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**Preliminary Site Assessment  
Phase I Subsurface Investigation  
Workplan**

**Kawahara Nursery, Inc.  
San Lorenzo, California**

May 12, 1993

BEI Job No. 93071

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**Prepared by:**

**Blymyer Engineers, Inc.  
1829 Clement Avenue  
Alameda, CA 94501**

**Site:**

**Kawahara Nursery, Inc.  
16550 Ashland Avenue  
San Lorenzo, CA 94508**

## Limitations

The recommendations presented herein were prepared in accordance with generally accepted professional engineering and/or geologic practices and principles. The scope of work for the project will be conducted within the limitation prescribed by the client. Our opinions are based upon observations made at the site; review of available environmental, climatological, and geological data pertaining to the site; and evaluation of analytical soil data provided by an approved testing laboratory. All data obtained from investigation of this type are reviewed by state or local regulatory agencies for conformance with their criteria. Therefore, there is no guarantee that additional bores, soil or groundwater analytical tests, or remedial work will not be required at the site. This warranty is in lieu of all other warranties either expressed or implied pertaining to this project.

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Laurie A. Buckman  
Project Geologist

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John Morrison, RG  
Registered Geologist

## Table of Contents

### 1.0 Introduction

1.1 Background .....	1
1.2 Site Conditions .....	1
1.3 Project Objectives .....	2

### 2.0 Environmental Setting

2.1 Regional Geology and Anticipated Site Stratigraphy .....	3
2.2 Climate .....	4

### 3.0 Methods of Investigation

3.1 Soil Investigation .....	5
3.1.1 Soil Sample Collection .....	5
3.1.2 Analytical Methods .....	6
3.2 Groundwater Investigation .....	6
3.2.1 Monitoring Well Installation .....	6
3.2.2 Groundwater Sample Collection .....	7
3.2.3 Analytical Methods .....	8
3.2.4 Groundwater Elevation Survey .....	8

4.0 Health and Safety Plan .....	9
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5.0 Final Report .....	10
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6.0 References .....	11
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## Figures

- Figure 1: Site Location Map
- Figure 2: Site Plan
- Figure 3: Proposed Monitoring Well Construction Diagram

## Appendices

- Appendix A: Correspondence from Alameda County Health Care Services Agency,  
Department of Environmental Health, dated January 27, 1993
- Appendix B: Site Health and Safety Plan

**BLYMYER**  
ENGINEERS, INC.



May 13, 1993  
BEI Job No. 93071

Ms. Juliet Shin  
Alameda County Health Care Services Agency  
Department of Environmental Health  
80 Swan Way, Rm. 200  
Oakland, CA 94621

**Subject: Kawahara Nursery**  
**16550 Ashland Avenue**  
**San Lorenzo, CA 94580**

Dear Ms. Shin:

Enclosed is the *Preliminary Site Assessment Phase I Subsurface Investigation Workplan*, dated May 12, 1993, completed by Blymyer Engineers, Inc. for the above referenced facility. Blymyer Engineers is prepared to begin the proposed investigation at the site immediately following your approval of the workplan.

Please call me at (510) 521-3773 with any questions or comments.

Sincerely,

Blymyer Engineers, Inc.

Laurie A. Buckman  
Project Geologist

Enclosure

## 1.0 Introduction

### 1.1 Background

Blymyer Engineers, Inc. has been retained by Kawahara Nursery, Inc. to conduct a Preliminary Site Assessment (PSA) at the property located at 16550 Ashland Avenue, San Lorenzo, California (Figure 1). This report constitutes a workplan as requested by the Alameda County Health Care Services Agency (ACHCSA), Department of Environmental Health, in a letter to Kawahara Nursery, Inc., dated January 27, 1993 (Appendix A). The work is required as a result of the removal of one diesel underground storage tank (UST) on December 1, 1992, as detailed in the *Underground Storage Tank* report submitted to the ACHCSA. The analytical results of the soil samples collected from the UST basin and from the excavated soil indicated Total Petroleum Hydrocarbon (TPH) as diesel concentrations ranging from 210 parts per million (ppm) to 5,000 ppm. The soil sample locations are shown on Figure 2.

### 1.2 Site Conditions

The site is located at 16550 Ashland Avenue, San Lorenzo, California. The surrounding area is light commercial/retail and residential. San Lorenzo High School is located across Ashland Avenue to the west. The property is bound by single family homes to the north, east, and south.

### 1.3 Project Objectives

The primary objective of the proposed PSA is to assess the horizontal and vertical extent of petroleum contamination in the soil and groundwater in the vicinity of the former UST basin.

Other investigative objectives include the determination of local groundwater flow direction and gradient in order to comply with current Regional Water Quality Control Board (RWQCB) requirements.

## 2.0 Environmental Setting

### 2.1 Regional Geology and Anticipated Site Stratigraphy

The project site is located in the city of San Lorenzo on the gently sloping East Bay Plain, approximately 3 miles northeast of San Francisco Bay, at an approximate elevation of 20 feet above mean sea level, based on the National Geodetic Vertical Datum (NGVD). The San Francisco Bay Area is a northwest-southeast trending region within the Coast Range Province of California. Rocks within the region range from Jurassic-aged sedimentary, metamorphic, and plutonic basement rocks to Holocene alluvium. The geologic structure of the region is dominated by a major fault system which includes the San Andreas Fault on the west side of the San Francisco Bay and the Hayward Fault at the base of the Berkeley Hills on the east side of the Bay. These faults are a result of the forces which have uplifted the Coast Range and dropped the section now covered by the open water of the San Francisco Bay and Quaternary alluvium (Goldman, 1967; Hickenbottom, 1988).

Soils in the vicinity of the site consist of Quaternary-age alluvium and colluvium deposits composed of gravels, sands, clays, and artificial fill. Area groundwater is found at a depth of approximately 20 to 25 feet below grade surface (bgs) (Radbruch & Case, 1967).



## 2.2 Climate

The East Bay Plain exhibits a Mediterranean-type climate with cool, wet winters and warmer, dry summers. Mean annual precipitation in nearby Oakland is 25.42 inches. Mean monthly rainfall is 4.03 inches in January and 0.05 inches in August. Prior to 1993, the entire Bay Area had experienced 6 years of below-normal precipitation. The mean monthly temperature in Oakland is 49.0 degrees Fahrenheit in January and 65.0 degrees Fahrenheit in September (NOAA, 1982).

### 3.0 Methods of Investigation

#### 3.1 Soil Investigation

##### 3.1.1 Soil Sample Collection

Blymyer Engineers proposes to install three soil bores (MW-1, MW-2, and MW-3 Figure 2) to an approximate depth of 35 feet bgs using a hollow-stem auger drill rig. Soil bore MW-1 will be placed within 10 feet of the UST excavation in the anticipated downgradient groundwater flow direction (south-southwest). Soil bores MW-2 and MW-3 will be drilled at the property boundaries to the northwest and southwest of the former UST basin, to determine groundwater flow direction and gradient. The soil bores will be completed as 2-inch-diameter groundwater monitoring wells.

Drill cuttings will be stored at the site in labeled, Department of Transportation (DOT)-approved, 55-gallon drums for proper disposal by the property owner.

Soil samples for lithologic identification will be collected at a minimum of 5-foot intervals and at noticeable changes in lithology. The soil samples will be collected with a split-spoon core barrel lined with three 2-inch-diameter by 6-inch-long brass sleeves. Each sample will be screened for volatile organic compounds (VOCs) using a photoionization detector (PID). Two soil samples from each bore will be collected for analysis, one soil sample will be selected from

the interval with the highest concentration of VOCs based on PID readings, and the other soil sample will be collected from the interval directly above the first encountered water-bearing zone. One brass sleeve from each sample interval will be packaged for analysis by placing a Teflon® sheet over each end of the brass sleeve and sealing the ends with plastic end caps and nonadhesive silicone tape. The soil samples will be placed on ice and shipped to NET Pacific, Inc., a California-certified laboratory, for analysis.

### **3.1.2 Analytical Methods**

The collected soil samples will be analyzed for TPH as diesel by modified EPA Method 8015 and benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8020. Proper chain-of-custody procedures will be observed.

