard operating procedures for the analysis and the quality control documentation measures are kept in the Analysts' files and reference binders.

The majority of inorganic instrumentation is calibrated with external standards, with the exception of the ICP spectrophotometer for metal analyses which is calibrated with the internal standard, yttrium. The calibration procedures and calculations for inorganics are similar to those of organics. Please refer to section 11.1.1.

11.2 RETENTION TIME WINDOWS

Most organic analyses use gas chromatography or liquid chromatography techniques; some inorganic analyses use liquid chromatography technique as well. For every chromatography analysis, each analyte will have a specific time of elution from the column to the detector. This is known as the analytes's retention time. The variance in the expected time of elution is defined as the retention time window. As the key to analyte identification in chromatography, retention time windows must be established on every column for every analyte

used for that method. These records are kept with the files associated with an instrument for later quantitation of the analytes.

Once the Analyst has determined that the instrument is in optimum working condition through calibration and calibration verification procedures, then he or she uses a mid-range calibration standard to establish the retention times for each of the individual analytes in a method. The Analyst makes three injections of the same standard over a 72-hour period, tabulating the retention times for each analyte for each of the three injections. The Standard Deviation of the three values for each analyte is calculated as follows:

$$\text{Standard Deviation} = \sqrt{\frac{1}{n-1}\left[\sum_{i=1}^{n} x_i^2 - \frac{\left(\sum_{i=1}^{n} x_i\right)^2}{n}\right]}$$

The retention time window is defined as the average retention time ± 3 Standard Deviations. Alternatively, the Analyst may use the computer software to determine the retention time windows. Both the Perkin Elmer Nelson Turbochrom software and the Hewlett Packard ChemStation software are capable of setting the retention time windows for the Analyst. Using multiple injections of a standard as described, the Analyst may configure the software to determine the retention time window. A peak outside of the retention time window will not be reported as a positive identification by the computer.

11.3 QUANTITATION

Organic analytes analyzed by gas chromatography are identified by comparing retention times of the sample and the standard. Most EPA Methods require that each analyte be confirmed on a second column, one with a different chemistry than the first column. Sample quantitation procedures are outlined in each method depending on the type of calibration used for the method. All calculations and instrumentation parameters are documented in the Analysts' notebooks.

Similarly, inorganic analytes are identified and quantitated by comparing the response of the analyte to the response of the standard. Confirmation is not always possible, although some methods, like metal analyses, allow for a secondary check under a different set of instrument operation parameters. Again, all calculation and instrument operating parameters are recorded in the Analysts' notebooks.

11.4 DETECTION LIMIT VERIFICATION

Method detection limits (MDL) are determined in accordance with 40 CFR 136. The MDL represents the concentration level for each analyte within a method at which the Analyst is 99% confident that the value is not zero. The detection limit is determined for each analyte on an annual basis. The Analyst prepares seven replicates of solution spiked at one to five times the reported detection limit with all the analytes of interest. Each of these aliquots is extracted and analyzed in the same manner as the samples. The standard Deviation (SD) of the replicates is calculated as follows:

$$SD=\sqrt{\frac{1}{n-1}\left[\sum_{i=1}^{n} x_i^2-\frac{\left(\sum_{i=1}^{n} x_i\right)^2}{n}\right]}$$

The detection limit is calculated as follows:

$$Detection\ Limit = t_{(n-1,1-\alpha=0.99)} \times Standard\ Deviation$$

where

$$t_{(n-1,1-\alpha=0.99)} = 3.143\ for\ seven\ replicates.$$

40 CFR 136 requires the analysis of seven replicates on one day only. Del Mar Analytical may choose to repeat the analyses on three non-consecutive days to account for any variances which may occur over time.

11.5 EQUIPMENT MAINTENANCE

Del Mar Analytical is dedicated to providing its clients with state-of-the-art technology. Instrumentation is purchased on the basis of accuracy, dependability, efficiency and sensitivity.

All instruments have log books in which adjustments, calibrations, routine maintenance, and any repairs are recorded. Service maintenance contracts are in place for many of the instruments for any major repairs. Most routine maintenance is performed by the Analyst or the Technical Manager. The highest quality gases, reagents and spare parts are kept on hand to minimize repair time and optimize instrument performance. By training staff to service their own instruments, preventative maintenance is performed more often thereby keeping the

instruments running better, reducing down-time and preventing Del Mar Analytical from relying on and waiting for technical service from the instrument manufacturers.

