

SUPPLEMENTAL
SITE CHARACTERIZATION STUDIES
RELATING TO THE
ANOTHER TREE
EMERYVILLE PROJECT

Submitted to:

Alameda County Health Care Services Agency
Department of Environmental Health
Division of Hazardous Materials
80 Swan Way, Room 200
Oakland, California

Submitted by:

Another Tree Development Corporation
369 Pine Street
Suite 224
San Francisco, California 94104

July 5, 1990

E0-751.0

TENERA
Environmental Services
1995 University Avenue, Berkeley, California 94704, (415) 845-5200
FAX: (415) 845-8453

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1.0 INTRODUCTION

1.1 General

This report has been prepared for Another Tree Development Corporation (ATDC) by TENERA Environmental of Berkeley, California pursuant to discussions with the Alameda County Health Care Services Agency, Division of Hazardous Materials (ACHA) and in response to the 6/8/90 letter of the ACHA relating to the Agency's review of TENERA's 5/18/90 report concerning the site of the Another Tree Emeryville Project. This document describes the results of certain supplemental site investigations completed on the property, and discusses TENERA's findings regarding the existence and nature of the asphaltic material reported to have been present on the site during prior site investigations.

This section describes the purpose of this submittal, and provides an overview of the specifications of the supplemental site investigation program as requested by the ACHA in their 6/8/90 letter. Section 2.0 describes the field sampling activities completed under this program, and the results of the laboratory analyses of soil samples taken at the site. Section 3.0 summarizes the findings of this work program, and TENERA's recommendations relating to those findings.

1.2 Purpose

Another Tree Development Corporation of San Francisco, California proposes to develop certain multi-family residential and ancillary structures on lands owned by ATDC in the City of Emeryville, Alameda County, and is now proceeding with site planning, facilities design activities, and permitting and environmental review of the property. ATDC and representatives of TENERA Environmental met with the ACHA on 4/10/90 to overview ATDC's proposed development concepts for the site, and to determine the County's requirements regarding review and comment on environmental conditions of the property. Based on discussions during that meeting, it was requested that the results of the several prior technical investigations on the site be concisely summarized, and forwarded for County review and comment along with ATDC's proposals for addressing conditions encountered on the site.

On 5/18/90, TENERA completed a technical report comprising a review of prior site characterization studies and including specific proposals for ACHA review addressed to the three areas of emphasis identified through prior investigations. That report was subsequently forwarded for ACHA review and comment. On 6/8/90, ATDC was informed by the ACHA (see Appendix A) that approval was granted for certain of the proposals made in the 5/18/90 report, but that further characterization work was needed at the site in regard to the reported existence of an asphalt-like waste material underlying portions of the property. This document is provided to describe the findings of work completed by TENERA between 6/13/90 and 6/29/90 to respond to ACHA's request for further characterization work.

1.3 Program Specifications

As documented in Appendix A, the ACHA requested that certain supplemental site characterization work be completed for purposes of defining the chemical composition of that material described in earlier reports as being an asphalt-like waste material, and to assess the physical extent of the material where inferred to encroach onto the site from earlier investigations. It was requested that samples of the material be obtained for laboratory analysis, and that analyses be completed for:

- Total Petroleum Hydrocarbons ✓
- Benzene, Toluene, Ethylbenzene, and Xylenes ✓
- Chlorinated Hydrocarbons ✓
- Semi-Volatile Organics ✓
- Total Oil and Grease ✓
- Heavy Metals ✓

It was also indicated by TENERA during discussions with the ACHA prior to initiating the field work, that a complete analysis of a representative sample would be done (on a sample or samples selected through field observations) to evaluate the material against the criteria for hazardous waste classification set forth in Article 11, Chapter 30, Title 22 CCR.

2.0 FIELD AND LABORATORY INVESTIGATIONS

2.1 Study Area

Investigations of the Marketplace and ATDC properties in 1982, 1987 and 1988 by Woodward-Clyde and Earth Metrics, Inc. identified the existence of certain areas on the properties inferred to contain an asphalt-like waste material believed to have been deposited or spilled in connection with the processing and transportation of refined asphalt during historical site operations. Review of the boring logs from 21 explorations completed over the entire Marketplace property showed the asphalt-like material to be present in thicknesses ranging from six inches to over seven feet, and concentrated in two general areas on the property.

The southernmost of the two areas (Figure 2-1) was shown as partially extending onto the northern portion of the ATDC site. Boring EM-8 (see Figure 2-2) completed by Earth Metrics in 1987 encountered the asphalt-like material, and determined its thickness at that point to be approximately two feet. The material was inferred to extend northward, and was reported to have been encountered in a thickness of approximately three feet at the location of MW10.

In view of these prior findings regarding the inferred physical extent of the asphalt-like material on the ATDC site, TENERA established a study area for the supplemental site characterization program which encompassed the entire portion of the site inferred to contain the waste material. That study area is shown in Figure 2-1 along with the area of high metals concentration in soil described in TENERA's 5/18/90 report.

2.2 Field Investigations and Sampling

Figure 2-2 shows the locations where eight soil borings were completed within and around the study area for purposes of assessing the existence and extent of the asphalt-like waste material, and to permit the collection of samples for laboratory analysis. The borings were completed to depths ranging from 3.0 ft to 8.0 ft below ground surface (BGS), and were positioned according to the rationale described in Table 2-1. It is noted that a portion of the study area (Figure 2-2) measuring approximately 60 ft x 100 ft was intentionally excluded from the supplemental sampling program, because that area will be subject to excavation in order to remove high metals concentration soils per approval of the ACHA (Appendix A).

Field examination of the soil materials encountered in the borings (see Appendix B for boring logs) determined that varying thicknesses of a black silty clay matrix with a slight oily odor were present in certain of the eight borings, and were presumably the material referred to in earlier reports. Such material was not encountered in all borings completed during this supplemental program. Certain borings encountered concrete slabs or other concrete obstacles which prevented advance of the borings in certain locations. Table 2-2 summarizes the findings in each of the borings

Is property defined here as The Marketplace, ATDC, or both?

← This statement implies both

← where is/was MW10? which report tells of this?

