REVIEW OF
SITE CHARACTERIZATION STUDIES
AND PROPOSED WORK PLAN
RELATING TO
ANOTHER TREE
EMERYVILLE PROJECT

Submitted to:

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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) on 4/10/90 to document TENERA's review and evaluation of prior environmental investigations completed for the site and vicinity of the Another Tree Emeryville Project, and to provide certain proposals for site remedial activities and additional site investigation work.

This section provides a brief overview of the purpose of this submittal, and includes a list of technical reference documents which have been prepared in connection with prior investigations upon and near the project site. Section 2.0 includes a description of prior, existing, and proposed uses of the property of interest herein. Section 3.0 presents a concise summary of the findings of prior geotechnical and environmental investigations relevant to the property, and identifies those environmental conditions believed to be of principal interest with regard to ACHA site environmental review. Section 4.0 presents TENERA's recommendations relating to further investigative work believed to be appropriate to provide for an adequate level of site environmental characterization, and includes certain proposals for remedial activities relating to the ATDC site.

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.

It was indicated by ATDC and TENERA that a substantial level of site investigation work has been completed to date, and has determined that certain conditions of soil and [potentially] groundwater contamination have been encountered on or near the site resulting from prior industrial uses and developments. For that reason, ACHA requested that the results of such former site investigations be concisely summarized in the form of a technical report, and forwarded for County review and comment along with ATDC's proposals for addressing conditions encountered on the site. This submittal has been developed by TENERA for ATDC use in responding to ACHA's request for site characterization information.

1.3 References

The site proposed for development of the Another Tree Emeryville Project (Figure 2-2) comprises the southernmost three-acre portion of that property referred to as the Emeryville Marketplace site. The Marketplace and adjoining Nielson properties (bounded by 64th and Powell Streets on the north and south, and Christie Avenue on the east), including the ATDC property, has been extensively studied in prior site investigation work completed during the period from 1981 through present. The technical reports and studies completed on the Emeryville Marketplace property are identified below, and have served as the principal reference sources discussed in this document.

Aqua Terra Technologies. 1988. Classification of an Asphalt-Like Waste Material Found on the Marketplace and Nielson Site in Emeryville, CA. The Martin Company, July 11, 1988.

Earth Metrics, Inc. 1987. Draft Work Plan for Soils Contamination Characterization of Marketplace Site in Emeryville, California. The Martin Group, November 10, 1987.

Earth Metrics, Inc. 1988. Draft Work Plan for Soils Contamination Characterization of Marketplace Site in Emeryville, California. The Martin Group, January 28, 1988.

Geomatrix Consultants. 1988. Geotechnical Study, Hawthorn Suites Hotel, Emeryville, California. Another Tree Development Corporation, April 20, 1988.

McClaren Environmental Engineering. 1989. Data Review and Work Plan to Conduct Further Groundwater Characterization at the Marketplace/Nielsen Properties. The Martin Group, August 9, 1989.

McClaren Environmental Engineering. 1989. Results of the Hydrogeologic Investigation Conducted at the Marketplace/Nielsen Properties. The Martin Group, September 11, 1989.

McClaren Environmental Engineering. 1989. Free Product Subsurface Investigation Marketplace Site, Emeryville, California. October 19, 1989.

Woodward-Clyde Consultants. 1987. Environmental Assessment Former Nielson Freight Line Site and Adjacent Parcel, Emeryville, California. The Martin Company, August 12, 1987.

Woodward-Clyde Consultants. 1982. Assessment of Subsurface Contaminants, Marketplace Property, Emeryville, California.