Each entry in the instrument log book includes the Analyst's initials, the date, a detailed description of the problem, a detailed explanation of the solution, and a verification that the instrument is functioning properly.

11.6 QUALITY CONTROL

The analytical process is controlled not only by instrument calibration, but by quality control measurements of the labor intensive portions of the analysis as well. These processes involve measurements of blanks, surrogates, accuracy and precision. With every analytical batch, a method blank, Laboratory Control Samples (LCS), spike, spike duplicate and surrogates are analyzed to determine the quality of the analytical process per batch of environmental samples. See Table 11-1 for a summary of minimum QC sample requirements.

11.6.1 METHOD BLANK

The method blank must be free of contamination to determine that neither the extraction procedure nor the analytical instrument contributed to the over-estimation of analytes in the environmental samples. With the exception of a few compounds on certain analyses, the method blank should quantitate to a value of less than half the reported detection limit for the analytes of interest. The exceptions are noted in the standard operating procedures for those methods. If unacceptable contamination is present in the method blank, corrective action is taken. Corrective action includes inspecting of the instrument, glassware, syringes and solvents for possible sources of contamination. The Analyst may determine that re-extraction and re-analysis of the sample is necessary prior to reporting the data.

11.6.2 ACCURACY

In the laboratory, accuracy is measured as percent recovery. Accuracy measurements are performed every twenty samples or once every analytical batch per matrix type, whichever contains fewer samples. For each matrix, an environmental sample from the analytical batch is spiked twice with a known quantity of the analyte(s) and analyzed in the same manner as the rest of the analytical batch. These samples are referred to as the matrix spike and matrix spike duplicate (MS/MSD). The % recovery is calculated and documented in a QC Data Report like the one presented in Figure 11-2. Percent recovery is calculated as follows:

$$\% \text{ Recovery} = \frac{(\text{Conc. of Matrix Spike}) - (\text{Conc. of Sample})}{\text{Spike Conc. Added}}$$

Table 11-1
Summary of Minimum Quality Control Requirements

Analysis Type	Method Blank	Laboratory Control Sample	Surrogate Spike	Internal Standard	Matrix Spike/ Matrix Spike Duplicate
Metals Analysis (ICP,GFAA,FAA)	Every Analytical Batch			Every Sample (ICP only)	Once per Analytical Batch
Nonmetallic Inorganic Analyses (IC, Cyanide, other Colorimetric Methods)	Every Analytical Batch	Every Analytical Batch			Once per Analytical Batch
Organic Analysis (TRPH, TOC)	Every Analytical Batch	Every Analytical Batch			Once per Analytical Batch
GC Analyses	Every Analytical Batch	Every Analytical Batch	Every Sample (Only if required by the method)	Every Sample (Only if required by the method)	Once per Analytical Batch
GC/MS Analyses	Every Analytical Batch	Every Analytical Batch	Every Sample	Every Sample	Once per Analytical Batch

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Figure 11-2
Quality Control Data Report

QC DATA REPORT

EPA METHOD: 8015 volatile
Matrix: Water

DATE: 6/13/94

SAMPLE # DF01202

Analyte	R1	Sp	MS	MSD	PR1	PR2	RPD	MEAN PR
	ppb	ppb	ppb	ppb	%	%	%	%
Hydrocarbons	2.8	110	120	120	107%	107%	0.0%	107%

Definition of Terms:

R1..... Result of Sample Analysis

Sp..... Spike Concentration Added to Sample

MS..... Matrix Spike Result

MSD..... Matrix Spike Duplicate Result

PR1..... Percent Recovery of MS: ((MS-R1) / SP) X 100

PR2..... Percent Recovery of MSD: ((MSD-R1) / SP) X 100

RPD..... Relative Percent Difference: ((MS-MSD)/(MS+MSD)/2)) X 100

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The mean percent recovery is determined by calculating the average of the matrix spike and the matrix spike duplicate. The warning limits are defined as the average of the mean percent recovery of the most recent spike samples ± 2 standard deviations. Mean percent recovery results outside of the warning limits do not require corrective action unless a trend develops. A trend is defined as three consecutive results which are all above the upper warning limit or all below the lower warning limit.The % recovery of an analyte in a spiked sample must fall within the control limits set for that analyte. The control limits are defined as the average of the mean percent recovery of the most recent twenty spike samples ± 3 standard deviations. Mean percent recovery results outside of the control limits warrant immediate corrective action. Some methods, however, have preset acceptance limits, in which case the limits set by the method may be used. The standard deviation is calculated as follows:

$$\text{Standard Deviation} = \sqrt{\frac{1}{n-1}\left[\sum_{i=1}^{n} x_i^2 - \frac{\left(\sum_{i=1}^{n} x_i\right)^2}{n}\right]}$$