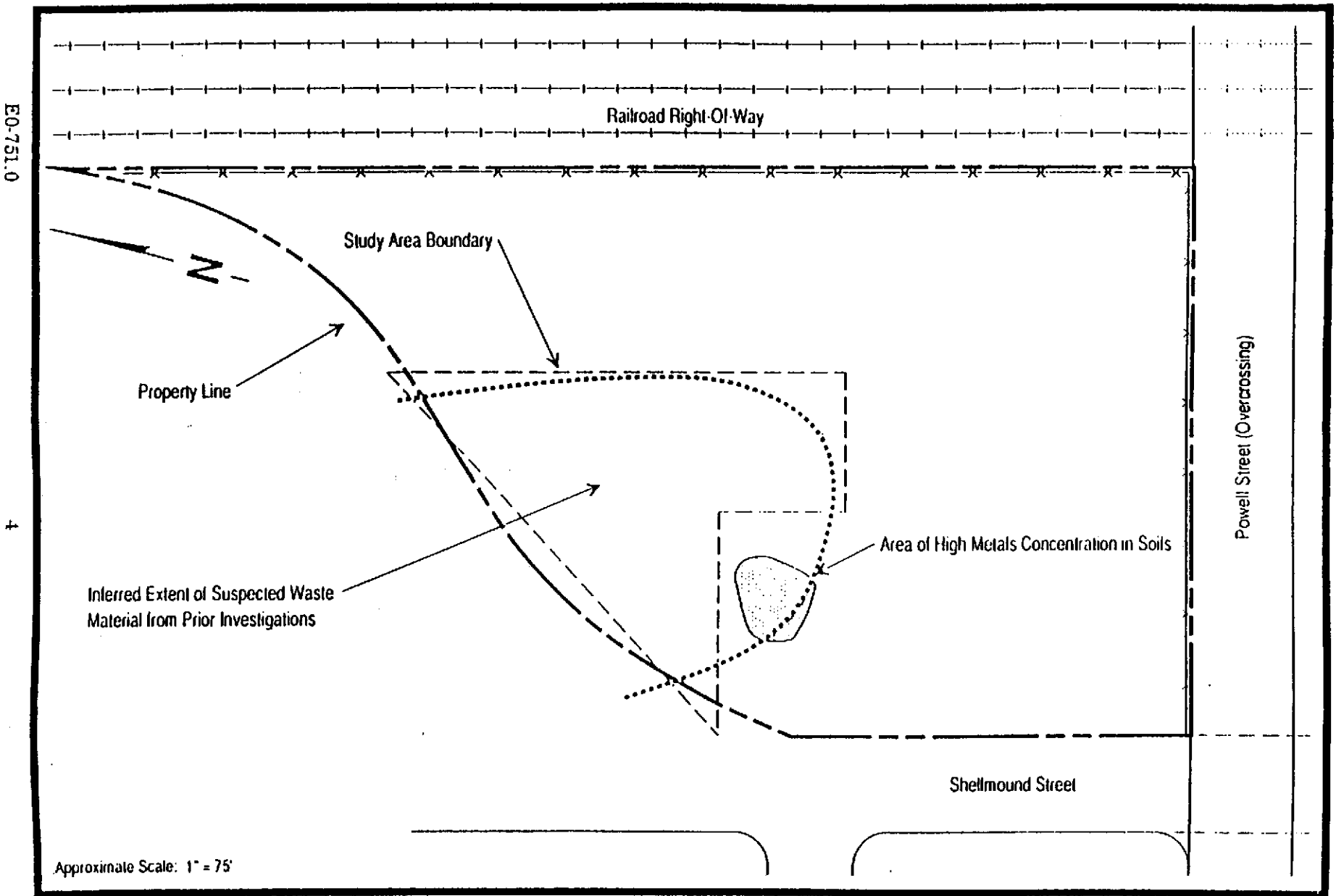


Figure 2-1

Study Area Delineation

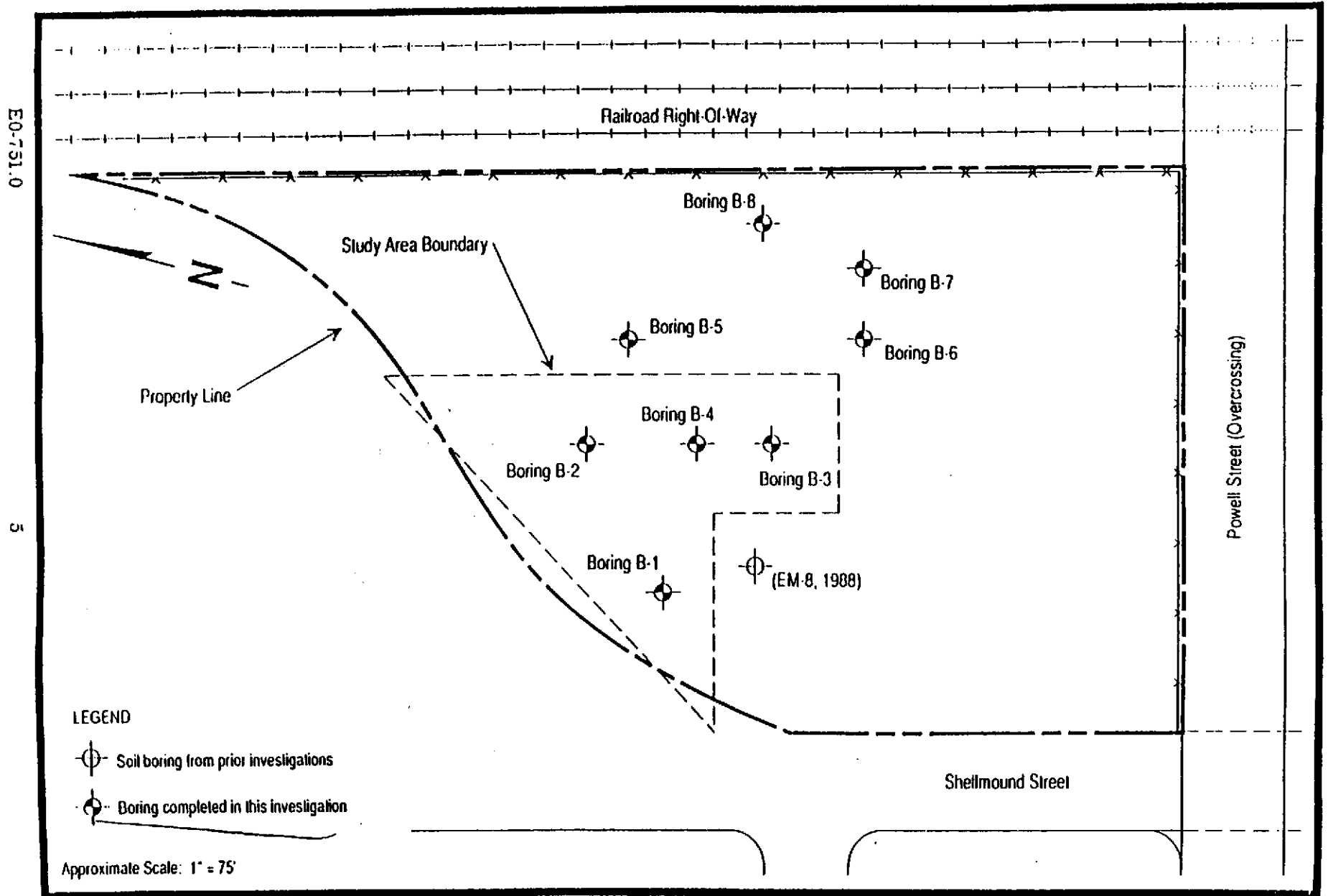


Figure 2-2

Plan of Borings

Table 2-1

Rationale for Field Boring Locations

Boring Number	Basis for Positioning Boring
B-1	Assess the existence, depth, and thickness of waste material in the northwestern third of the study area
B-2	Assess the existence, depth, and thickness of waste material in the northeastern third of the study area
B-3	Assess the existence, depth, and thickness of waste material in the southeastern third of the study area
B-4	Supplemental boring to clear concrete encountered at base of Boring B-3
B-5	Reconnaissance boring to assess existence of waste material outside limit of study area
B-6	Reconnaissance boring to assess existence of waste material outside limit of study area
B-7	Reconnaissance boring to assess existence of waste material outside limit of study area
B-8	Reconnaissance boring to assess existence of waste material outside limit of study area

Table 2-2

Characterization of Borings

Boring Number	Matrix Encountered		Comments on Boring Completion
	Depth (ft)	Thickness (in)	
B-1	3	5	No obstructions. Bottom of boring at 6.0 ft BGS
B-2	4	6	No obstructions. Bottom of boring at 8.0 ft BGS
B-3	2	8	Concrete obstruction at 3.0 ft BGS. Bottom of boring at 3.0 ft BGS
B-4	Not encountered		Concrete obstruction at 3.0 ft BGS
B-5	4	6	No obstructions. Bottom of boring at 5.5 ft BGS
B-6	Not encountered		Concrete obstruction at 3.5 ft BGS
B-7	Not encountered		Concrete obstruction at 2.5 ft BGS
B-8	Not encountered		Concrete obstruction at 3.0 ft BGS

completed during the program, and indicates the depth and thickness of the black silty clay matrix, where encountered.

Based on field examination of four samples (representing each third of the study area plus the one sample acquired outside the area) of the black silty clay matrix material, it was determined that the texture, odor, color, and consistency of the samples appeared to be similar. For that reason, TENERA elected to screen all four samples for hydrocarbons and to select a single sample for complete Title 22 CCR evaluation. The results of the laboratory analyses of the samples are discussed below.