## **3.2 Groundwater Investigation**

### **3.2.1 Monitoring Well Installation**

The three soil bores will be converted to 2-inch-diameter monitoring wells. Proposed monitoring well construction details are shown on Figure 3.

The wells will be constructed of 2-inch-diameter, schedule 40 PVC casing. The casing will be 0.010-inch factory-slotted from the bottom of the bore to 5 feet above the water table if groundwater is confined. If groundwater is not confined, the slotted screen will be placed from the bottom of the bore to 5 feet above the first encountered water-bearing zone. The remainder of the casing will be blank. A threaded cap or a slip cap with machine screws will be attached to the bottom of the casing.

The annulus between the borehole wall and the casing will be backfilled with clean sand, appropriate for the chosen slot size, from the bottom of the bore to 2 feet above the screened interval. Two feet of bentonite pellets will be placed in the annulus and hydrated to form a seal. The annulus will be backfilled to grade with a neat cement slurry. The top of the casing will be secured with a locking well cap and a flush-mounted traffic box will be installed over each well.

Each well will be developed by surging and pumping approximately six to ten well volumes. Development water will be stored at the site in labeled, DOT-approved, 55-gallon drums for proper disposal by the owner.

### **3.2.2 Groundwater Sample Collection**

Groundwater samples will be collected from the monitoring wells at least 24 hours after development. At least three well volumes will be removed prior to sampling. Temperature, pH,

and conductivity will be measured initially and after the removal of each well volume. Each well will be sampled when these measurements are all within 15% of each other for three consecutive well volumes. All groundwater samples will be collected using a decontaminated PVC hand pump or a Teflon® bailer. One bailer blank will be collected. The groundwater and bailer blank samples will be placed in appropriate containers provided by the laboratory, labeled, and placed on ice for transportation to the analytical laboratory. All proper chain-of custody procedures will be observed.

Purge water will be stored at the site in labeled, DOT-approved, 55-gallon drums for proper disposal by the owner.

### **3.2.3 Analytical Methods**

The groundwater samples will be analyzed by NET Pacific, Inc. for TPH as diesel by modified EPA Method 8015 and BTEX by EPA Method 8020.

### **3.2.4 Groundwater Elevation Survey**

The water levels in all of the wells at the site will be measured from the top-of-casing (TOC) using an interface probe. The TOC elevation for each well will be surveyed with a rod and level to an arbitrary datum. This will allow the determination of the local groundwater gradient direction.

#### **4.0 Health and Safety Plan**

A site-specific health and safety plan prepared by Blymyer Engineers, which covers all phases of the work, is attached as Appendix B. The plan addresses key personnel and their responsibilities relative to health and safety, chemical and physical hazards, risk evaluation and management, personal protective equipment, and emergency procedures. A "tail-gate meeting" will be conducted prior to each phase of the work to discuss pertinent health and safety issues and review the site safety plan with all site workers.

## 5.0 Final Report

Upon completion of the work described in the preceding sections, a final report will be prepared for submittal to the ACHCSA. The final report will include a description of all field work performed at the site, analytical results and interpretation, soil and groundwater contamination characterization, conclusions, and recommendations.

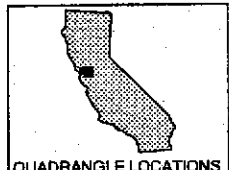
## 6.0 References

- Goldman, Harold B., 1967, *Geology of San Francisco Bay*, California Division of Mines and Geology, prepared for the San Francisco Bay Conservation and Development Commission, 58 p.
- Hickenbottom, K. and Kenneth, M., 1988, *Geohydrogeology and Groundwater Quality Overview of the East Bay Plain Area, Alameda County, California: 205(J) Report*, submitted to the California Regional Water Quality Control Board, San Francisco Bay Region, 83 p.
- National Oceanic and Atmospheric Administration, 1982, *Monthly Normals of Temperature Precipitation, and Heating and Cooling Degree Days 1951-1980, California, Ashenillvine, National Climatic Data Center.*
- Radbruch, Dorothy and Case, J.E., 1967, *Preliminary Geologic Map & Engineering Geologic Information, Oakland and Vicinity, California: United States Geological Survey.*

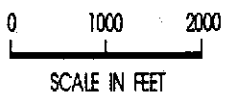
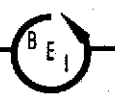




SOURCE: UNITED STATES GEOGRAPHICAL SURVEY 7.5' QUAD. 'SAN LEANDRO, CA' AND 'HAYWARD, CA' BOTH PHOTOREVISED 1980.



**BLYMYER**  
ENGINEERS, INC.



**SITE LOCATION MAP**

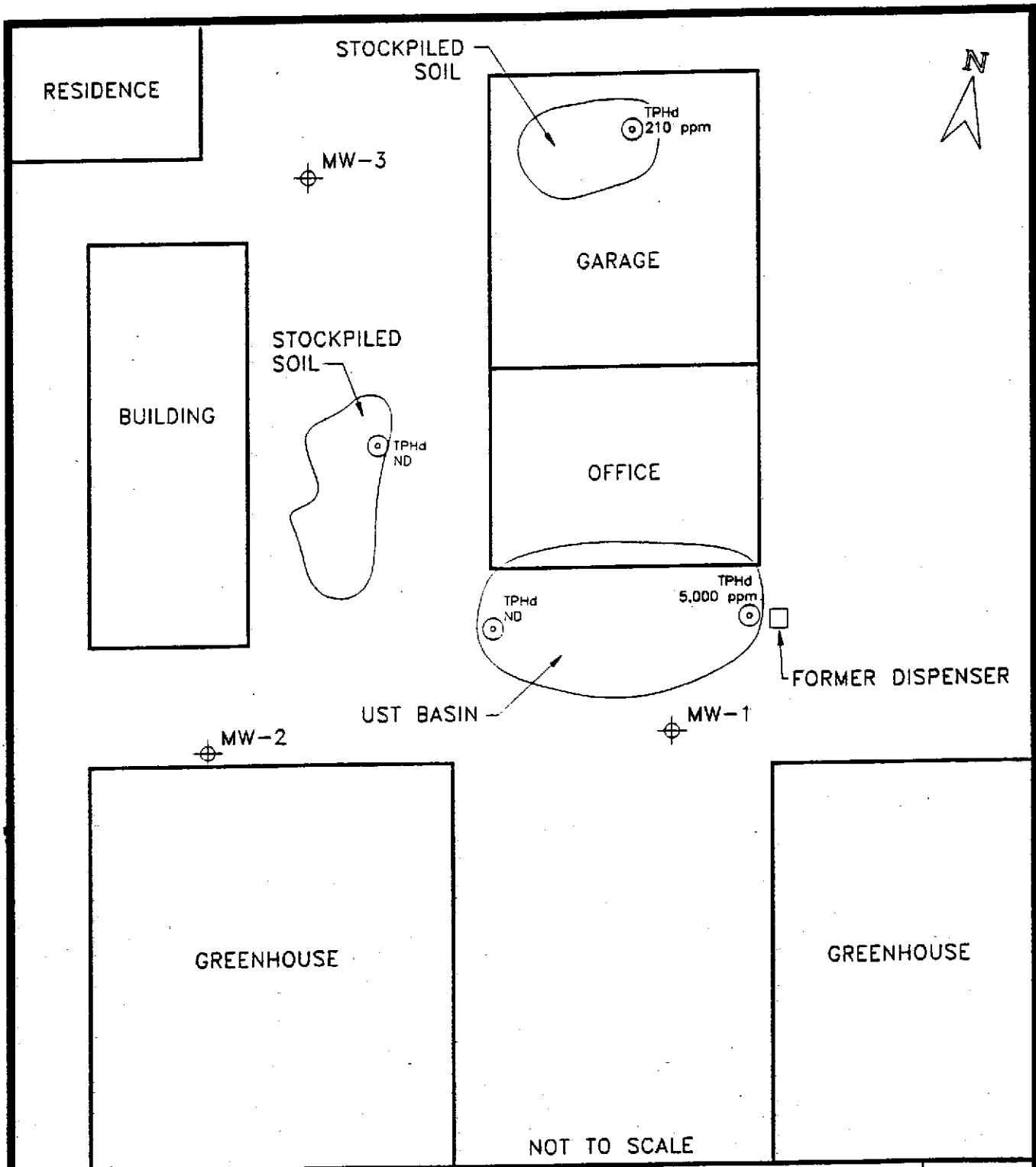
KAWAHARA NURSERY  
16550 ASHLAND AVE.  
SAN LORENZO, CA

FIGURE

1

BEI JOB NO. 93071

DATE 4/93



<b>BLYMYER</b> ENGINEERS, INC.		<b>LEGEND</b> ⊕ PROPOSED MONITORING WELL ⊙ SOIL SAMPLE LOCATION UST UNDERGROUND STORAGE TANK ND NOT DETECTED ppm PARTS PER MILLION TPHd TOTAL PETROLEUM HYDROCARBONS AS DIESEL	<b>PROJECT</b> KAWAHARA NURSERY SAN LORENZO, CA SITE PLAN	<b>FIGURE</b> 2
BEI JOB NO. 93071	DATE 5/5/93			