2.0 SITE DESCRIPTION

2.1 Location

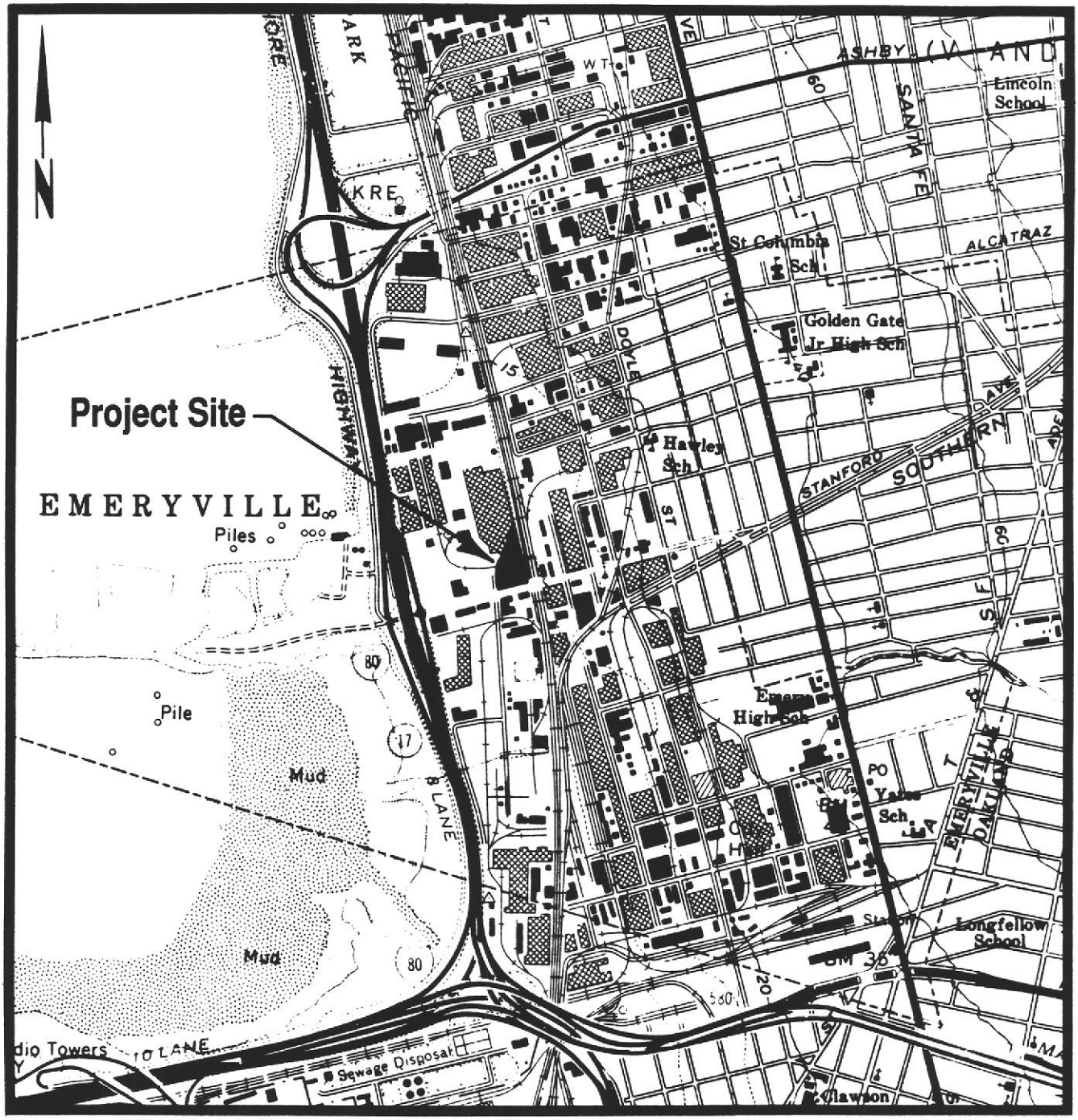
The site of the Another Tree Emeryville Project comprises a parcel of approximately 2.9 acres located at the southernmost end of the existing Marketplace development in Emeryville, Alameda County (Figure 2-1). The site is formed by a curved boundary line on the north representing the proposed future alignment of Bay Street, and is bounded on the west, south, and east by Shellmound Street, Powell Street, and an existing railroad right-of-way, respectively.

2.2 Prior Developments and Uses

The history of development and use of the ATDC site and the adjoining Marketplace property has been documented in studies completed by Earth Metrics, Inc. in 1987 and 1988, and by McClaren in 1989. Further information on geologic conditions and structures formerly located on the site was developed by Geomatrix in 1988 in connection with their work involving explorations for buried obstructions.

The Earth Metrics and McClaren studies identified that the Marketplace property including the ATDC site had been subject to industrial development and uses at least during the period from 1884 through 1964. The first development noted in those documents comprised various plant facilities of the Paraffine Companies, Inc. situated approximately 900 ft north of the ATDC site, and involving research and development activities associated with bituminous and petroleum based products. It was noted in the McCLaren studies that such operations may have included the refining of asphalt and kerosine. In 1920, the Paraffine Company changed its name to PABCO, and, in 1929, began the manufacture of paint products. By 1930, most of what is now the Marketplace property was covered with buildings (McClaren, 1989). In 1957, PABCO was acquired by The Fibreboard Corporation and continued operations through 1964, at which time, Fibreboard began to divest its industries. By 1974, the majority of the main structures and infrastructure facilities on the Marketplace site had been demolished. In 1975, the Marketplace site was graded, and paving and construction of the existing Marketplace parking lot was completed. The majority of the ATDC site is now paved, and comprises a portion of the Marketplace parking lot.

Geotechnical investigations of the ATDC site completed in 1988 by Geomatrix identified the remnants of certain foundation slabs and footings from a structure formerly located on the site, as well as several additional structures that were present at that time. Those additional structures included an above ground concrete water storage tank, a below grade concrete tank, a wooden building approximately 40 ft x 50 ft in plan dimension, a concrete curb, and two buried steel pipes.



Basemap source: USGS 7.5 Minute Series (Topographic), Oakland West Quadrangle, 1968.