2.3 Analytical Results

The laboratory analytical data obtained on the samples from Borings B-1, B-2, B-3, and B-5 are included (along with chain of custody record) in Appendix C, and are summarized in Table 2-3. As shown in the table, all samples were analyzed for total petroleum hydrocarbons (in the heavy hydrocarbon range consistent with the assessment for asphaltic material), and the aromatic hydrocarbons benzene, toluene, xylenes, and ethylbenzene. Total petroleum hydrocarbon concentrations ranging from less than 50 parts per million to 420 parts per million were detected in all samples, but no detections of benzene, toluene, xylenes, or ethylbenzene were made.

The complete analysis of the sample from Boring B-2 against the criteria of Title 22 CCR indicated that that sample would not be classified as a hazardous waste.

Table 2-3

Summary of Analytical Determinations
Supplemental Site Characterization Program
Another Tree Emeryville Project

Analytical Determination (a)	Sample Description			
	B-1 @ 3 ft	B-2 @ 4 ft	B-3 @ 2 ft	B-5 @ 4 ft
Total Petroleum Hydrocarbons (EPA 418.1)	420	<50	53	130
Benzene, Toluene, Ethylbenzene, and Xylenes (EPA 8020)	ND	ND	ND	ND
Chlorinated Hydrocarbons (EPA 8010)	—	ND	—	—
Semi-Volatile Organics (EPA 8270)	—	(b)	—	—
Title 22 Analysis				
Reactivity	—	NR	—	—
Corrosivity	—	NC	—	—
Ignitability	—	NI	—	—
Toxicity	—		—	—
96-hour Bioassay	—	>750	—	—
Inorganics				
Antimony	—	1	—	—
Arsenic	—	3.0	—	—
Barium	—	240	—	—
Beryllium	—	0.4	—	—
Cadmium	—	6.1	—	—
Chromium	—	37	—	—
Cobalt	—	6	—	—
Copper	—	16	—	—
Fluoride	—	2.7	—	—
Lead	—	6	—	—
Mercury	—	0.07	—	—
Molybdenum	—	3	—	—
Nickel	—	25	—	—
Selenium	—	ND	—	—
Silver	—	ND	—	—
Thallium	—	ND	—	—
Vanadium	—	46	—	—
Zinc	—	36	—	—

NOTES:

(a) All values in parts per million, unless otherwise noted.

(b) Pyrene was detected in the sample at the detection limit of 0.03 parts per million. No other semi-volatile organic substances were detected in the sample.

LEGEND:

ND: Not detected. See Appendix C for detection limits.