11.6.3 PRECISION

Precision is measured as the relative percent difference (RPD) between two values. Precision measurements are performed every twenty samples or once every analytical batch per matrix type, whichever contains fewer samples. Both the matrix spike (MS) and the matrix spike duplicate (MSD) are analyzed in the same manner as rest of the analytical batch. The relative % difference between the two spikes is calculated and documented. The relative % difference is calculated as follows:

$$\text{Relative \% difference} = \frac{(\text{Conc. of MS}) - (\text{Conc. of MSD})}{(\text{Conc. of MS} + \text{Conc. of MSD})/2}$$

The warning limits are defined as the average of the relative percent difference for the most recent twenty matrix spike/matrix spike duplicate pairs ± 2 standard deviations. Relative percent difference results outside of the warning limits do not require corrective action unless a trend develops. A trend is defined as three consecutive results outside of the warning limits. The relative % difference for a particular analyte must fall within the control limit established for that analyte. The control limits are defined as the average relative % difference for the most recent twenty matrix spike/matrix spike duplicate pairs ± 3 standard deviations. Relative percent difference results outside of the control limits warrant immediate corrective action. Some methods, however, have preset acceptance limits, in which case the limits set by the method may be used. The standard deviation is calculated in the same manner as the % recovery of the matrix spike.

11.6.4 QUALITY CONTROL DATA

The matrix spike (MS) and matrix spike duplicate(MSD) are reported by the Analyst on a daily basis. The QA/QC Assistant reviews the QA/QC data and then inputs the data into the computer. If the QA/QC Assistant finds any data that is suspected to be out of control, the QA/QC Officer is notified immediately. The QA/QC Officer then reviews the data and may take appropriate corrective action.

11.6.5 SURROGATES

In majority of organic analyses, surrogate compounds are spiked into all environmental samples, the method blank, matrix spike, and the matrix spike duplicate and act as a secondary check on accuracy. The percent recovery of the surrogate is documented, ensuring that all environmental samples have gone through the analytical process with acceptable uniformity. The control limits for surrogate recovery vary from analysis to analysis. Corrective action must be taken on any surrogate recovery outside of the control limit.

11.6.6 USE OF CONTROL CHARTS

Control charts like the one in Figure 11-3, are updated every twenty entries. The calculations from the latest twenty entries define the control limits until another control chart is established. As long as all the entries are within the control limits the analysis is considered acceptable. Because of the statistical nature of the control limits, it is assumed that one in every twenty entries will be outside the control limits. When this deviance occurs, the Analyst must check all calculations, all quality control measures, and verify that the sample preparation and analysis was performed accurately. If all the analytical measurements are verified as correct, then the deviation is attributed to matrix interference or statistical variances. However, any more than one entry outside the control limits requires a thorough examination of the entire analytical system to determine the source of the system error and to perform the corrective action. Any data belonging to the suspect entry's analytical batch should be reanalyzed.

11.7 MATERIALS

All commercially available materials purchased for use in the analytical process are of the highest purity and quality. These materials include all gases used for gas chromatography; all solvents, acids, and bases used in extraction or digestion, dilution, and standard preparation; stock standards; and any other routinely restocked items. On receipt of any of these items, the lot number from the manufacturer is recorded and the purity of the lot is established through a method blank and or a calibration check. Records are kept in appropriate departments.