Figure 2-1

Site Location
Another Tree Emeryville Project

2.3 Existing Site Conditions

The site of the Another Tree Emeryville Project was acquired by ATDC in 1988, and has remained undeveloped since that time. Figure 2-2 shows the present configuration of the property, and indicates that the above ground concrete water storage tank and wooden building present at the time of the Geomatrix 1988 geotechnical investigations are no longer on the property. The figure also shows that an "L" shaped area near the center of the property is unpaved, and is surrounded by curb and striped parking spaces. That "L" shaped area had been proposed in late 1988 as the site of a hotel facility, but was not developed for such use.

2.4 Proposed Site Development

ATDC is currently in the planning and design stages for a proposed multi-family residential development on the site. Although building arrangement diagrams, architectural details, and related structural and ancillary facility layouts are not available at this time, it is known that the construction activities involved with site grading, utilities installation, and foundation earth work on the project site will result in the disturbance of soils on the property, and may be anticipated to expose construction personnel or the public to materials which have been determined to contain hazardous substances.

Certain soil materials excavated on the project site may also be classified as hazardous wastes based on the results of sampling and testing completed to date, and would be subject to certain environmental regulatory requirements relating to their management. For these reasons, it was deemed appropriate by ATDC at this point in the site development process to identify specific project construction activities expected to involve the potential for personnel exposure or hazardous substances releases in order to facilitate early-on review of the proposed development by the ACHA. Those construction activities expected to present the potential for soil exposure include 1) excavation of utility trenches, 2) excavations for foundations, and 3) cuts or excavations for purposes of site grading. The review of site soil characteristics discussed in Section 3.0 is, in part, intended to permit assessment of potential soil exposures during such activities.

It is not anticipated that a potential for personnel exposure to groundwater (e.g. from site dewatering) will occur during or after site development, nor is it intended that groundwater be developed for a beneficial use in connection with the project. However, the potential for existing groundwater contamination on the site is addressed in the following section, due to findings of the soils investigations on the site and inferences from prior investigations in the vicinity of the property.