NR: Not reactive per criteria of Article 11, Chapter 30, Title 22 CCR

NC: Not corrosive per criteria of Article 11, Chapter 30, Title 22 CCR

NI: Not ignitable per criteria of Article 11, Chapter 30, Title 22 CCR

— The "—" symbol indicates not analyzed

3.0 DISCUSSION OF FINDINGS

3.1 General

How? } The field explorations performed under this supplemental site characterization program involved the completion of eight soil borings within a defined study area comprising an approximate 1.4 ac portion along the northern boundary of the ATDC site. This work now brings the total number of exploration features completed on the northern portion of the site to 18 soil borings and 2 exploration trenches. In view of the findings of this supplemental program along with those of prior explorations on the property, TENERA believes that the extent of site characterization work relating to the existence of an asphalt-like waste material on the site is adequate. Four of the borings completed under this program encountered concrete slab material or concrete obstructions around the boundary of the study area of interest, and are believed to have defined the approximate horizontal extent of unobstructed soils which could have received waste disposals or releases from non-building areas. The location and extent of such buried obstructions were also evaluated in prior investigations for ATDC and correlate well with TENERA's findings.]

3.2 Physical Composition of Target Material

As described in Section 2.0 and in the boring logs provided in Appendix B, it was determined that a thin zone of soil discoloration consisting of a black silty clay matrix with a slight oily odor was encountered in thicknesses ranging from 5 in. to 8 in. at depths of 2 ft to 4 ft within the study area of interest in this investigation. Such material was not encountered in all borings.

Based on field examination of core samples of the black silty clay matrix material, it was determined that the texture, odor, color, and consistency of the samples appeared to be similar. Further, it was noted that the material did not exhibit an asphalt-like consistency or appearance or a hardened tar-like composition such as that material described in earlier site investigations. For these reasons, TENERA would interpret that the asphalt-like waste material encountered in previous borings EM-8 and MW-10 represented localized conditions, and not a wide spread disposal as indicated in previous reports.

3.3 Chemical Composition of Target Material

The laboratory analytical determinations completed on four samples of the black silty clay matrix material from the northern portion of the ATDC site showed the material to have some concentrations of heavy end petroleum hydrocarbons at levels ranging from 53 parts per million to 420 parts per million. No aromatic hydrocarbon substances (i.e benzene, toluene, xylenes, or ethylbenzene) were detected.

One sample of the material selected on the basis of field observations was subjected to a complete series of laboratory analyses to assess the classification of the material against the criteria established in Article 11, Chapter 30, Title 22 CCR. Based on the findings of those analyses, it was determined that the black silty clay matrix material encountered on the site would not be classified as a hazardous waste.

3.4 Proposals for Site Approval

As described in TENERA's 5/18/90 technical report comprising a review of prior site characterization studies and including specific proposals for ACHA review, it was estimated that a significant quantity of the material of interest in this supplemental investigation was believed to be present on the site. In view of the composition of the material and the costs for removal and the import of fill material to return the site to grade, it was believed to be appropriate to leave the material in place, and to cap the affected area with building foundations, paving, or similar materials.

TENERA believes that the findings of this supplemental investigation suggest that the asphalt-like waste material encountered previously in Boring EM-8 was a localized condition, and we note that the area of interest in that boring will, in any event, be excavated and exposed during removal of the area of high metals concentration in soil (Figure 2-1). For that reason, TENERA does not believe that additional specific mitigation or remediation actions are warranted in regard to the issue of asphalt-like waste on the ATDC site.

With regard to the existence of a black silty clay matrix material over portions of the ATDC site, it was determined that the material would not be classified as a hazardous waste. Further, laboratory analyses of groundwater samples from other locations on the Marketplace site have determined that groundwater underlying that property is neither suitable for drinking purposes nor is the resource extracted for any beneficial use. For those reasons, TENERA does not believe that further investigations or specific mitigation or remediation actions are warranted in regard to the black silty clay matrix material.

Appendix A

Alameda County Health Care Services Agency
Letter of June 8, 1990

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director



JIM SAUCERMAN

JUN 12 1990

8 June 1990

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415)

Richard Pritzer
Another Tree Development Corporation
369 Pine Street
Suite 224
San Francisco, CA 94104

Subject: Proposed Remedial Actions to be Implemented at the ATDC
Project at Shellmound and Powell Streets, Emeryville.

Dear Mr. Pritzer:

Thank you for the Work Plan prepared by Tenera Environmental Services. This document has been reviewed and the following conclusions have been reached.

- 1) Approval is granted for the excavation of soils within the area of high metal contamination identified in the report. Within borings EM8, EM8B, EMC, and EM8E, levels of copper, mercury, lead and zinc exceeding the Total Threshold Limitation Concentration established by the State of California were measured. A soil so contaminated constitutes a hazardous waste and will require excavation and proper disposal.

Upon the conclusion of the soil removal, samples will have to be taken and analyzed for these heavy metal constituents. This action is necessary to demonstrate that the excavation has been sufficiently thorough to ensure that no contamination exceeding the TTLC value remains on the site. Please submit the results of these verification analysis to this office for review.

- 2) Approval is granted for the ground water monitoring well placement sites suggested in the Work Plan. Please ensure that the construction protocols and screening intervals utilized in these wells conform to those specified by the San Francisco Bay Regional Water Quality Control Board. We suggest that the entire series of analysis specified in the Tenera proposal be conducted on all three wells. Future modifications to the analysis protocol for a given well will be based upon the data derived during the first few sampling periods. Please ensure that all sampling data and well boring logs are submitted to this office for review and inclusion into our records.

Richard Pritzer
Another Tree Development Corp.
369 Pine Street
Suite 224
San Francisco, CA 94104
Re. ATDC Project in Emeryville
8 June 1990
Page 2 of 2

- 3) Further characterization is needed in regards to the asphaltic material underlying part of the ATDC Project site. Specifically, the chemical composition of this material and the physical extent to which it encroaches upon the site in questions need to be defined with greater certainty. In the absence of this information approval cannot be granted for leaving the material in place as suggested in the Tenera Work Plan. Additional soil borings are required in regions in which this material is suspected to be present. In addition, a sample of the asphaltic material must be collected for laboratory analysis.