Figure 11-3
Control Chart

Control Chart

Method **8015 modified**
Matrix: Water

	Date	Sample #	Mean PR	RPD
1	6/1/94	DE02708	104%	0%
2	6/1/94	DE03357	89%	0.00%
3	6/2/94	Blank	97%	24.30%
4	6/2/94	DE03197	84%	4.08%
5	6/4/94	DE03172	102%	0.00%
6	6/6/94	DF00025	109%	0.00%
7	6/4/94	DE03197	100%	0.00%
8	6/6/94	DE03368	95%	8.70%
9	6/7/94	DE03373	93%	9.52%
10	6/8/94	Blank	105%	8.70%
11	6/7/94	DE03303	99%	8.70%
12	6/9/94	DF00107	92%	19.18%
13	6/8/94	DF00257	84%	0.00%
14	6/3/94	DE03356	103%	8.70%
15	6/3/94	DE03256	93%	8.70%
16	6/10/94	DF00833	96%	0.00%
17	6/12/94	Blank	109%	0.00%
18	6/10/94	DF00718	98%	8.70%
19	6/13/94	DF01202	107%	0.00%
20	6/9/94	DF00256	104%	8.00%

	Mean PR	RPD
AVERAGE OF MEAN PR OR RPD	97.92%	5.88%
STDEV X 2	14.98%	13.73%
STDEV X 3	22.47%	20.60%

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11.8 GENERAL LABORATORY EQUIPMENT

Balances are checked weekly for accuracy using NBS P-class weights and once per month using NBS S-class weights. These checks are recorded in a log. For measurements which are out of range, the Laboratory Manager is immediately notified. Every year the balances are calibrated by a professional balance calibration company. Refrigerator temperatures are also checked daily and recorded in a log. If the temperature of any refrigerator is out of the acceptable range of 4°C ±2°C, the Laboratory Manager is immediately notified and the temperature is corrected or refrigerator repaired.

12.0 SELECTION OF SUBCONTRACT LABORATORIES

To continue providing the best possible service to its clients, Del Mar Analytical subcontracts to other laboratories analyses it is not certified to perform. These analyses include asbestos testing, bioassay toxicity testing, radioactivity testing, and microbiological testing. These laboratories are chosen based on many criteria: the laboratory's reputation, ability to meet turn-around-times, prices, service and Statement of Qualifications all go into the decision of which subcontract laboratory to use. All subcontracted laboratories must be California State Certified. If the work is performed under the jurisdiction of another state, the subcontract laboratory must be certified in that state. A subcontract laboratory is only used if it has been approved by the Laboratory Director. Whenever possible, analyses unable to be performed at Del Mar Analytical should be sent to its affiliated laboratories. Clients are informed verbally by the Project Manager when an analysis will be subcontracted to another laboratory. If a client does not give consent, every effort is made to satisfy the client. If necessary, samples are immediately returned to the client, and references are given to the client so that he or she can accomplish his or her goals.

13.0 CORRECTIVE ACTION AND COMPLAINT RESOLUTION

A Quality Control Program must have a corrective action implemented into every standard operating procedure. If the level of acceptance set by the methodology is not met, corrective action must be taken immediately. In accordance with EPA SW-846 Chapter 1, Revision 1, December 1992, the following steps are taken to maintain the integrity of the final data package:

1. Identification and definition of the problem;
2. Assignment of responsibility for investigating the problem;
3. Investigation and determination of the cause of the problem;
4. Determination of a corrective action to eliminate the problem;
5. Assigning and accepting responsibility for taking corrective action;
6. Implementing the corrective action and evaluating its effectiveness; and
7. Verifying that the corrective action has eliminated the problem.

These steps apply to any and all standard operating procedures at Del Mar Analytical. Notification of Corrective Action forms, like the one in Figure 13-1, are completed by the Analysts or Project Managers and copies are given to the Quality Assurance Officer for review and filing.

The process for complaint resolution follows the same steps taken with corrective action. If a client has a complaint, the Project Manager has the responsibility to resolve the problem. After a thorough investigation and discussions with the Analyst, Quality Assurance Officer, Laboratory Manager, Technical Manager and/or Laboratory Director, a solution or explanation is derived and recorded in a Corrective Action Report. An example of a Corrective Action Report is presented in Figure 13-2. Every attempt is made to resolve the complaint to the full satisfaction of the client.