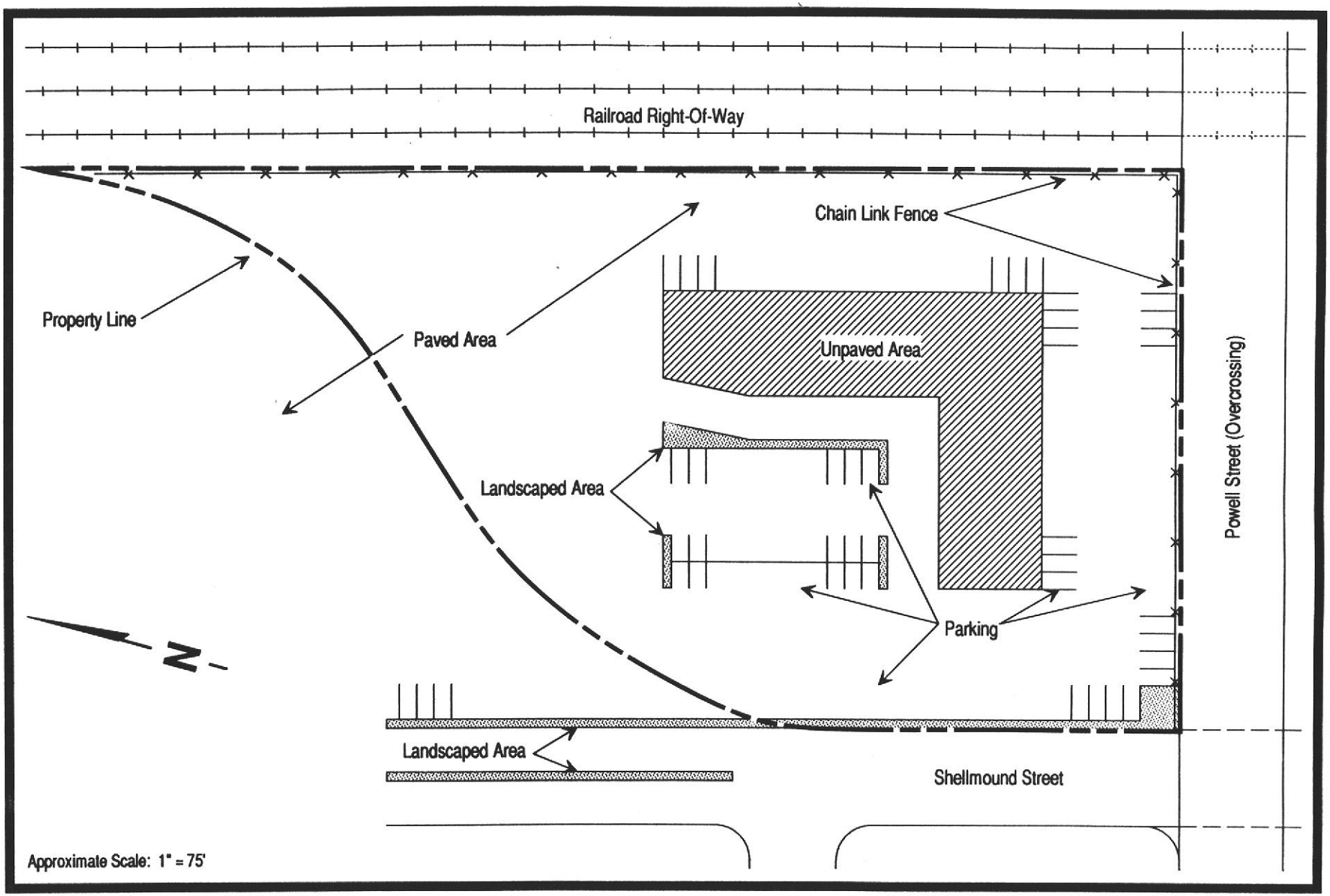


Figure 2-2
Existing Site Plan
Another Tree Emeryville Project

3.0 SITE CHARACTERIZATION

3.1 General

This section is provided to review and summarize the site characterization investigations which have been completed to date on the ATDC property, and to identify those conditions which are believed by ATDC to warrant further investigation or proposals for remedial activities in connection with site development. Pursuant to discussions with the ACHA on 4/10/90, the information herein has been prepared as a concise summary of site conditions and the findings of prior investigations as documented in the numerous references listed in Section 1.3. Accordingly, no extensive restatement of information included in existing reports has been done. As indicated to the ACHA, however, all technical reports referenced herein are on file with ATDC, and can be provided to the County, as desired, to facilitate ACHA's review of this submittal.

3.2 Soil Conditions

A substantial number of soil borings and other explorations were completed on the ATDC site in 1982, 1987 and 1988, and included 14 borings for purposes of environmental sampling, 18 borings for purposes of geotechnical sampling, and eight trenches for purposes of identifying buried obstructions. Figure 3-1 shows the locations of all soil exploration features completed on the property, and serves as a reference to the laboratory analytical data presented in Tables 3-1 and 3-2.

The principal soil characterization work completed on the ATDC site was reported during the 1982 investigations of Woodward-Clyde, and the 1987 and 1988 investigations of Earth Metrics, Inc. That work involved the collection of 19 soil samples from borings on the site, and laboratory analysis for organic and inorganic substances selected on the basis of field observations and prior site uses and industrial activities. The results of the analytical determinations on all soil samples collected under these programs are shown in Tables 3-1 and 3-2.

As reflected in Table 3-1, the laboratory analyses for inorganic constituents in soil samples acquired from Borings EM-8, EM-8B, EM-8C, and EM-8E detected levels of copper, lead, mercury, and zinc which are in excess of applicable threshold limit concentration values established in Chapter 30, Title 22 California Code of Regulations (CCR) for the classification of hazardous wastes. These elevated levels are summarized below along with the applicable total threshold limit concentration (TTLC) values.