The sample(s) should be presented to a State certified laboratory and analyzed for Total Petroleum Hydrocarbons (EPA Method GCFID, 3550 and 5030), Benzene, Toluene, Xylene and Ethylbenzene (EPA Method 8020 or 8240), Chlorinated Hydrocarbons (EPA Method 8010 or 8240), Semi Volatile Organics (EPA Method 8270), Total Oil and Grease (EPA Method 503 D&E) and a screen for heavy metals by use of Atomic Absorption. This series of tests will serve to measure the chemical composition of the material. The information so derived will be used to gauge the appropriate mitigation or disposal strategy to be used.

If you have any questions concerning this matter please contact me at (415) 271-4320. The contents of this letter have been discussed with Jim Saucerman of Tenera Environmental Services.

Sincerely,

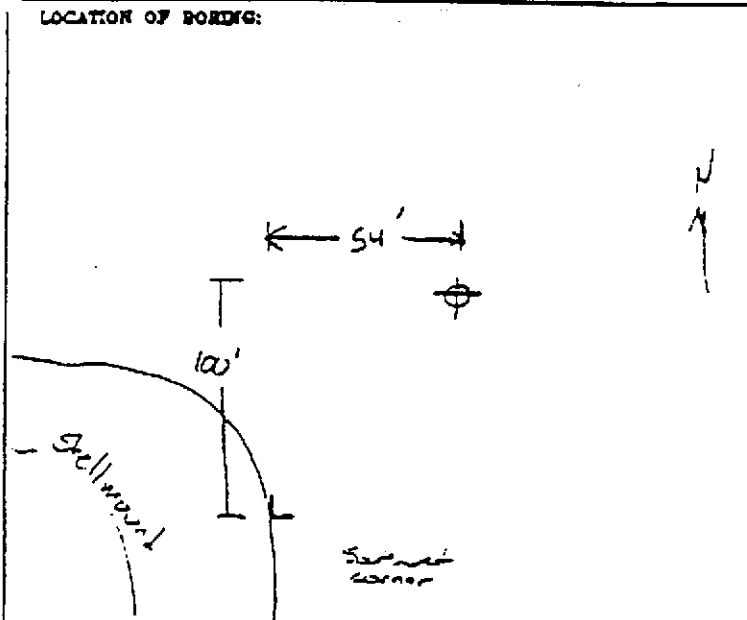


Dennis J. Byrne
Hazardous Materials Specialist

cc: Gil Jensen, Alameda County District Attorney's Office, Consumer
and Environmental Protection Division
Lester Feldman, SFRWQCB
Howard Hatayama, DOHS
Rafat Shahid, Assistant Director, Alameda County Department of
Environmental Health.
Jim Saucerman, Tenera Environmental Services

Appendix B

Logs of Borings



PROJECT: S800 Shellmound	BORING NO.: 1
JOB NO.: 1017.14.01	TOTAL DEPTH: 6.0
PROJ. MGR.: BGM	LOGGED BY: PTL
DRILLING CONTRACTOR: Clearbrook	
DRILL RIG TYPE: Truck Mount 4" solid	
DRILLERS NAME: Brian	
SAMPLING METHODS: 2" S+H	
RAMMER WT.: 140	DROP: 30
START TIME: 0900	DATE: 6/13/90
COMPLETED TIME: 0915	DATE: 6/13/90

BACKFILLED TIME: 0915	DATE: 6/13	BY: PTL
COMMENTS:		

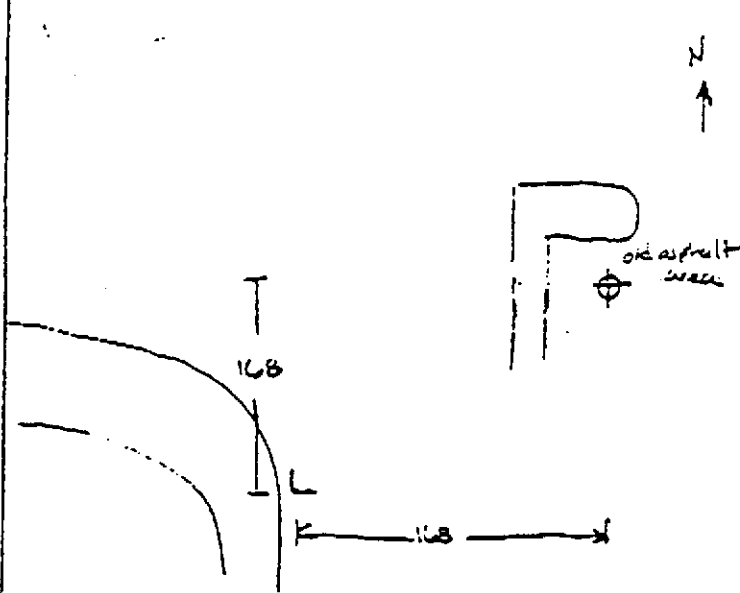
SAMPLE DEPTH	SAMPLER TYPE	BLOWS/6-IN.	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION	Soil Gas Equipment	WELL COMPLETION	WELL COMPLETION NOTES	DEPTH IN FEET	GRAPHIC LOG
2.0		7							1	Asphalt with basecourse
		4	18	13	G				2	Orange Gravel 1/2-3/4" clean
	WB	3							3	Light Brown Gravel with Clay (cm) none more to
	3.5	2							4	White
	ST	3	24	24	G				5	[Very Dark Brown to Black Gravelly Clay - Gravel
		3							6	(is asphaltic with a black silty clay matrix
		2							7	Green Gray silty clay (cm) with soft
6.0									8	fine sand (Bay Mud)
									9	
									10	B.O.B. Co. Seal

Project: S800 Shellmound
 Date: 6/13/90
 Page: 1 of 6

FIELD LOG OF BORING

SHEET 2 OF 6

LOCATION OF BORING:



PROJECT: 5800 Shell mound	BORING NO.: B-2
JOB NO.: 1017.14.01	TOTAL DEPTH: 8'
PROJ. MGR.: Don	LOGGED BY: PR
DRILLING CONTRACTOR: Overheart Const	EDITED BY:
DRILL RIG TYPE: Truck Mount 4" Solid	
DRILLERS NAME: Brian	
SAMPLING METHOD: 2" SPT	
HAMMER WT.: 140	DEEP: 30
START TIME: 6/13/90	DATE: 0930
COMPLETED TIME: 6/13/90	DATE: 1005