Figure 13-1
Notification of Corrective Action Form

NOTIFICATION OF CORRECTIVE ACTION

Client: _____ Report/Sample #: _____

P/M: _____ Date: _____

FIELD SERVICES

- ☐ Pick-up / delivery missed
- ☐ Incorrect containers sent to client
- ☐ Complaint made by client
- ☐ Incorrect field sampling procedure
- ☐ Containers / supplies not delivered
- ☐ Other : _____

LOGIN / SAMPLE CONTROL

- ☐ Lost samples
- ☐ Samples not logged in properly
- ☐ Improper interpretation of C.O.C
- ☐ Samples delayed in login TAT _____
- ☐ Special remarks left out on Analysis Log Sheet
- ☐ Samples labeled incorrectly
- ☐ Other : _____

Date Rec'd _____ Date logged in _____

- ☐ L.U.F.T
- ☐ GC/MS
- ☐ PURGEABLES
- ☐ METALS DIGESTION
- ☐ METALS
- ☐ PESTICIDES
- ☐ INORGANIC
- ☐ ORGANIC EXTRACTION

- ☐ Hold time failure
- ☐ Missed analyses
- ☐ Calculation errors
- ☐ Data turned in without QC
- ☐ Failure to conform to methodology
- ☐ Transcription error
- ☐ Sample number not checked against sample label
- ☐ Data turned in late despite analytical results generated on time
- ☐ Failure to alert PM with problems which delay reporting of results
- ☐ Data is not consistent :
  - ___ Results changed after review
  - ___ Results are not consistent within the report
- ☐ Incorrect units were used
- ☐ Analytical interpretation error
- ☐ Fail to properly interpet C.O.C instructions / worklist
- ☐ Incorrect use of, or failure to use dilution factors
- ☐ Failure to report method used or detection limits
- ☐ Other : _____

- ☐ MARKETING
  - ☐ Incorrect pricing
  - ☐ Errors in Quotation
  - ☐ Analytical capability promised that could not be delivered
  - ☐ Follow up / status report not delivered to client as promised
- ☐ PROJECT MANAGEMENT
  - ☐ Dissatisfied client
  - ☐ Other : _____

COMMENTS

_____

Figure 13-2
Corrective Action Report

CORRECTIVE ACTION REPORT

Department:	LUFT	Client:	XXX
Method:	EPA mod. 8015	Project:	XXX
Date:	3-17-94	Matrix:	Soil

Identification and Definition of Problem:
The a,a,a-trifluorotoluene surrogate used for the EPA mod. 8015 volatile analysis was outside of acceptance limits for samples ABC and XYZ.

Determination of the Cause of the Problem:
Although the sample results were less than 1000 ug/Kg, both samples contained hydrocarbons which coeluted with the surrogate. This coelution resulted in a larger area count for the surrogate peak and therefore, a higher recovery of the surrogate.

Corrective Action:
Since the gas chromatograph is not capable of separating the interfering hydrocarbons from the surrogate, no actions were taken. The surrogates and QA/QC for the other samples were within acceptance limits.

QA/QC Officer Signature: Debbie Ranck Date: 6-24-94

14.0 PERFORMANCE AUDITS

Del Mar Analytical participates in the following proficiency programs:

1. The EPA Water Pollution Study Audit Program
2. The EPA Water Supply
3. State of Arizona Department of Health Services
4. State of California Department of Health Services

The following licenses, accreditations and certifications are held by the Del Mar Analytical network:

1. A_2LA accreditation
2. State of Arizona DHS for hazardous waste testing and drinking water analyses
3. State of California DHS for hazardous waste testing and drinking water analyses

Each spring and fall quarter, Del Mar Analytical receives ampules from the EPA Performance Evaluation Program for the Water Supply and Water Pollution Studies. In addition, Del Mar Analytical analyzes samples annually for the Daily Monitoring Requirement Quality Assurance (DMR QA) program. These evaluations contain a variety of organic and inorganic analytes whose values are unknown to the laboratory. The analytes must be correctly identified and accurately quantitated. The results of these analyses are kept on file with the Quality Assurance Officer and are available upon request.

Clients are encouraged to submit quality control samples to Del Mar Analytical and on request, arrangements may be made to split samples and subcontract to another laboratory as a confirmatory check.

In addition, performance evaluation samples are administered to Analysts at random intervals. In order to assure that their performance is acceptable, new Analysts are administered check samples immediately after the training program.