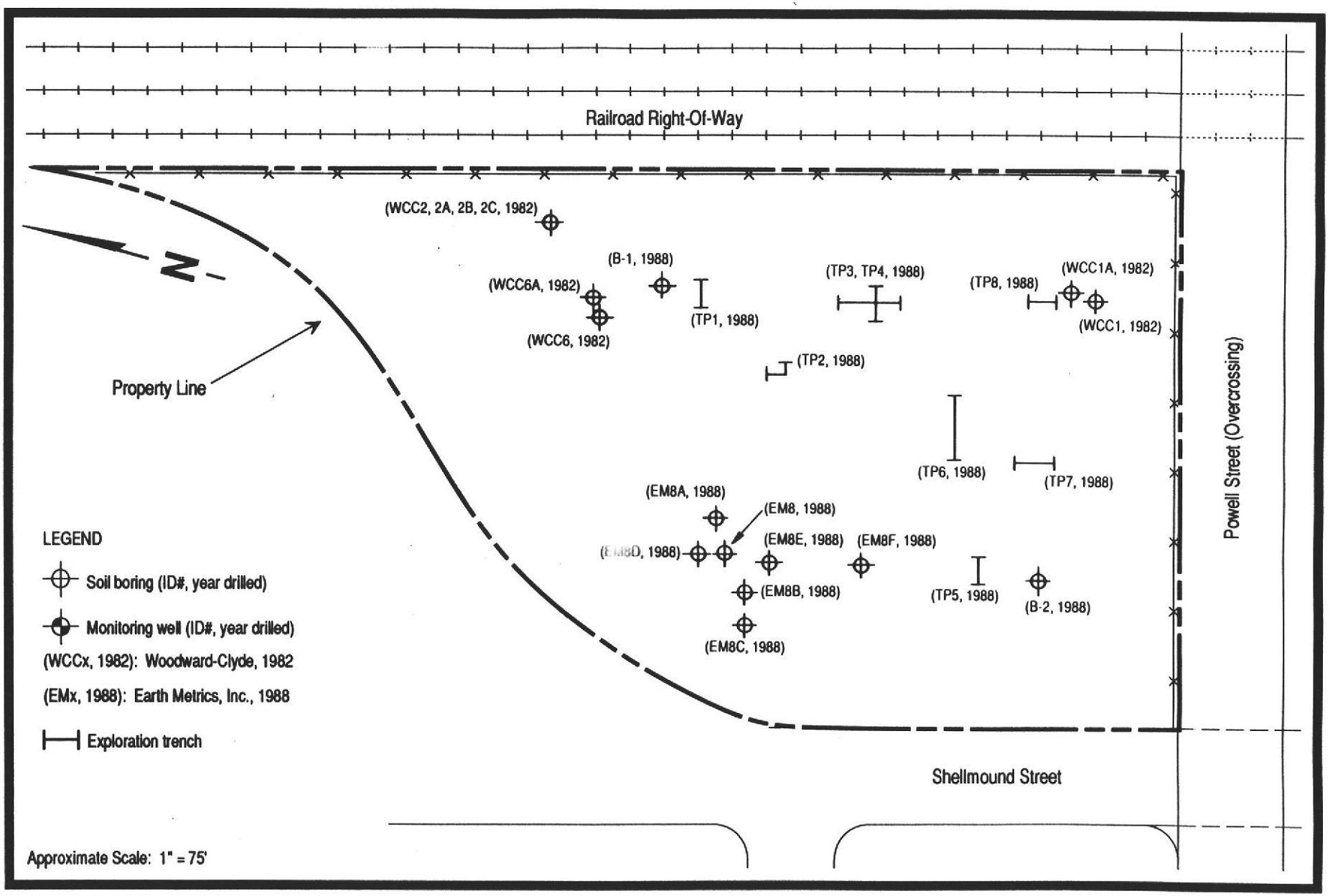


Figure 3-1
Plan of Previous Borings and Explorations
on Site of Another Tree Emeryville Project

Table 3-1
Summary of Inorganic Substance Determinations on Soil Samples from the ATDC Project Site

Sample Description (a)	Analytical Determinations (b) (c)																			
	Silver mg/kg (ppm)	Arsenic mg/kg (ppm)	Barium mg/kg (ppm)	Beryllium mg/kg (ppm)	Cadmium mg/kg (ppm)	Cobalt mg/kg (ppm)	Total Chromium mg/kg (ppm)	Hexavalent Chromium mg/kg (ppm)	Copper mg/kg (ppm)	Mercury mg/kg (ppm)	Manganese mg/kg (ppm)	Molybdenum mg/kg (ppm)	Nickel mg/kg (ppm)	Lead mg/kg (ppm)	Antimony mg/kg (ppm)	Selenium mg/kg (ppm)	Thallium mg/kg (ppm)	Vanadium mg/kg (ppm)	Zinc mg/kg (ppm)	Tin mg/kg (ppm)
A. Woodward-Clyde 1982																				
Boring WCC1							76	—	30				32	15					70	
Boring WCC1A																				
Boring WCC2		3.5			—	11	46	—	370				38	340					350	
Boring WCC1A																				
Boring WCC2A																				
Boring WCC2B																				
Boring WCC2C																				
Boring WCC6					—		880	0.2	230				56	110					550	
Boring WCC6A																				
B. Earth Metrics, Inc. 1987																				
Boring EM8 (@ 3 ft BGS)	20.4	19.2	377.2	—	24.8	6.5	133.3		46,819.0	40.1	264.3	—	61.7	2,129.9	—	39.8	—	23.9	24,317.3	140.7
Boring EM8 (@ 5 ft BGS)	—	—	29.4	—	2.7	8.9	34.0	—	72.8	—	214.6	—	35.3	7.6	—	—	—	22.8	77.5	—
Boring EM8A	—	—	30.1	—	4.02	7.3	24.7		61.1	—	545.5	4.3	7.7	12.1	—	—	—	32.4	77.3	
Boring EM8B	4.1	20.6	203.8	—	26.8	9.7	105.7		4,025.7	35.4	761.2	<5.3	37.9	2,347.7	89.6	<48.7	—	45.3	8,663.4	
Boring EM8C	10.9	45.5	92.2	—	37.6	15.3	181.6		11,663.2	42.9	1,181.7	<6.8	82.7	7,080.5	205.9	<39.6	<9.9	59.0	13,337.4	
Boring EM8D	—	—	71.6	—	1.8	4.6	33.0		44.9	—	94.4	—	20.3	29.1	<9.9	<3.9	<9.9	18.1	61.7	
Boring EM8E	5.7	17.9	184.4	—	9.91	5.0	363.6		4,585.4	75.5	350.4	—	<12.3	10,634.7	105.7	<12.5	—	14.6	3,787.3	
Boring EM8F	0.4	—	120.9	—	3.43	5.0	45.1		77.4	—	298.3	—	18.6	210.9	—	—	—	42.1	226.1	

NOTES:

(a) See Figure 3-1 for locations of borings.

(b) The "—" symbol in this table indicates not detected. See below for detection limits.