SAMPL. DEPTH	SAMPL. TYPE	BLOWS/6-IN.	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION	Soil Gas Equipment	WELL COMPLETION	WELL COMPLETION NOTES	DEPTH IN FEET	GRAPING LOG
3.0	MB	4	18	18	G					
1.5		6								
6.0	MB	8	18							
		9								
	S	2								
		3	24							
		4								
		7								
3										

RECORDED TIME: 1345 DATE: 6/13 BY: PR

COMMENTS:

Soil gas sampling device: I really can't describe as asphaltic. WL = 3.9' @ 1030

1 - Shell mound (Borehole)

(Brown silty Gravel (G) dense, cm)

(Sample refused at 2 feet, chips of rock)

(Drilled to 3')

2 - Medium Brown sand very dark gray clayey Gravel (G)

Med. dense, moist. Base of borehole at 3.5'

3 - Brown - very dark gray to black silty clay (G)

fine, wet, trace of asphalt gravel, some nodules of green gray silty clay (G) @ 3.5 feet

4 - mixed with gravel fill

5 - Same

6 - Dark Green (G) clayey gravel (G) loose, sub-saturated

7 - fine gravel (G-10) coarse sand (G-10)

8 - 3.0 B @ 3 feet

Appendix C

Laboratory Analytical Data

LOG NO: E90-06-287

Received: 13 JUN 90

Reported: 29 JUN 90

Mr. Jim Saucerman
 Tenera Environmental
 1995 University
 Berkeley, California 94704

CC: Mr. Pat Lassiter

Project: 5800 Shellmound St.

REPORT OF ANALYTICAL RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED			
06-287-1	B-1 @ 3'	13 JUN 90			
06-287-2	B-3 @ 2'	13 JUN 90			
06-287-3	B-5 @ 4'	13 JUN 90			
06-287-4	B-2 @ 4'	13 JUN 90			
PARAMETER	06-287-1	06-287-2	06-287-3	06-287-4	
fourteen CAM Metals by ICAP					
Silver, mg/kg	---	---	---	<0.4	
Barium, mg/kg	---	---	---	240	
Beryllium, mg/kg	---	---	---	0.4	
Cadmium, mg/kg	---	---	---	6.1	
Cobalt, mg/kg	---	---	---	6	
Chromium, mg/kg	---	---	---	37	
Copper, mg/kg	---	---	---	16	
Molybdenum, mg/kg	---	---	---	3	
Nickel, mg/kg	---	---	---	25	
Lead, mg/kg	---	---	---	6	
Antimony, mg/kg	---	---	---	1	
Thallium, mg/kg	---	---	---	<4	
Vanadium, mg/kg	---	---	---	46	
Zinc, mg/kg	---	---	---	36	
Arsenic, mg/kg	---	---	---	3.0	
Mercury, mg/kg	---	---	---	0.07	
Selenium, mg/kg	---	---	---	<0.4	
Nitric Acid Digestion, Date	---	---	---	06.21.90	
Nitric Acid Digestion, Date	---	---	---	06.21.90	
Bioassay Set Up Date	---	---	---	06.22.90	
CAM Bioassay Screen, mg/L	---	---	---	>750	
Petroleum Hydrocarbons by IR, mg/kg	420	53	130	<50	
Ignitability, deg F	---	---	---	N.I.	

LOG NO: E90-06-287

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Mr. Jim Saucerman
 Tenera Environmental
 1995 University
 Berkeley, California 94704

CC: Mr. Pat Lassiter

Project: 5800 Shellmound St.

REPORT OF ANALYTICAL RESULTS

Page 2

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED			
06-287-1	B-1 @ 3'	13 JUN 90			
06-287-2	B-3 @ 2'	13 JUN 90			
06-287-3	B-5 @ 4'	13 JUN 90			
06-287-4	B-2 @ 4'	13 JUN 90			
PARAMETER	06-287-1	06-287-2	06-287-3	06-287-4	
RCRA Reactivity Requirements					
Cyanide Generation, mg/kg	---	---	---	<0.5	
Reactivity with Acid, :	---	---	---	NEG(3)	
Reactivity with Base, :	---	---	---	NEG(3)	
Reactivity with Water, :	---	---	---	NEG(3)	
Sulfide Generation, mg/kg	---	---	---	<2	
Fluoride, mg/kg	---	---	---	2.7	
pH, Units	---	---	---	7.8	
Aromatic Hydrocarbons					
Date Analyzed	06.19.90	06.19.90	06.19.90	06.22.90	
Dilution Factor, Times	1	1	1	1	
Benzene, mg/kg	<0.1	<0.1	0.1	<0.1	
Ethylbenzene, mg/kg	<0.1	<0.1	<0.1	<0.1	
Toluene, mg/kg	<0.1	<0.1	<0.1	<0.1	
Total Xylene Isomers, mg/kg	<0.1	<0.1	<0.1	<0.1	

LOG NO: 390-06-287

Received: 13 JUN 90

Reported: 29 JUN 90

Mr. Jim Saucerman
Tenerra Environmental
1995 University
Berkeley, California 94704

CC: Mr. Pat Lassiter

Project: 5800 Shellmound St.