15.0 INTERNAL AUDITS

An audit of the laboratory's quality system is conducted by the Internal Quality Assurance Auditor on a yearly basis. All areas of the laboratory are audited to ensure that all policies and procedures outlined in the quality manual are being implemented. Areas of the laboratory that are audited include, but are not limited to, purchasing, data processing/handling, project management, complaint resolution, and sample control. In addition, performance audits are done at random for every Analyst on a yearly basis. The Internal Quality Assurance Auditor reviews the Analyst's files, notebooks and raw data for documentation of all quality control measurements. Each Analyst maintains a series of quality control notebooks which contain sample results, calculations, calibration data, QA/QC recoveries and control charts, copies of corrective action reports, methodology, reagent preparation information, SOPs and method exceptions. Analysts must also have maintenance logs, adequate tools and supplies to keep instruments operational. The Analyst's data reporting procedures are reviewed to ensure that results are easily traceable. The quality system audits and performance audits are documented using checklists based on the most recent Standard Operating Procedure for each area of the laboratory. See Figure 15-1 for an example. During the audit, any problems and/or policy violations are documented by the Internal Quality Assurance Auditor in writing. It is the ultimate responsibility of the Quality Assurance Officer to ensure that corrective actions have been implemented to correct any problems found during an audit. If any audit findings cast doubt on the correctness or validity of test results or calibration, the client whose work may have been affected will be notified in writing immediately. Once corrective action is implemented, a follow-up is scheduled to ensure that the problem has been corrected. See Figure 15-2 for an example of the corrective action and follow-up report that is used for documentation.

Figure 15-1
Internal Quality Assurance Audit Checklist

INTERNAL QUALITY ASSURANCE AUDIT

DEPARTMENT: METALS

ANALYST: _____ **DATE:** _____

ITEM	ACCEPT.	COMMENTS
Housekeeping is adequate: area is kept clean and free of clutter.		
Instrument maintenance log is current.		
Current methods binder, including clarifications, exceptions and SOP is organized and readily accessible in the lab. Analyst knows location of and has read her or his methods.		
Analyst knows the location of current QA manual.		
Containers have appropriate labels, including wash bottles and waste containers.		
Date of receipt and of opening is written on the reagent and standard bottles.		
Date of expiration is written on the reagent and standard bottles.		
Chemicals are stored according to compatibility: acids, bases, samples, solids and standards, etc. stored separately.		
Reagent log is properly filled out with the appropriate information.		
Instrument operating conditions are documented, i.e. aliquot(s), Argon flow rate(s), calculations and formulas, primary and secondary wavelengths, units etc.		
Detection limits and dates established are documented.		
ICP instrument run logs are current and complete, including analyst's signature, client name, data, dilution/multiplication factor ID, instrument, leowerks number and title on the cover.		
All entries are in ink and correction fluid is not used.		
Errors are corrected by lining out with a single line, initialing, and writing the full date.		
Blank pages are marked out with a "Z" and with analyst's signature.		
Corrective action forms are prepared when necessary.		
Personal protective equipment is used properly i.e. labcoats and gloves are always worn, and goggles are always worn when working under the hood or handling acids.		
Calibration is done daily (midpoint), upon method change, or when control limits of 85 - 115 % for Initial Check Standards or Subsequent Check Standards are not met.		

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Figure 15-1 (continued)

INTERNAL QUALITY ASSURANCE AUDIT

DEPARTMENT: METALS
(CONTINUED)

ITEM	ACCEPT.	COMMENTS
Complete calibration is done monthly at a minimum of 3 levels plus a blank.		
Coefficient of correlation is 0.995 or greater.		
Initial Check Standard, from a dissimilar source, is run immediately following daily instrument calibration. The recovery must be between 85 - 115 %.		
A Subsequent Check Standard is run after every 10 samples and at the end of a run. The recovery must be between 85 - 115 % for soils, TCLPs, STLCs, hazardous samples and all waters.		
A Blank is run immediately after each Subsequent Check Standard. The Blank must be less than the detection limit.		
The corresponding Method Blank, Method Blank Spike and Method Blank Spike Duplicate are run once during a run in which their associated samples are analyzed.		
The Method Blank must be less than the detection limit.		
The recovery for the Method Blank Spike must be between 80 - 120 %.		
The Matrix Spike (MS) and Matrix Spike Duplicate (MSD) shall be run every 20 samples. The recoveries must be between 80 - 120 % and the relative percent difference (RPD) is < 20%		
Matrix Spike & Matrix Spike Duplicate sheets (QC Data Report and Control Chart) are filled out and current.		
The Interference Check Solution is run at the beginning of an analytical run one once every week. The recovery must be within 20 % of the true value.		
The Internal Standard of Yttrium is included in every sample aliquot when testing for elements with wavelengths much greater than that of Yttrium, such as Potassium and Sodium		

QA AUDITOR: _____ **ANALYST:** _____
(SIGNATURE) (SIGNATURE)

QA OFFICER: _____
(SIGNATURE)

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AUDICP

16.0 DATA REDUCTION, REPORTING, REVIEW AND VALIDATION

The data review process at Del Mar Analytical starts at the Sample Control level. Sample Control personnel review chain-of-custody forms and input the sample information and required analyses into a computer database. The transaction of the chain-of-custody forms and the computer data is reviewed by the Sample Control Group Leader. Final review of the chain-of-custody forms and computer data is performed by the Project Managers.