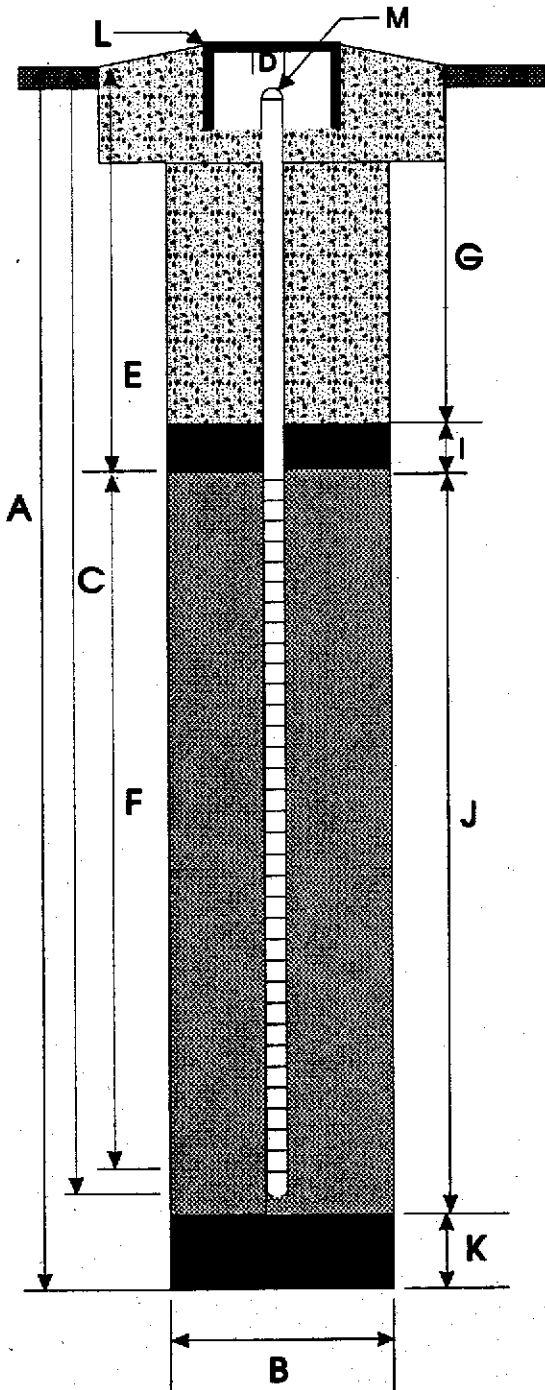
# BLMYER ENGINEERS, INC.

BEI JOB #93071  
FIGURE 3

CLIENT:  
SITE:  
  
JOB#  
DRILLER:  
LOGGED BY:

BORING/WELL NO.:  
TOP OF CASING ELEV.:  
GROUND SURFACE ELEV.:  
DATUM:

## SUGGESTED WELL CONSTRUCTION DIAGRAM



## WELL CONSTRUCTION

- A.** Total Depth 35 feet
- B.** Diameter 8 3/4 inches  
Drilling Method Hollow stem auger
- C.** Casing Length 35 feet  
Material PVC Schedule 40
- D.** Casing Diameter 2 inches
- E.** Depth to Top Perforations 20-25 feet
- F.** Perforated Length 10-15 feet  
Perforated Interval from 20 or 25 to 35 ft.  
Perforation Type Factory slot  
Perforation Size 0.010 inches
- G.** Surface Seal Concrete/Cement
- H.** Backfill \_\_\_\_\_  
Backfill Material \_\_\_\_\_
- I.** Seal 2 feet  
Seal Material Bentonite
- J.** Gravel Pack 12-17 feet  
Pack Material #2 Lonestar sand
- K.** Bottom Seal N/A  
Seal Material Native material
- L.** 12" Dia. Flush mount traffic box
- M.** Locking well cap

ALAMEDA COUNTY  
HEALTH CARE SERVICES

AGENCY

DAVID J. KEARS, Agency Director



RAFAT A. SHAHID, ASST. AGENCY DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH  
State Water Resources Control Board  
Division of Clean Water Programs  
UST Local Oversight Program  
80 Swan Way, Rm 200  
Oakland, CA 94621  
(510) 271-4530

January 27, 1993

Mr. Sam Kawahara  
16550 Ashland Avenue  
San Lorenzo, CA 94580

STID 4403

Re: Required investigations at 16550 Ashland Avenue, San Lorenzo, California

Dear Mr. Kawahara,

On December 1, 1993, one 5,000-gallon diesel underground storage tank was removed from the above site. Two soil samples were collected from the tank pit, one from beneath each end of the tank, and two soil samples were collected from the excavated soil. The analysis of these samples identified Total Petroleum Hydrocarbons as diesel (TPHd) at 5,000 parts per million (ppm) in the sample collected from the east end of the tank, and at 210 ppm in the excavated soil.

Guidelines established by the California Regional Water Quality Control Board (RWQCB) requires that a soil and ground water investigation be conducted when there is evidence to indicate that a release to soil and ground water may have occurred from the underground storage tank.

You are required to conduct a **Preliminary Site Assessment (PSA)** to determine the lateral and vertical extent and severity of latent soil and ground water contamination which may have resulted from the release at the site. The information gathered by the PSA will be used to determine an appropriate course of action to remediate the site, if deemed necessary. The PSA must be conducted in accordance with the RWQCB's Staff Recommendations for the Initial Evaluation and Investigation of Underground Tanks, the State Water Board's LUFT Manual, and be consistent with requirements set forth in Article 11 of Title 23, California Code of Regulations. The major elements of such an investigation are summarized in the attached **Appendix A**. The major elements of the guidelines include, but are not limited to, the following:

- o At least one ground water monitoring well must be installed within 10 feet of the observed soil contamination, oriented in the confirmed downgradient direction relative to ground water flow. In the absence of data identifying the confirmed downgradient direction, a minimum of three wells

Mr. Sam Kawahara  
Re: 16550 Ashland Ave.  
Page 2 of 3  
January 27, 1993

will be required to verify gradient direction. During the installation of these wells, soil samples are to be collected at five-foot-depth intervals and any significant changes in lithology.

- o Subsequent to the installation of the monitoring wells, these wells must be surveyed to an established benchmark, with an accuracy of 0.01 foot. Ground water samples are to be collected and analyzed quarterly, along with water level measurements. If the initial quarterly reports indicate that ground water flow directions vary greatly than you will be required to begin monthly water level measurements, until the ground water gradient behavior is known. Both soil and ground water samples must be analyzed for the appropriate fuel contaminants listed in Table 2 of the RWQCB's Staff Recommendations for the Initial Evaluation and Investigation of Underground Tanks.

This Department will oversee the assessment and remediation of your site. Our oversight will include the review of and comment on work proposals and technical guidance on appropriate investigative approaches and monitoring schedules. The issuance of well drilling permits, however, will be through the Alameda County Flood Control and Water Conservation District, Zone 7, in Pleasanton. The RWQCB may choose to take over as lead agency if it is determined, following the completion of the initial assessment, that there has been a substantial impact to ground water.