REPORT OF ANALYTICAL RESULTS

Page 3

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED			
06-287-1	B-1 @ 3'	13 JUN 90			
06-287-2	B-3 @ 2'	13 JUN 90			
06-287-3	B-5 @ 4'	13 JUN 90			
06-287-4	B-2 @ 4'	13 JUN 90			
PARAMETER		06-287-1	06-287-2	06-287-3	06-287-4
EPA Method 8010					
Date Analyzed		---	---	---	06.19.90
Date Extracted		---	---	---	06.19.90
1,1,1-Trichloroethane, mg/kg		---	---	---	<0.01
1,1,2,2-Tetrachloroethane, mg/kg		---	---	---	<0.01
1,1,2-Trichloroethane, mg/kg		---	---	---	<0.01
1,1-Dichloroethane, mg/kg		---	---	---	<0.01
1,1-Dichloroethene, mg/kg		---	---	---	<0.01
1,2-Dichloroethane, mg/kg		---	---	---	<0.01
1,2-Dichlorobenzene, mg/kg		---	---	---	<0.01
1,2-Dichloroethene (Total), mg/kg		---	---	---	<0.01
1,2-Dichloropropane, mg/kg		---	---	---	<0.01
1,3-Dichlorobenzene, mg/kg		---	---	---	<0.01
1,4-Dichlorobenzene, mg/kg		---	---	---	<0.01
2-Chloroethylvinylether, mg/kg		---	---	---	<0.01
Bromodichloromethane, mg/kg		---	---	---	<0.01
Bromomethane, mg/kg		---	---	---	<0.01
Bromoform, mg/kg		---	---	---	<0.01
Chlorobenzene, mg/kg		---	---	---	<0.01
Carbon Tetrachloride, mg/kg		---	---	---	<0.01
Chloroethane, mg/kg		---	---	---	<0.01
Chloroform, mg/kg		---	---	---	<0.01
Chloromethane, mg/kg		---	---	---	<0.01
Dibromochloromethane, mg/kg		---	---	---	<0.01

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Project: 5800 Shellmound St.

REPORT OF ANALYTICAL RESULTS

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LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED			
06-287-1	B-1 @ 3'	13 JUN 90			
06-287-2	B-3 @ 2'	13 JUN 90			
06-287-3	B-5 @ 4'	13 JUN 90			
06-287-4	B-2 @ 4'	13 JUN 90			
PARAMETER		06-287-1	06-287-2	06-287-3	06-287-4
Dichlorodifluoromethane, mg/kg		---	---	---	<0.01
Freon 113, mg/kg		---	---	---	<0.01
Methylene chloride, mg/kg		---	---	---	<0.01
Trichloroethene, mg/kg		---	---	---	<0.01
Trichlorofluoromethane, mg/kg		---	---	---	<0.01
Tetrachloroethene, mg/kg		---	---	---	<0.01
Vinyl chloride, mg/kg		---	---	---	<0.01
cis-1,2-Dichloroethene, mg/kg		---	---	---	<0.01
cis-1,3-Dichloropropene, mg/kg		---	---	---	<0.01
trans-1,2-Dichloroethene, mg/kg		---	---	---	<0.01
trans-1,3-Dichloropropene, mg/kg		---	---	---	<0.01

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LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED			
06-287-1	B-1 @ 3'	13 JUN 90			
06-287-2	B-3 @ 2'	13 JUN 90			
06-287-3	B-5 @ 4'	13 JUN 90			
06-287-4	B-2 @ 4'	13 JUN 90			
PARAMETER	06-287-1	06-287-2	06-287-3	06-287-4	
V/N, A Ext. Pri. Poll. (EPA-8270)					
Date Analyzed	---	---	---	06.26.90	
Date Extracted	---	---	---	06.25.90	
Dilution Factor, Times	---	---	---	1	
1,2,4-Trichlorobenzene, mg/kg	---	---	---	<0.03	
1,2-Dichlorobenzene, mg/kg	---	---	---	<0.03	
1,2-Diphenylhydrazine, mg/kg	---	---	---	<0.03	
1,3-Dichlorobenzene, mg/kg	---	---	---	<0.03	
1,4-Dichlorobenzene, mg/kg	---	---	---	<0.03	
2,4,5-Trichlorophenol, mg/kg	---	---	---	<0.03	
2,4,6-Trichlorophenol, mg/kg	---	---	---	<0.03	
2,4-Dichlorophenol, mg/kg	---	---	---	<0.03	
2,4-Dimethylphenol, mg/kg	---	---	---	<0.03	
2,4-Dinitrophenol, mg/kg	---	---	---	<0.3	
2,4-Dinitrotoluene, mg/kg	---	---	---	<0.03	
2,6-Dinitrotoluene, mg/kg	---	---	---	<0.03	
2-Chloronaphthalene, mg/kg	---	---	---	<0.03	
2-Chlorophenol, mg/kg	---	---	---	<0.03	
2-Methyl-4,6-dinitrophenol, mg/kg	---	---	---	<0.03	
2-Methylnaphthalene, mg/kg	---	---	---	<0.03	
2-Methylphenol, mg/kg	---	---	---	<0.03	
2-Nitroaniline, mg/kg	---	---	---	<0.2	
2-Nitrophenol, mg/kg	---	---	---	<0.03	
3,3'-Dichlorobenzidine, mg/kg	---	---	---	<0.03	

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REPORT OF ANALYTICAL RESULTS

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LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED			
06-287-1	B-1 @ 3'	13 JUN 90			
06-287-2	B-3 @ 2'	13 JUN 90			
06-287-3	B-5 @ 4'	13 JUN 90			
06-287-4	B-2 @ 4'	13 JUN 90			
PARAMETER	06-287-1	06-287-2	06-287-3	06-287-4	
3-Nitroaniline, mg/kg	---	---	---	<0.2	
4-Bromophenylphenylether, mg/kg	---	---	---	<0.03	
4-Chloro-3-methylphenol, mg/kg	---	---	---	<0.03	
4-Chloroaniline, mg/kg	---	---	---	<0.2	
4-Chlorophenylphenylether, mg/kg	---	---	---	<0.03	
4-Methylphenol, mg/kg	---	---	---	<0.03	
4-Nitroaniline, mg/kg	---	---	---	<0.2	
4-Nitrophenol, mg/kg	---	---	---	<0.7	
Acenaphthene, mg/kg	---	---	---	<0.03	
Acenaphthylene, mg/kg	---	---	---	<0.03	
Aniline, mg/kg	---	---	---	<0.03	
Anthracene, mg/kg	---	---	---	<0.03	
Benzidine, mg/kg	---	---	---	<1	
Benzo(a)anthracene, mg/kg	---	---	---	<0.03	
Benzo(a)pyrene, mg/kg	---	---	---	<0.03	
Benzo(b)fluoranthene, mg/kg	---	---	---	<0.03	
Benzo(g,h,i)perylene, mg/kg	---	---	---	<0.03	
Benzo(k)fluoranthene, mg/kg	---	---	---	<0.03	
Benzyl alcohol, mg/kg	---	---	---	<0.2	
Benzoic acid, mg/kg	---	---	---	<0.2	
Butylbenzylphthalate, mg/kg	---	---	---	<0.03	
Chrysene, mg/kg	---	---	---	<0.03	
Di-n-octylphthalate, mg/kg	---	---	---	<0.03	
Dibenzo(a,h)anthracene, mg/kg	---	---	---	<0.03	