The next level of data review occurs with the Analysts. As results are generated, analysts review their work to ensure that the results generated meet QC requirements and relevant EPA and other Methodologies. Moreover, a second level of review is performed by a second analyst to ensure data compliance. Second level peer review is accomplished by checking analytical results against raw data and evaluating results for accuracy. At this time, blank runs, QA/QC check results, continuing calibration results, laboratory control samples, sample data, and spike information are evaluated. Issues that deem further review include the following:

- The calibration check standard or LCS is out of the specified limits.
- QC spikes and/or duplicate sample data are outside the specified control limits for accuracy and precision.
- Unusual detection limit changes are observed.
- A trend indicating that the QC samples are approaching control limits is observed on control charts.
- Samples having unusually high results.
- Samples exceeding a regulatory limit.
- Raw data indicating some type of contamination or poor technique.

Data which is validated as acceptable by the analysts is transferred onto worksheets. Unacceptable analytical results are brought to the attention of the Laboratory Manager, Project Manager, the Quality Assurance Officer or Technical Manager for further investigation. Corrective action is initiated whenever necessary.

After analysis, the Analyst transcribes the results onto laboratory report worksheets. A random 15% of reports are checked by the Laboratory Manager, Quality Assurance Officer, and/or Technical Manager for transcription errors and acceptable quality control requirements. The results are then entered into the computer database and a hardcopy is printed for the client. The Project Manager reviews the results for appropriateness and completeness. The Project Manager will review the report against most of the same criteria as the Analyst. The primary focus of data review at this level is against previous trends in a project and against information generated by other analyses.

The entire set of worksheets is checked against the chain-of-custody form a second time to assure that all analyses requested have been performed. Quality control results are checked to assure that calculations are correct. Analytical problems identified are brought to both the attention of the Laboratory Manager and the Quality Assurance Officer for corrective action. The final, typed report is then reviewed and signed by the Laboratory Director. The accounting personnel also check the report for any clerical or billing errors. When complete, the report is sent out to the client.

Copies of final reports including the original chain-of-custody form and the laboratory worksheets are kept in a secure filing area for a minimum of ten years. A visual summary of the flow of samples and information through the laboratory, as well as data review and validation, is presented in Figure 16-1.

16.0 DATA REDUCTION, REPORTING, REVIEW AND VALIDATION

The data review process at Del Mar Analytical starts at the Sample Control level. Sample Control personnel review chain-of-custody forms and input the sample information and required analyses into a computer database. The transaction of the chain-of-custody forms and the computer data is reviewed by the Sample Control Group Leader. Final review of the chain-of-custody forms and computer data is performed by the Project Managers.

The next level of data review occurs with the Analysts. As results are generated, analysts review their work to ensure that the results generated meet QC requirements and relevant EPA and other Methodologies. Moreover, a second level of review is performed by a second analyst to ensure data compliance. Second level peer review is accomplished by checking analytical results against raw data and evaluating results for accuracy. At this time, blank runs, QA/QC check results, continuing calibration results, laboratory control samples, sample data, and spike information are evaluated. Issues that deem further review include the following:

- The calibration check standard or LCS is out of the specified limits.
- QC spikes and/or duplicate sample data are outside the specified control limits for accuracy and precision.
- Unusual detection limit changes are observed.
- A trend indicating that the QC samples are approaching control limits is observed on control charts.
- Samples having unusually high results.
- Samples exceeding a regulatory limit.
- Raw data indicating some type of contamination or poor technique.

Data which is validated as acceptable by the analysts is transferred onto worksheets. Unacceptable analytical results are brought to the attention of the Laboratory Manager, Project Manager, the Quality Assurance Officer or Technical Manager for further investigation. Corrective action is initiated whenever necessary.