(c) A blank space or no entry in the table indicates not analyzed.

DETECTION LIMITS:

A. Woodward-Clyde 1982: Cadmium, 0.5 mg/kg; Hexavalent Chromium, 0.2 mg/kg

B. Earth Metrics, Inc. 1987: Antimony, 10.0 mg/kg; Arsenic, 4.0 mg/kg; Beryllium (EM-8), 0.2 mg/kg; Beryllium (EM-8A–EM-8F), 0.6 mg/kg; Mercury, 1.0 mg/kg; Molybdenum, 1.0 mg/kg; Selenium, 4.0 mg/kg, Silver, 0.4 mg/kg; Thallium, 10.0 mg/kg; and Tin, 2.0 mg/kg.

Table 3-2

Summary of Organic Substance Determinations
on Soil Samples from the Another Tree Emeryville Project

Analytical Determination (a)	Boring EM-8 @ 3 – 3.5 ft	Boring EM-8 @ 5 – 5.5 ft	Boring EM-8C @ 3.5 ft
Oil and Grease	95	< 6	
Polynuclear Aromatic Hydrocarbons			
Naphthalene			<6.2
Acenaphthylene			<12.5
Acenaphthene			<6.2
Fluorene			<1.2
Phenanthrene			4.3
Anthracene			<0.2
Fluoranthene			30.2
Pyrene			16.7
Benzo(a) anthracene			2.6
Chrysene			0.8
Benzo(b) fluoranthene			3.7
Benzo(k) fluoranthene			3.1
Benzo(a) pyrene			0.8
Dibenz(ah) anthracene			2.4
Benzo(ghi) perylene			1.8
Indenopyrene			1.0

NOTES:

(a) All values expressed in parts per million (ppm).

(b) A blank space or no entry in the table indicates not analyzed.

SOURCE: Earth Metrics, Inc. 1988. Draft Work Plan for Soils Contamination Characterization of Marketplace Site in Emeryville, California. The Martin Group, January 28, 1988.

Substance	Total Threshold Limit Concentration (mg/kg)	Range of Metals Concentrations in On-site Soils (mg/kg)
Copper	2,500	4,025.7 – 46,819
Lead	1,000	2,129.9 – 10,634.7
Mercury	20	40.1 – 75.5
Zinc	5,000	8,663.4 – 24,317.3

Reference to Figure 3-1 and discussions presented in the Earth Metrics, Inc. 1988 report shows that these elevated metals concentrations were encountered on the site in a localized area which was defined in vertical and areal extent by a series of seven soil borings. Those metals values in excess of applicable TTLC's were found in samples from four of the borings.

The analyses of samples from borings in the area of the high metals concentration soils also showed low levels of oil and grease (Table 3-2), and detectable levels of certain polynuclear aromatic hydrocarbon (PAH) compounds, notably fluoranthene and pyrene. Fluoranthene is a PAH produced from the pyrolytic processing of organic raw materials such as coal and petroleum at high temperatures, and is also contained in cigarette smoke. Pyrene is a constituent of coal tar, and is also obtained by the destructive hydrogenation of hard coal.

3.3 Waste Disposals

The investigations of the Marketplace property in 1982, 1987 and 1988 identified the existence of certain areas on the property containing 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, each in excess of 1.5 acres in size.

The southernmost of the two areas is estimated to have been about 1.6 acres in size, and partially extends onto the northern portion of the ATDC site. Boring EM-8 (see Figure 3-1) 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 is inferred to extend northward, and was encountered in a thickness of approximately three feet at the location of monitoring well MW-10.

In July 1988, the asphalt-like waste material was sampled and evaluated for The Martin Group by Aqua Terra Technologies to determine the properties and classification of the waste in accordance with the criteria for [hazardous waste]

identification set forth in Article 11 of Chapter 30, Title 22 CCR. Based on the analyses of both soil and floating material samples of the substance it was determined that the material would not be classified as hazardous under applicable California regulations. Additional evaluations and laboratory testing of the waste material during the 1989 investigations of McClaren Engineering suggested that the leaching of constituents from the waste into groundwater is not believed to have been significant under conditions encountered on the site, and there has been no evidence that the asphalt-like waste material has adversely affected groundwater quality.

3.4 Ground Water Conditions

The geology and hydrogeology of the Marketplace property and the adjoining Nielson property along 64th Street were initially investigated during the 1982 work of Woodward-Clyde, and have recently been the subject of extensive additional investigations by McClaren. Those investigations involved the installation of 15 groundwater monitoring wells extending across the Marketplace and Nielson properties, as well as the collection and analysis of samples of the asphalt-like waste material, petroleum hydrocarbon product encountered in certain wells, and groundwater. The McClaren work has also developed a description and characterization of the hydrogeology of the property, including the gradient and direction of movement of groundwater, and has determined that groundwater underlying the property is neither suitable for drinking purposes nor is the resource extracted for any beneficial use.