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REPORT OF ANALYTICAL RESULTS

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LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED			
06-287-1	B-1 @ 3'	13 JUN 90			
06-287-2	B-3 @ 2'	13 JUN 90			
06-287-3	B-5 @ 4'	13 JUN 90			
06-287-4	B-2 @ 4'	13 JUN 90			
PARAMETER	06-287-1	06-287-2	06-287-3	06-287-4	
Dibenzofuran, mg/kg	---	---	---	<0.03	
Dibutylphthalate, mg/kg	---	---	---	<0.03	
Diethylphthalate, mg/kg	---	---	---	<0.03	
Dimethylphthalate, mg/kg	---	---	---	<0.03	
Fluoranthene, mg/kg	---	---	---	<0.03	
Fluorene, mg/kg	---	---	---	<0.03	
Hexachlorobenzene, mg/kg	---	---	---	<0.03	
Hexachlorobutadiene, mg/kg	---	---	---	<0.03	
Hexachlorocyclopentadiene, mg/kg	---	---	---	<0.03	
Hexachloroethane, mg/kg	---	---	---	<0.03	
Indeno(1,2,3-c,d)pyrene, mg/kg	---	---	---	<0.03	
Isophorone, mg/kg	---	---	---	<0.03	
N-Nitrosodimethylamine, mg/kg	---	---	---	<0.03	
N-Nitrosodiphenylamine, mg/kg	---	---	---	<0.03	
N-Nitrosodi-n-propylamine, mg/kg	---	---	---	<0.03	
Nitrobenzene, mg/kg	---	---	---	<0.03	
Naphthalene, mg/kg	---	---	---	<0.03	
Phenanthrene, mg/kg	---	---	---	<0.03	
Phenol, mg/kg	---	---	---	<0.03	
Pentachlorophenol, mg/kg	---	---	---	<0.03	
Pyrene, mg/kg	---	---	---	0.03	
Bis(2-chloroethoxy)methane, mg/kg	---	---	---	<0.03	
Bis(2-chloroethyl)ether, mg/kg	---	---	---	<0.03	
Bis(2-chloroisopropyl)ether, mg/kg	---	---	---	<0.03	

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REPORT OF ANALYTICAL RESULTS

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LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED			
06-287-1	B-1 @ 3'	13 JUN 90			
06-287-2	B-3 @ 2'	13 JUN 90			
06-287-3	B-5 @ 4'	13 JUN 90			
06-287-4	B-2 @ 4'	13 JUN 90			
PARAMETER		06-287-1	06-287-2	06-287-3	06-287-4
Bis(2-ethylhexyl)phthalate, mg/kg		---	---	---	<3
Semi-Quantified Results **					
Molecular Sulfur, mg/kg		---	---	---	100

** Quantification based upon comparison of total ion count of the compound with that of the nearest internal standard.

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REPORT OF ANALYTICAL RESULTS

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LOG NO	SAMPLE DESCRIPTION, NON-SALINE WATER SAMPLES	DATE SAMPLED
06-287-5	Control Tank	
PARAMETER		06-287-5
Total Hardness, mg/L		40

Sim D. Lessley, Ph.D., Laboratory Director



BC Analytical

1266 POWELL STREET • EMERYVILLE, CA 94608 • (415) 426-8300 • FAX (415) 347-3843

Old Method

150 mg/L corresponds to LC50

TOXICITY BIOASSAY

Log No. E90-06-287-4

Tenera Environmental
1995 University
Berkeley, CA 94704

Date Sampled: 06/13/90
Date Received: 06/13/90
Date Reported: 07/01/90

Report To:

ATTN: Mr. Jim Saucerman

Laboratory Director

CALIFORNIA HAZARDOUS WASTE ASSESSMENT BIOASSAY: SCREEN

Description: B-2 @ 4'
Organism: Pimephales promelas, fathead minnow Source: Sticklebacks Unlimited
Water: Fresh Source: Emeryville Dechlorinated Temperature Range: 19.7 - 20.3 °C
Tap Water with Matrix
Modifiers: _____
Exposure: Air Oxygen _____ None _____

Assay Parameters	Time Hrs	Dilution													
		Control		250 mg/L		250 mg/L		750 mg/L		750 mg/L					
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Survival	Start	10	100	10	100	10	100	10	100	10	100				
	24	10	100	10	100	10	100	10	100	8	80				
	48	9	90	10	100	10	100	10	100	8	80				
	72	9	90	10	100	10	100	10	100	8	80				
	96	9	90	10	100	10	100	10	100	8	80				
Dissolved Oxygen mg/L	Start	9.3		9.5		9.6		9.7		9.7					
	24	8.4		8.5		7.7		8.3		8.7					
	48	8.7		9.2		8.9		8.7		8.7					
	72	8.4		8.5		8.7		8.5		8.6					
	96	7.9		8.5		8.8		8.0		8.9					
pH	Start	8.1		8.0		8.1		8.1		8.1					
	24	7.9		7.4		7.5		7.6		7.7					
	48	8.0		7.8		8.0		8.0		8.0					
	72	8.2		8.1		8.1		8.1		8.1					
	96	8.0		7.9		7.9		7.9		8.0					

RESULTS: 96 hr TL_m > 750 mg/L Toxicity Units Established Percent survival in undiluted sample Not Applicable

Length of fish, cm	Max.	<u>3.0</u>	Min.	<u>2.8</u>	Mean	<u>2.9</u>
	Weight of fish, g.	Max.	<u>0.29</u>	Min.	<u>0.20</u>	Mean

*In cases where 96 hour mortality does not equal or exceed 50% in at least one dilution of the sample, no TL_m value is established.

Threshold Limit

Test technically not valid because only 1 control and 2 evaluations of 250 & 2 evaluations of 750. Controls are supposed to mimic evaluations

M.L. Parris

KF