After analysis, the Analyst transcribes the results onto laboratory report worksheets. A random 15% of reports are checked by the Laboratory Manager, Quality Assurance Officer, and/or Technical Manager for transcription errors and acceptable quality control requirements. The results are then entered into the computer database and a hardcopy is printed for the client. The Project Manager reviews the results for appropriateness and completeness. The Project Manager will review the report against most of the same criteria as the Analyst. The primary focus of data review at this level is against previous trends in a project and against information generated by other analyses.

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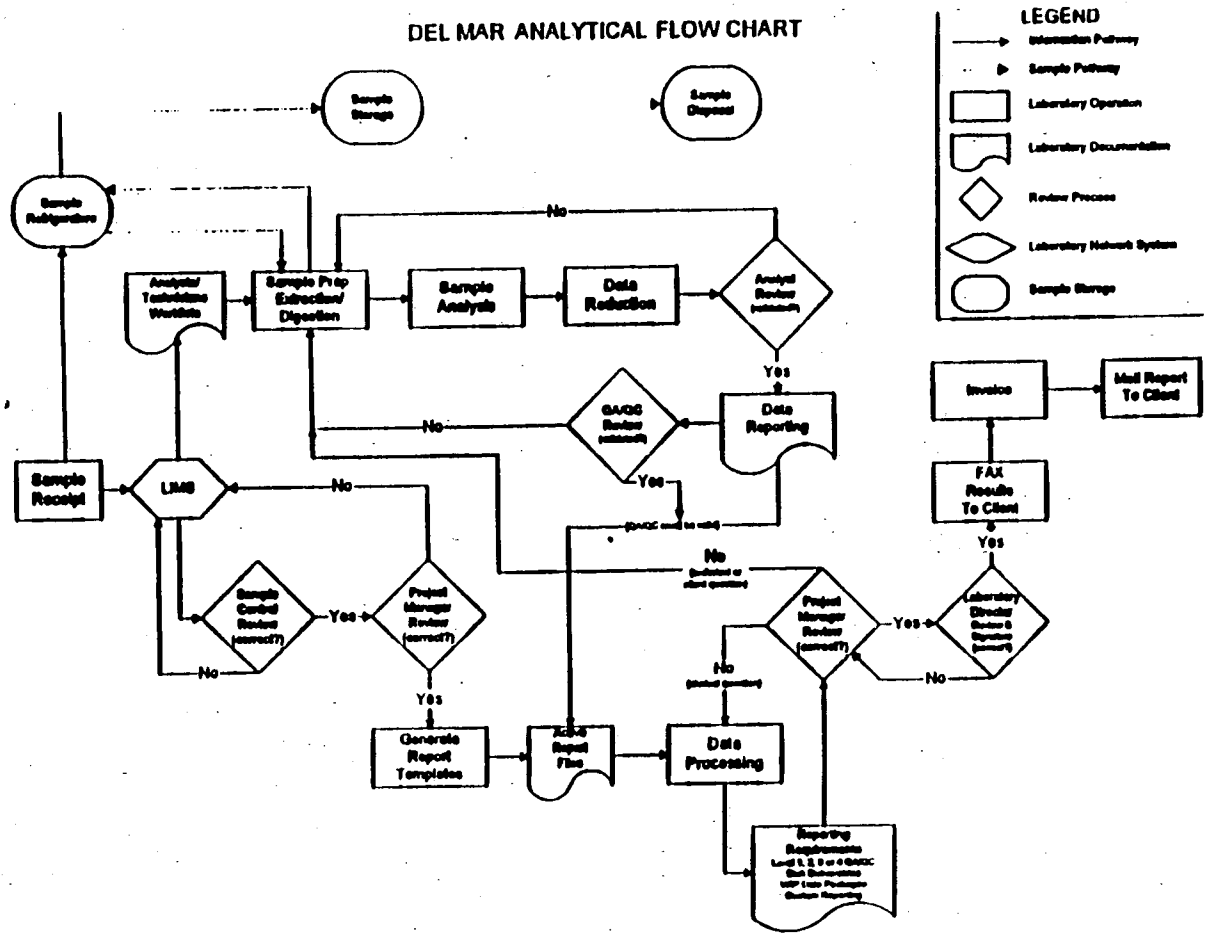
Figure 16-1
Del Mar Analytical Flow Chart