The PSA proposal is due within 60 days of the receipt of this letter. Once the proposal is approved, field work should commence within 60 days. A report must be submitted within 45 days after the completion of this phase of work at the site. Subsequent reports are to be submitted quarterly until this site qualifies for final RWQCB "sign-off". Such quarterly reports are due the first day of the second month of each subsequent quarter.

The referenced initial and quarterly reports must describe the status of the investigation and must include, among others, the following elements:

- o Details and results of all work performed during the designated period of time: records of filed observations and data, boring and well construction logs, water level data, chain-of-custody forms, laboratory results for all samples collected and analyzed, tabulations of free product thicknesses and dissolved fractions, etc.

Mr. Sam Kawahara  
Re: 16550 Ashland Ave.  
Page 3 of 3  
January 27, 1993

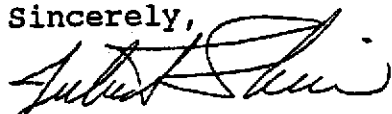
- o Status of ground water contamination characterization.
- o Interpretations of results: water level contour maps showing gradients, free and dissolved product, plume definition maps for each target component, geologic cross sections, etc.
- o Recommendations or plans for additional investigative work or remediation.

Please be advised that this is a formal request for a work plan pursuant to **Section 2722 (c) (d) of Title 23 California Code of Regulations**. Any extensions of the stated deadlines, or modifications of the required tasks, must be confirmed in writing by either this agency or RWQCB.

Please be reminded to copy Richard Hiatt, at the San Francisco Bay Region-Water Quality Control Board, on all correspondence and reports regarding this site.

If you have any questions or comments, please contact me at (510) 271-4530.

Sincerely,



Juliet Shin  
Hazardous Materials Specialist

cc: Richard Hiatt, RWQCB  
Edgar Howell-File(JS)

SITE HEALTH & SAFETY PLAN

Kawahara Nursery  
16550 Ashland Avenue  
San Lorenzo, CA 94580

Prepared for  
Kawahara Nursery, Inc.  
May 13, 1993

Prepared By  
Blymyer Engineers, Inc.  
1829 Clement Avenue  
Alameda, CA 94501

Project #93071

Rev. (2/92)

## CONTENTS

### Tailgate Safety Meeting Checklist

#### 1.0 INTRODUCTION

- A. Overview

#### 2.0 PROJECT SAFETY AUTHORITY

- A. On-Site Project Safety
- B. Blymyer Engineers, Inc. Corporate Safety Officer

#### 3.0 JOB HAZARD ANALYSIS

- A. Chemical Hazards
- B. Physical Hazards

#### 4.0 JOB HAZARD SUMMARY

#### 5.0 EXPOSURE MONITORING PLAN

- A. Airborne Contaminants
- B. Heat Stress
- C. Cold Stress
- D. Noise

#### 6.0 PERSONAL PROTECTIVE EQUIPMENT

- A. Introduction
- B. Levels of Protection

#### 7.0 WORK ZONES AND SECURITY MEASURES

- A. General
- B. Field Operations Work Area

#### 8.0 DECONTAMINATION PROCEDURES

- A. Introduction
- B. Procedure

#### 9.0 GENERAL SAFE WORK PRACTICES

#### 10.0 SANITATION



**11.0 STANDARD OPERATING SAFETY PROCEDURES**

- A. Traveling
- B. Decontamination
- C. Respiratory Protection Program

**12.0 EMERGENCY PROCEDURES**

- A. Site Emergency Warning System
- B. Emergency Equipment
- C. General Emergency Procedures
- D. Personal Injury

**13.0 TRAINING REQUIREMENTS**

**14.0 MEDICAL SURVEILLANCE**

- A. Examination Requirements

**15.0 RECORDKEEPING**

- A. General
- B. Medical Records

**16.0 SIGNATURES**

**Contractor and Sub-Contractor Agreements**

**BLYMYER ENGINEERS, INC.**  
**TAILGATE SAFETY MEETING CHECKLIST**

Project Number: 93071    Site Address: 16550 Ashland Avenue, San Lorenzo, CA

Date: May , 1993    Project Safety Officer: Laurie A. Buckman

**ITEMS TO BE DISCUSSED WITH ALL PROJECT PERSONNEL:**

- \_\_\_\_\_ Head and eye protection required on job - (Hard hat, safety glasses).
- \_\_\_\_\_ Other protective equipment required - (steel-toed boots, earplugs, gloves, chemicals suits, etc.)
- \_\_\_\_\_ Respiratory protective equipment.
- \_\_\_\_\_ Discuss materials expected to be encountered on job and exposure limits (gasoline, waste oil, benzene, etc., and their respective TLV's).
- \_\_\_\_\_ Air monitoring procedures (LEL meter, PID, etc).
- \_\_\_\_\_ Work zones and methods of security (should have sketch of proposed drilling sites showing how barricades, tape, and cones will keep public out).
- \_\_\_\_\_ Decontamination procedures (discuss steam-cleaning of all contaminated equipment, and personal hygiene).
- \_\_\_\_\_ General safe work practices.
- \_\_\_\_\_ Emergency procedures (fire extinguisher, first aid, gas detectors, hospital directions, emergency numbers).

The following personnel were present for discussion of the topics listed above:

NAME	SIGNATURE	COMPANY	DATE

## SITE HEALTH & SAFETY PLAN

### 1.0 INTRODUCTION

#### A. Overview

The subject property is an operating landscape nursery consisting of approximately 3 acres of land. Approximately 90% of the property is covered with asphalt and concrete occupied by covered greenhouses, offices, and warehouses.

One underground storage tank containing diesel fuel was removed from the property along with the associated piping and dispenser. Following the UST removal the excavated soil was stockpiled adjacent to the excavation and in a warehouse located to the north of the main office. Confirmation soil samples collected from the UST excavation and stockpile soil indicated concentrations of Total Petroleum Hydrocarbons (TPH) as diesel ranging from 210 parts per million (ppm) to 5,000 ppm.

Three soil bores to approximately 35 feet below grade surface (bgs) will be drilled at the site. One soil bore will be drilled adjacent to the UST excavation and the remaining two bores will be drilled on the northeast and northwest portion of the property. The soil bores will be converted to 2-inch diameter monitoring wells.

Soil samples will be collected from the bores and groundwater samples collected from the monitoring wells will be submitted for analysis of TPH as diesel and benzene, toluene, ethylbenzene, and total xylenes (BTEX).

Disposal characterization soil samples will be collected from the stockpile soil and submitted for analysis of TPH as diesel, BTEX, and reactivity, corrosivity, and ignitability (RCI) for landfill disposal.

All soil cuttings generated from the installation of the soil bores will be characterized and disposed of with the stockpile soil. Water generated from the development and purging of the installed monitoring wells will be stored in DOT-approved 55 gallon drums for later disposal. It is estimated that one 55-gallon drums of water will be generated.

## **2.0 PROJECT SAFETY AUTHORITY**

### **A. On-Site Project Safety**

Personnel responsible for the project safety are:

Laurie A. Buckman  
Project Safety Officer  
Blymyer Engineers, Inc.

Roman S. Worobel  
Corporate Safety Officer  
Blymyer Engineers, Inc.

The Project Safety Officer has the authority to suspend work anytime he or she determines that the provisions of the plan are inadequate to ensure worker safety. The Project Safety Officer shall also inform individuals whose conduct is not consistent with the requirements of the plan. In addition, the Project Safety Officer shall be responsible for the following:

- Safety Supplies & Equipment Inventory for the Project Site
- Medical Surveillance Program/Physical Examination Compliance
- Training Programs/Hazard Communication Compliance
- Accident/Incident Reporting
- Decontamination/Contamination Reduction Procedures

### **B. Blymyer Engineers, Inc. Corporate Safety Officer**

The Corporate Safety Officer reports to the Blymyer Engineers, Inc. Senior Management and is responsible for on-site safety and injury/illness prevention functions.