No groundwater monitoring wells have been completed on the ATDC site. The nearest of the 15 wells in the groundwater network installed on the Marketplace and adjoining properties is Well MW-10 (Figure 3-1) located about 100 ft north of the northern boundary line of the site, and cross gradient from the localized area of high metals concentration soils. General information has, however, been acquired on the depth to groundwater underlying the ATDC site through geotechnical investigations completed by Geomatrix in 1988. Groundwater measurements in trenches excavated on the site in February 1988 showed groundwater to be present at depths ranging from 4 ft to 5 1/2 ft at locations surrounding the former structure near the central portion of the property. These depths correlate closely with the detailed findings of McClaren in 1989, and suggest that groundwater movement under the ATDC site is toward the southwest.

The analyses of groundwater samples from wells on the Marketplace property have detected a variety of organic and inorganic constituents which have either been shown or have been inferred to have resulted from releases of wastes or chemical products through historical operations on the property, or from operations upgradient (eastward) from the property. Summaries of all analytical data acquired on the property were presented in the Earth Metrics study (Earth Metrics, 1988) and the McClaren study (McClaren, September 1989). The following observations and interpretations of the findings of prior groundwater investigations and ATDC

site soils investigations are made as they relate to the hydrogeologic characterization of the ATDC site.

- No groundwater quality data have been acquired from samples collected on the ATDC site
- It is TENERA's interpretation that the nature and location of existing and potential sources of groundwater contamination upon the ATDC site have been adequately identified through prior site investigations
- The potential for degradation of groundwaters underlying the ATDC site exists from off-site sources, and has not been assessed
- Laboratory analyses of groundwater samples from wells nearby the ATDC site for inorganic substances (metals) have detected the presence of arsenic, chromium, copper, lead, nickel, and zinc. Comparison of these water quality data with the results of soil testing on the property, however, suggests that metals in the soil column are not adversely affecting groundwater (i.e. the metals in on-site soils do not appear to be in soluble form), nor do the metals detected in groundwater samples correlate with the locations of metals detected in on-site soils
- Laboratory analyses of groundwater samples from wells nearby the ATDC site for organic substances have detected the presence of total petroleum hydrocarbons (as diesel) and certain volatile organic compounds (benzene and xylenes).
- Field sampling activities completed on wells on the Marketplace property have encountered the presence of free product in certain on-site wells. A minor amount of floating product was observed in Well MW-10 during sampling activities in August 1989, and it was later reported (McClaren, September 1989) that the upgradient and lateral extent of floating product underlying the Marketplace property had not been determined. Later attempts (September 1989) to sample Well MW-10 showed no evidence of free product.
- Field observations and measurements completed by Geomatrix in 1988 and McClaren in 1989 suggest that groundwater movement under the ATDC site is toward the southwest
- Laboratory analyses of groundwater samples from the Marketplace property for total dissolved solids and electrical conductivity along with review of existing groundwater uses upon and surrounding the property, have determined that groundwater underlying the property is neither suitable for drinking purposes nor is the resource extracted for any beneficial use.
- Extensive evaluations and laboratory testing of the asphalt-like waste material noted upon certain portions of the Marketplace property suggest that the leaching of constituents from the waste into groundwater is not believed to have been significant under conditions encountered on the site,

and there has been no evidence that the asphalt-like waste material has adversely affected groundwater quality.

- A review of records of the San Francisco Bay Regional Water Quality Control Board (McClaren, 1989) has determined that the former Chevron Asphalt Plant and Terminal located at 1520 Powell Street lies upgradient of the ATDC site, and is currently under investigation following the detection of soil and groundwater contamination at that location. Soil and groundwater sampling activities at the site to date have identified the presence of certain chlorinated solvents (including dichloroethene, trichloroethene and vinyl chloride) as well as cycloalkanes.

4.0 PROPOSALS FOR SITE APPROVAL WORK PLAN

4.1 General

It is TENERA's interpretation that the site characterization work described in Section 3.0 for the ATDC site and the Marketplace properties has identified three general areas of emphasis which should be addressed in regard to ATDC's review of environmental conditions on the site. These areas comprise 1) the existence of a localized area of soil contamination on the property with metals concentrations in excess of applicable TTLC's, 2) the existence of an asphalt-like waste material extending over a portion of the site, and 3) the potential existence of groundwater contamination underlying the site from on-site or off-site sources. The following sections address each of these areas of emphasis, and include specific proposals for ACHA review and approval for resolving each issue.

4.2 Soil Contamination

Based on the areal distribution and numbers of exploration features on the ATDC site (Figure 3-1), it is TENERA's interpretation that an adequate level of site characterization work has been completed in regard to the description of [environmental] soil conditions on the property. This interpretation is made on the bases that 1) we believe that the nature and locations of existing and potential sources of soil and groundwater contamination on the site have been adequately identified through prior site investigations, 2) the level of material sampling and analyses completed on soil samples from the site and adjoining property have adequately defined the characteristics of the soil contaminants of concern at the site in relation to applicable environmental standards and guidelines, and 3) the investigations to date are believed to be adequate to define specific proposals for appropriate actions to be implemented in connection with site development.