Responsibilities include:

- Health surveillance of all Blymyer Engineers, Inc. employees.
- Assuring that safety procedures in effect are in compliance with all appropriate federal, state, and local regulations (following the most stringent of the standards).
- Maintenance of personnel exposure monitoring records.

- Assuring appropriate personal protective equipment is adequate for actual hazards of on-site conditions.
- Assuring appropriate hazard areas are identified and marked.
- Assuring all personnel entering hazard area are in appropriate levels of protection and adequately trained.

### 3.0 JOB HAZARD ANALYSIS

#### A. Chemical Hazards

The possible major chemical hazards of contaminants to be encountered on the project are:

CHEMICAL	PEL/TLV	ROUTE(S) OF EXPOSURE	SOLUBILITY IN WATER	VAPOR PRESSURE	LEL, UEL
Diesel	75 mg/m	Ing, Inh, Con.	Insoluble	1.96 mm HG @ 40 C	0.7%, 5%
Benzene	1 ppm	Ing, Inh, Con.	0.0007 g/ml @ 68 F	75 mm Hg @ 68 F	1.3%, 7.9%
Toluene	100 ppm	Ing, Abs, Ing, Con.	0.0005 g/ml @ 61 F	20 mm Hg @ 65 F	1.2%, 7.1%
Ethylbenzene	100 ppm	Ing, Inh, Con.	0.0001 g/ml @ 68 F	10 mm Hg @ 79 F	1.0%, 6.7%
Xylenes	2 ppm	Ing, Abs, Inh, Con.	Insoluble	9 mm Hg @ 68 F	1.1%, 7%

Inhalation, ingestion, skin absorption and, skin and/or eye contact are the main routes of entry regarding the exposure to potentially hazardous substances. Results of animal and human toxicological studies are detailed in "Handbook of Toxic and Hazardous Chemicals" by M. Sittig (1981), and "Dangerous Properties of Industrial Materials" by N. Irving Sax (1984). An additional reference source used for the development of this Site Safety Plan is "Threshold Limit Values and Biological Exposure Indices" published by the American Conference of Governmental Industrial Hygienists.

#### B. Physical Hazards

Site physical hazards include the operation of hand operated auger, scattered machinery, hazards associated with railroad easements, opening of sealed drums of unknown contents which have been sitting out in the open for an unknown period of time, and large trucks transporting and loading materials near the sampling points. USA utility locator service and site personal have located the off-site subsurface utility lines within the areas which will be drilled. Existing utilities on the site must be avoided in the process of normal site work.

Additionally, there is a potential for physical hazards resulting from falling objects such as tools or equipment, from falls from elevations, or from tripping over pipes, tools, hoses, and other equipment laying on the ground. Improper use and/or maintenance of equipment and tools is another potential source of physical hazards on site. These sorts of physical hazards must be avoided through proper site management and control of the work area by the Project Safety Officer.

#### **4.0 JOB HAZARD SUMMARY**

Minimal risk from contaminants is anticipated, however, due to the unknown contents of the drums to be sampled "worst case: precautions will be a adhered to

#### **5.0 EXPOSURE MONITORING PLAN**

##### **A. Airborne Contaminants**

An air quality monitoring program shall be implemented to provide baseline and on-going air quality data for site operations. This program shall include an on-going evaluation of on-site airborne contaminant concentrations during work site activities that involve significant surface disturbances using direct reading instruments, detector tubes and/or NIOSH air sampling methods. In addition, a determination will be made by the project safety officer whether perimeter monitoring of downwind air quality conditions will be performed during significant surface disturbances.

## B. Heat Stress

The following table details work procedures under high temperatures:

**Permissible Heat Exposure Threshold Limit Values**  
(Values are given in °F )

Work Load			
Work-Rest Regimen	Light	Moderate	Heavy
Continuous Work	86	80	77
75% Work-25% Rest, each hour	87	82	79
50% Work-50% Rest, each hour	89	85	82
25% Work-75% Rest, each hour	90	88	86

The Threshold Limit Values are based on the assumption that nearly all acclimatized, fully clothed workers with adequate water and salt intake should be able to function effectively under the given working conditions without exceeding a deep body temperature of 100 °F. The Threshold Limit Values do not apply if special clothing is required to perform the job and this clothing impedes sweat evaporation.

During extremely hot temperatures, drinking water will be made available to the workers such that one cup is drunk every 15-20 minutes.

## C. Cold Stress

Since prolonged exposure to cold air, or to immersion in cold water, at temperatures well above freezing can lead to dangerous hypothermia, whole body protection must be provided.

1. Adequate insulating clothing to maintain core temperatures above 36°C (96.8°F) must be provided to workers if work is performed in air temperatures below 4°C (40°F). Wind chill factor or the cooling power of the air is a critical factor. The higher the wind speed and the lower the temperature in the work area, the greater the insulation value of the protective clothing required.



2. Unless there are unusual or extenuating circumstances cold injury to other than hands, feet, and head is not likely to occur without the development of the initial signs of hypothermia (severe shivering and reduced mental alertness). Older workers or workers with circulatory problems require special precautionary protection against cold injury. The use of extra insulating clothing and/or a reduction in the duration of the exposure period are among the special precautions which should be considered.

#### **D. Noise**

A potential for elevated noise exposure exists when operating or working around heavy equipment. The use of hearing protection such as ear plugs and/or hearing protectors will be required, as necessary.

## **6.0 PERSONAL PROTECTIVE EQUIPMENT**

### **A. Introduction**

It is important that personal protective equipment and safety requirements be appropriate to protect against the potential hazards at the site. Protective equipment will be selected based on the contaminant type(s), concentration(s), and route of entry. In situations where the type of materials and possibilities of contact are unknown or the hazards are not clearly identifiable, a more subjective determination must be made of the personal protective equipment.

A minimum of Level D safety equipment and clothing will be required for all workers and visitors on the site. A minimum of Level C safety equipment and clothing will be required for at least the initial phase of the sampling of the drum material. Once a general knowledge of the contents of the drums is determined through field sampling procedures, the decision may be made to decrease the level of personal safety equipment. All personnel must be prepared to upgrade to higher levels of protective equipment as conditions warrant.

### **B. Levels of Protection**

The Level D protection equipment for the work at the site will include:

- hardhat (near operating heavy machinery or where falling hazards exist)
- long sleeve button down shirt
- chemical-resistant steel toed boots or shoes
- safety glasses
- inner gloves (polyvinyl) for handling soil or liquid samples
- overgloves (neoprene, nitrile) for handling augers or other contaminated items
- polycoated Tyvek coveralls for working with wet materials
- uncoated Tyvek coveralls for working with dry materials

The Level C protection equipment for the work at the site will include:

- Level D equipment including appropriate gloves and hooded chemical-resistant clothing
- respiratory protection which may include half or full face respirator with appropriate cartridges depending on the type(s) of airborne substances

The Project Safety Officer may modify the level of protection at any time during the project.

## **7.0 WORK ZONES AND SECURITY MEASURES**

### **A. General**

A site must be controlled to reduce the possibility of exposure to any contaminants present and their transport by personnel or equipment from the site.

The possibility of exposure or translocation of contaminants can be reduced or eliminated in a number of ways, including:

- Setting up security or physical barriers to exclude unnecessary personnel from the general area
- Minimizing the number of personnel and equipment on-site consistent with effective operations
- Establishing work zones within the site
- Establishing control points to regulate access to work zones
- Conducting operations in a manner to reduce the exposure of personnel and equipment
- Minimizing the airborne dispersion of contaminants
- Implementing the appropriate personnel and equipment decontamination procedures

### **B. Field Operations Work Area**

Work area (zones) will be established based on anticipated contamination and provided on a site map (Figure 1). Within these zones prescribed operations will occur utilizing appropriate personal protective equipment. Movement between areas will be controlled at checkpoints. The planned zones are:

1. **Exclusion Area (contaminated):**  
The actual areas where work is being performed are considered to be the exclusion areas. Access to these areas will be strictly limited to the personnel needed to conduct the work being performed.
2. **Contamination Reduction Area:**  
An area adjacent to each active work zone will be designated as the contamination reduction area. Disposable protective gear will be removed and placed in plastic bags prior to leaving the reduction zone. Heavy equipment and non-disposable gear will be cleaned at a decontamination area within this zone.
3. **Support Area (non-contaminated):**  
Areas located away from active work areas and out of the zone of potential impact of hazards will be used for staging and support of the work being performed on site. Any materials, equipment, or clothing of personnel must be fully decontaminated prior to entering these areas.

## **8.0 DECONTAMINATION PROCEDURES**

### **A. Introduction**

As part of the system to prevent or reduce the physical transfer of contaminants by personnel and/or equipment from on-site, procedures will be instituted for decontaminating anything leaving the Exclusion Area and Contamination Reduction Area. These procedures include the decontamination of personnel, equipment, monitoring equipment, clean-up equipment, etc. Unless otherwise demonstrated, everything leaving the Exclusion Area should be considered contaminated and appropriate methods established for decontamination shall be followed. In general, decontamination at the site consists of rinsing equipment, personnel, etc., with copious amounts of water and washing with detergent water solutions.

### **B. Procedure**

1. Personnel protective equipment worn into the Exclusion Area will be decontaminated upon leaving the Contamination Reduction Area. All decontaminated equipment will be air dried.
2. The decontamination of equipment, material, and personnel working in the Contamination Reduction Area may be somewhat less complex than that used in the Exclusion Area.
3. The spent solution, brushes, sponges, containers, stands, etc., used in the decontamination process must be properly disposed.

## 9.0 GENERAL SAFE WORK PRACTICES

The project operations shall be conducted with the following minimum safety requirements employed:

1. Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand to mouth transfer and ingestion of materials is prohibited in any area where the possibility of contamination exists.
2. Hands must be thoroughly washed upon leaving a contaminated or suspected contaminated area before eating, drinking, or any other activities transpire.
3. Thorough washing of the entire body should be accomplished whenever decontamination procedures for outer garments are in effect. The washing should occur as soon as possible after the final wearing of protective garments.
4. Legible and understandable precautionary labels shall be prominently affixed to containers of raw materials, intermediates, products, mixtures, scrap, waste, debris, and contaminated clothing.
5. Contaminated protective equipment shall not be removed from the regulated area until it has been cleaned or properly packaged and labeled.
6. Removal of materials from protective clothing or equipment by shaking, or any other means which may disperse materials into the air is prohibited.
7. Personnel on-site must use the "buddy" system when wearing any respiratory protective devices. Communications between members must be maintained at all times. Emergency communications shall be prearranged in case of encountering unexpected situations. Visual contact must be maintained between "pairs" on-site, and each team should remain in closed proximity to assist each other, if necessary.
8. Personnel should be cautioned to inform each other of subjective symptoms of chemical exposure such as headache, dizziness, nausea, and irritation of the respiratory tract.
9. No excessive facial hair which interferes with a satisfactory fit of the facepiece-to-face seal will be allowed on personnel required to wear respiratory protective equipment.
10. All respiratory protection selection, use, and maintenance shall meet the requirements of established Blymyer Engineers' procedures, recognized consensus standards (ANSI, NIOSH), and shall comply with the requirements set forth in 29 CFR 1910.134.
11. Blymyer Engineers' on-site personnel are to be thoroughly briefed on the anticipated hazards, equipment requirements, safety practices, emergency procedures, and

communications methods, initially and in daily briefings.

13. Contact with surface water and groundwater shall be minimized.
14. Steel-toed boots will be worn on-site at all times.

In addition, the following precautions shall be implemented for all personnel working on the project:

- Gross decontamination and removal of all personal protective equipment shall be performed prior to exiting the facility. Contaminated clothing will be removed and collected in a drum for disposal.
- Field operations personnel shall be cautioned to inform each other of non-visual effects of the presence of toxics, such as:
  - Headaches
  - Dizziness
  - Nausea
  - Blurred Vision
  - Cramps
  - Irritation of eyes, skin, or respiratory tract
  - Changes in complexion or skin discoloration
  - Changes in apparent motor coordination
  - Changes in personality or demeanor
  - Excessive salivation or changes in pupillary response
  - Changes in speech ability or pattern
- 15. During trenching operations field personnel shall maintain a safe distance from the excavation to preclude injury.
- 16. Personnel shall maintain an adequate distance from operating drilling rigs.
- 17. During all site inspections at facilities where heavy equipment (including trucks) is operating, all Blymyer Engineers' employees shall wear an orange safety vest.

## **10.0 SANITATION**

Provisions will be made to ensure proper sanitation facilities for site personnel.

## **11.0 STANDARD OPERATING SAFETY PROCEDURES**

Standard Operating Safety Procedures (SOSPs) will be followed by Blymyer Engineers'

employees to reduce risks associated with using field equipment and with handling hazardous materials. The SOSP's are divided into three sections: traveling, decontamination and respiratory protection.

**A. Traveling**

1. Seat belts shall be worn by all occupants in Company-owned and/or company-supported vehicles.
2. Company-owned and/or company-supported vehicles will not be operated while under the influence of drugs or alcohol. Alcoholic beverages, beverage containers, illegal drugs or drug paraphernalia shall not be consumed in vehicles or possessed on job sites.
3. Company-owned and company-supported vehicles must be kept in safe operating condition which includes periodic inspection and maintenance of lights, brakes, tires and performance of a tune-up.
4. All applicable traffic rules and regulations shall be obeyed.
5. In the event of an accident, report the incident to the Corporate Safety Officer as soon as possible. Collect all the pertinent information related to the accident, such as other party's state driver's license number, automobile license plate number, home and work phone number, police report number, and location of accident.

**B. Decontamination**

1. All personnel shall follow decontamination procedures described below. The decontamination procedure shall be reiterated in the site-specific health and safety plan. Figure 2 contains the minimum decontamination layout for Level C protection.
2. Level C Decontamination Procedure:

**Station 1: Equipment Drop**

Deposit equipment used on-site (tools, containers, etc.) on a plastic sheet on the ground. Segregation of the equipment will help reduce potential for cross-contamination. A warming station will be provided for cold weather conditions and a shaded area for hot weather conditions.

**Station 2: Outer Garment, Boot Cover, Glove Wash**

Scrub boot covers, outer gloves and chemical resistant suit with appropriate detergent

wash.

### Station 3: Outer Garment, Boot Cover, Glove Rinse

Rinse off decontamination solution from Station 2 using copious amounts of water.

### Station 4: Boot Cover and Glove Removal

Remove boot covers, outer gloves, and tape. Dispose of tape in a plastic bag. Place gloves and boot covers on plastic sheeting for reuse or disposal, depending on their condition.

### Station 5: Cartridge Change

If a worker leaves the Exclusion Zone to change a cartridge, this is the last step in the decontamination procedure. The worker's cartridge is exchanged, new outer gloves and boot covers donned, and joints taped. The worker then returns to duty.

### Station 6: Garment and Safety Boot Removal

Remove chemical suits and safety boots and place in a plastic bag.

### Station 7: Inner Glove Wash and Rinse

Wash inner gloves with the decontamination solution and rinse with water.

### Station 8. Mask Removal

Remove mask for decontamination with detergent and then rinse with water. Remove inner gloves and dispose. Wash hands.

### Station 9. Field Wash

Shower in field decontamination trailer. Segregate site clothing and wash separately. Redress with clean clothes.

## 3. Level D Decontamination Procedure:

Level D decontamination consists of boot and glove wash and rinse, washing face and hands and showering off-site as soon as practicable. If disposable suits are used, they shall be disposed of after use. If coveralls are used, they should be removed and washed separately from street clothes at an off-site facility.

When disposable protective clothing is ripped, it shall be immediately discarded and

replaced. All disposable clothing shall be double bagged and disposed of as required by applicable regulations.

### C. **Respiratory Protection Program**

Blymyer Engineers maintains the following program governing the selection and use of respirators. The program follows the respiratory protection guidelines as presented in 29 CFR Part 1910.134:

1. Use accepted engineering control measures to reduce or eliminate air contamination by dust, fogs, mist, gases, smoke, sprays, or vapor. Control measures may include enclosures, general and local ventilation, surface wetting and operation modification.
2. If control measures cannot ensure adequate air quality, employees will use appropriate respirators, provided conditions are suitable for their use. Respirators will be provided by Blymyer Engineers and the employee shall use the provided respiratory protection in accordance with instructions and training received.
3. Respirators and cartridges will be selected on the basis of available information concerning contamination at the work site. Information on the contaminants present or expected to be at the site will be found in a site-specific health and safety plan.

Note: Information regarding contaminants may be found in the following sources: "NIOSH Pocket Guide to Chemical Hazards" and the ACGIH "Threshold Limit Value and Biological Indices".

4. All employees using a respirator will be instructed and trained in the proper use of respirators and their limitations. This includes a qualitative respirator fit tested to determine an adequate face-to-mask seal.
5. Respirators shall be regularly cleaned and disinfected. During cleaning, the respirators shall be inspected for wear and tear. Worn or deteriorated parts shall be replaced.
6. Respirators shall be stored in a convenient, clean, and sanitary location.
7. The Corporate Safety Officer will monitor the respirator program on a regular basis and modify as necessary to provide maximum protection to all employees.
8. All employees expected to work under conditions requiring respirators will undergo an annual medical examination to verify fitness to perform such work while wearing a respirator.



9. Respirators shall not be worn when conditions prevent a facepiece-to-face seal such as facial hair, scars or denture removal.

## **12.0 EMERGENCY RESPONSE**

### **A. Site Emergency Warning System**

Several warning systems may be utilized depending on the work site conditions or emergency involved:

1. Verbal Communications
2. Vehicle Horns
3. Portable hand-held compressed gas horns

Verbal instructions with or without assistance are used to deal with specific incidents. Horn signals are used to signify emergency warning.

One long blast is used on-site to signify emergency evacuation of the immediate work area to a predetermined location upwind, where a headcount will be taken and further instructions given.

Repeated short blasts are used on-site or from off-site to signify evacuation of all personnel from the site to the hot line where further instructions will be given after a headcount is taken.

### **B. Emergency Equipment**

The following equipment comprises the basic elements for emergency preparedness. All or some of these items shall be available at the work site:

1. Fire extinguisher - dry chemical
2. First aid kits (including chemical burn kit)
3. Combustible gas and oxygen detector analyzers
4. Inorganic vapor detector tubes and air supply pumps--Draeger and/or MSA, or equivalent

### **C. General Emergency Procedures**

In case of an emergency or hazardous situation, the team member that observes this condition shall immediately sound the alarm.

1. Upon hearing an alarm, all non-emergency communications will cease and the member giving the alarm will proceed to give the Project Safety Officer all pertinent information.
2. Actions to be taken will be dictated by the emergency condition.

3. Power equipment will be shut down and operators will stand by for instruction.
4. Injured personnel will be transported to the Contamination Reduction Line.
5. Blymyer Engineers' office will be notified immediately.
6. In case of a fire, explosion, or hazard alarm, personnel will immediately proceed to assigned pre-arranged safe locations.
7. Upon arrival at the safe locations, a complete head count will be given to the Project Safety Officer and personnel will stay at the safe locations until the area is secured.

**D. Personal Injury**

If an injury occurs due to an accident or exposure to a hazardous substance, the Blymyer Engineers' office will be noticed. The Corporate Safety Officer will be given all appropriate information concerning the nature and cause of the injury so that treatment preparations can be initiated. The injured person will be transported to the Contamination Reduction line where appropriate first aid and treatment can begin. The Project Manager will be informed and will investigate the cause of the injury and make any necessary changes in work procedures.

In the event of an accident resulting in physical injury, first aid will be administered, and the injured worker will be transported to local hospital for emergency treatment.

**Hospital: Humana Hospital**

**Directions to Hospital: Left on Lewelling, to E 14th, left approx. 2 miles, hospital on left.**

**EMERGENCY CONTACT LISTING:**

<b>Nature of Emergency</b>	<b>Name</b>	<b>Phone Number</b>
<b>Ambulance</b>	<b>Humana Hospital</b>	<b>911</b>
<b>Fire</b>	<b>San Lorenzo</b>	<b>911</b>
<b>Police</b>	<b>San Lorenzo</b>	<b>911</b>
<b>Poison Control Center</b>	<b>Humana Hospital</b>	<b>911</b>
<b>Hospital</b>	<b>Humana Hospital</b>	<b>357-4958</b>
<b>Agency Contact</b>	<b>Juliet Shin</b>	<b>271-4530</b>
<b>Laboratory</b>	<b>Coast to Coast</b>	<b>(800) 456-2227</b>
<b>Other Contingencies</b>	<b>Blymyer Engineers, Inc.</b>	<b>(510) 521-3773</b>

**13.0 TRAINING REQUIREMENTS**

All personnel assigned to this project will be required to demonstrate that they have completed the training requirements, according to Federal OSHA Standards under 29 CFR 1910.120. Field personnel from Blymyer Engineers and their sub-contractors will attend a project work task review before beginning work.

All Blymyer Engineers' site personnel shall have completed training relative to the project operations plans, and the materials to be encountered during the project. This formal training is supplemented as required by daily safety briefings. All subcontractor personnel will be required to complete the same basic training, and to attend all safety briefings.

## **14.0 MEDICAL SURVEILLANCE**

Blymyer Engineers' personnel and subcontractors engaged in project operations shall be participants in a medical surveillance program, and must be cleared by the examining physician(s) to wear respiratory protection devices and protective clothing for working with hazardous materials. The applicable requirements under Federal OSHA, 29 CFR 1910 will be observed.

### **A. Examination Requirements**

All Blymyer Engineers' personnel on-site shall have successfully completed a pre-placement or periodic medical examination in accordance with established Blymyer Engineers' policies and procedures, and consistent with the provisions of the OSHA carcinogen standards. This examination shall include a complete medical and occupational history, physical examination, and selected biological sampling. Laboratory studies include a complete blood count (CBC), urinalysis, chemistry panel (SMAC), pulmonary function (FEV and FVC), chest X-ray, audiometry, and vision screening.

## **15.0 RECORDKEEPING**

### **A. General**

Recordkeeping shall be consistent with OSHA regulations in all respects. The following permanent records will be maintained in the Blymyer Engineers' offices:

1. Safety Inspection Reports
2. Personnel Exposure Monitoring Records  
(spiral or bound permanent log books will be used)
3. OSHA 200-Current to within 5 days

### **B. Medical Records**

Permanent medical records shall be maintained in confidential files by the contract physician/medical clinic and Blymyer Engineers office. The physician will supply Blymyer Engineers with a medical status document, certifying that the personnel assigned to the project are physically capable of performing their individual work tasks.

**16.0 SIGNATURES**

Site Health & Safety Plan Approved By:

Signature: \_\_\_\_\_ Date \_\_\_\_\_

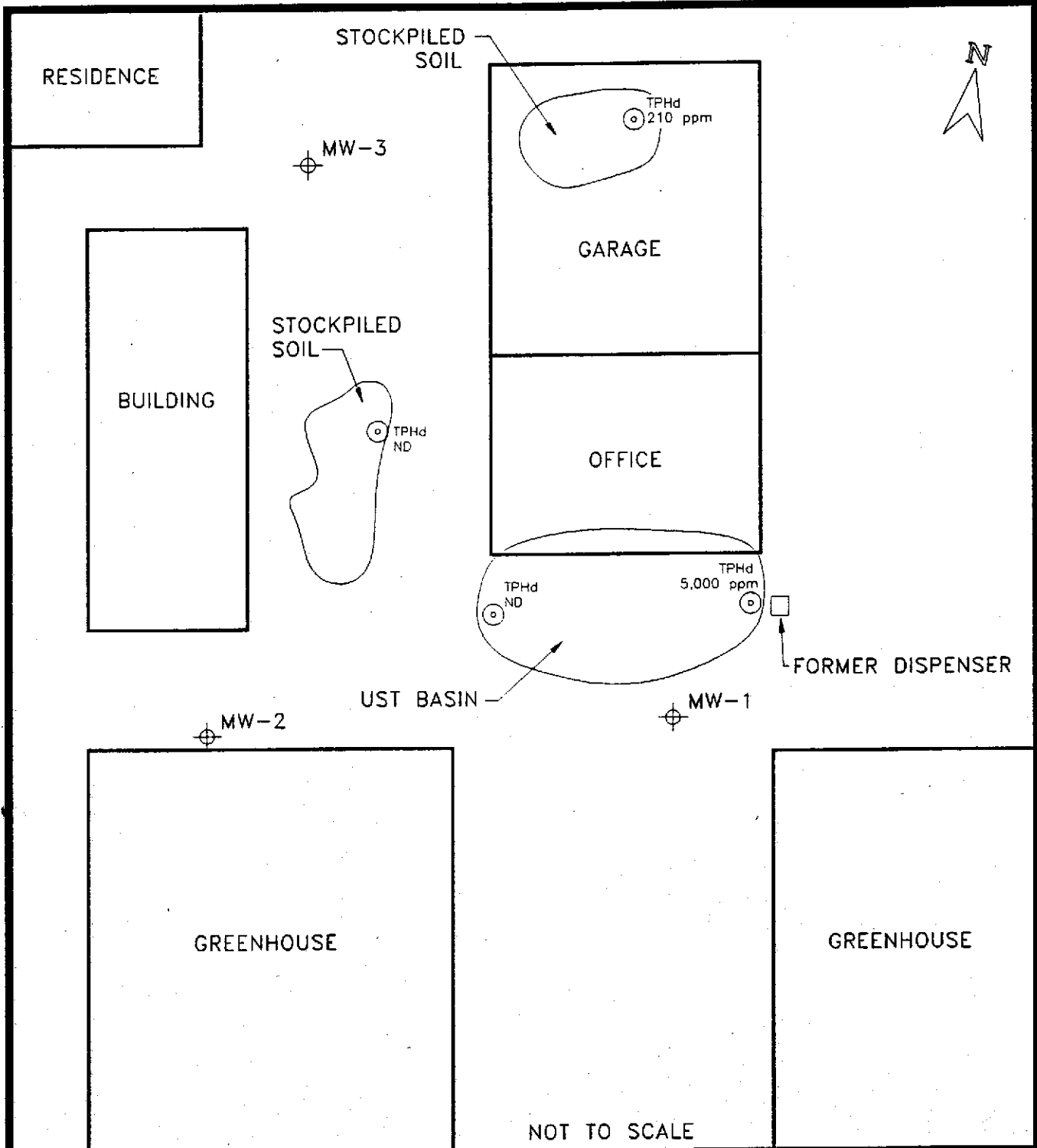
Name: Roman S. Worobel

Title: Corporate Safety Officer

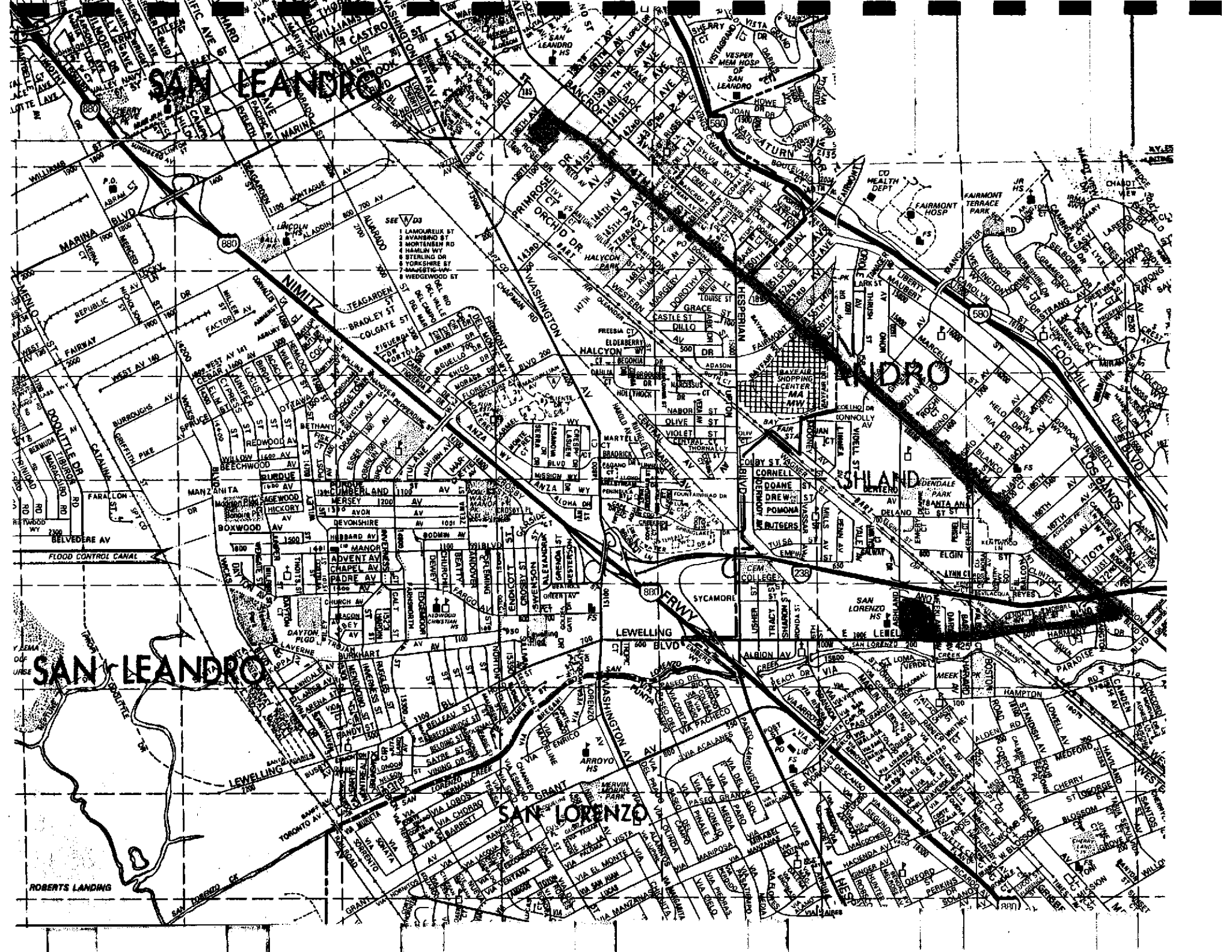
**CONTRACTOR AND SUB-CONTRACTOR AGREEMENTS**

1. Contractor certifies that the following personnel to be employed on the subject project have met the following requirements of the OSHA Hazardous Waste Operator Standard (29 CFR 1910.120) and other applicable OSHA standards.
2. Contractor certifies that in addition to meeting OSHA requirements, it has received a copy of this site Health & Safety Plan and will ensure that its employees are informed and will comply with both OSHA requirements and the guidelines in this site Health & Safety Plan.
3. Contractor further certifies that it has read and understands and will comply with all provisions of this Health & Safety Plan and will not hold Blymyer Engineers, Inc. responsible or liable for any injury or health problems that may arise.

Contractor Personnel	Training/Certification Medical Examination	Signature	Date
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____



<b>BLMYER</b> ENGINEERS, INC.		<b>LEGEND</b> ⊕ PROPOSED MONITORING WELL ○ SOIL SAMPLE LOCATION UST UNDERGROUND STORAGE TANK ND NOT DETECTED ppm PARTS PER MILLION TPHd TOTAL PETROLEUM HYDROCARBONS AS DIESEL	<b>PROJECT</b> KAWAHARA NURSERY SAN LORENZO, CA <b>SITE PLAN</b>	<b>FIGURE</b> 2
BEI JOB NO. 93071	DATE 5/5/93			



**SAN LEANDRO**

**LEANDRO**

**SAN LEANDRO**

**SAN LORENZO**

SEE V/D

- 1 LAMARQUE ST
- 2 AVANADO ST
- 3 MORTENLIN RD
- 4 HAMILIN WY
- 5 STERLING DR
- 6 YORKSHIRE ST
- 7 MAWERTON ST
- 8 WEDGEWOOD ST

**FRWY**

FLOOD CONTROL CANAL

ROBERTS LANDING