As indicated in prior investigations of the ATDC site (Earth Metrics, 1988) and in discussions with the ACHA on 4/10/90, it is envisioned that two remediation alternatives warrant consideration by ATDC in relation to the issue of a localized area of soil contamination on the property with metals concentrations in excess of applicable TTLC's: excavation and off-site disposal of the contaminated soil, and leaving the soil in place and capping the area with building foundations, paving, or similar materials. In view of the relatively small quantity of contaminated soil detected at that location on the ATDC site (estimated to be less than 150 cubic yards) it is contemplated that excavation for off-site disposal of the material may be an appropriate remedial action primarily from the standpoint of worker protection during site construction. Such removal would not be deemed warranted (at this time) solely for purposes of groundwater quality protection. It is noted, however, that the merits of this alternative must be considered in view of recently promulgated federal and state regulations relating to the disposal of untreated wastes to land. A treatment standard for solids with metals, for example, has recently been proposed for approval as an emergency regulation by the California

Department of Health Services and would become effective on 5/8/90. Such wastes would be prohibited from land disposal effective 5/8/92. A similar restriction on metal bearing solid wastes is in effect under federal regulations, but has been deferred to become effective in September 1990.

For this reason, TENERA proposes that the ACHA grant approval for the excavation and off-site disposal of that localized area of soil identified on the site with metals concentrations in excess of applicable TTLC's, but permit ATDC to conduct laboratory analyses of a sample of the soil material to establish its acceptability for land disposal under applicable regulations.

4.3 Waste Disposals

Based on the areal distribution and numbers of exploration features on the ATDC site and the Marketplace property, it is TENERA's interpretation that an adequate level of site characterization work has been completed in regard to the description of the asphalt-like waste material extending over the northern portion of the site. Analytical work completed on samples of the waste have shown that the material would not be classified as hazardous under applicable California regulations. Additional evaluations and laboratory testing of the waste material have suggested that the leaching of constituents from the waste into groundwater is not believed to have been significant under conditions encountered on the site, and there has been no evidence that the asphalt-like waste material has adversely affected groundwater quality.

With regard to actions appropriate to remediation of the waste material, it is envisioned that the two remediation alternatives identified above for contaminated soil conditions also warrant consideration by ATDC in relation to the issue of the asphalt-like waste. In this case, however, it is noted that a significant quantity of the waste has been shown to be present over an area of the site estimated to be approximately 0.8 acres in size. The material ranges in thickness from about 2 ft at the point of boring EM-8 to approximately 3 ft at the point of monitoring well MW-10 just north of the north property boundary, and would equate to a quantity of approximately 2,600 cubic yards of material. Further, the Alameda County Health Agency has recently evaluated the nature and conditions of this waste material (also present on the adjoining Marketplace property), and has determined that such material may be left in place. Therefore, in view of the properties of the material, the costs associated with removal and the import of fill to return the site to grade, and ACHA's recent findings regarding the material, it is believed that the excavation and off-site disposal of the waste is impractical and is not warranted at the ATDC site.

For this reason, TENERA proposes that the ACHA grant approval to leave the asphalt-like waste material in place and to cap the area with building foundations, paving, or similar materials.

4.4 Groundwater Investigation

As described in Section 3.0, no groundwater monitoring wells have been completed on the ATDC site. Certain conditions have, however, been noted in on-site soils and in soils and groundwater from adjoining and upgradient properties which suggest that contaminants may be present in groundwater underlying the site. For these reasons, it is proposed that a focused groundwater investigation be completed in connection with the proposed development to assess groundwater conditions underlying the property. The specific objectives of this proposed investigation would be as follows:

- To provide for the installation of a series of three monitoring wells for purposes of water level measurement to permit the correlation of site hydrogeologic conditions with information developed on the adjoining Marketplace property
- To provide for the installation of a well immediately downgradient from the localized area of elevated metals concentrations in soil to assess the findings of prior investigations that metals in soils at the Marketplace property do not appear to be affecting groundwater
- To provide for the installation of wells along the eastern boundary of the site for purposes of assessing the potential for contamination of groundwater underlying the site from upgradient sources
- To assess the potential existence of total petroleum hydrocarbons from upgradient sources as inferred from earlier findings during the sampling of monitoring well MW-10

Figure 4-1 shows the locations of wells proposed to be completed on the ATDC site, and indicates their relationship to the groundwater surface elevations and flow direction inferred from investigations of the adjoining Marketplace site. The depths, screened intervals, and survey of the proposed wells would be established so as to permit valid comparison with the water level measurements of prior groundwater investigations.

It is proposed that one round of water quality samples be acquired from the wells and analyzed for those parameters identified in Table 4-1. The analytical results on samples from the wells would then be evaluated and reported for ACHA review along with a discussion of findings in relation to the objectives of the investigation, and recommendations for appropriate actions in regard to site groundwater conditions.

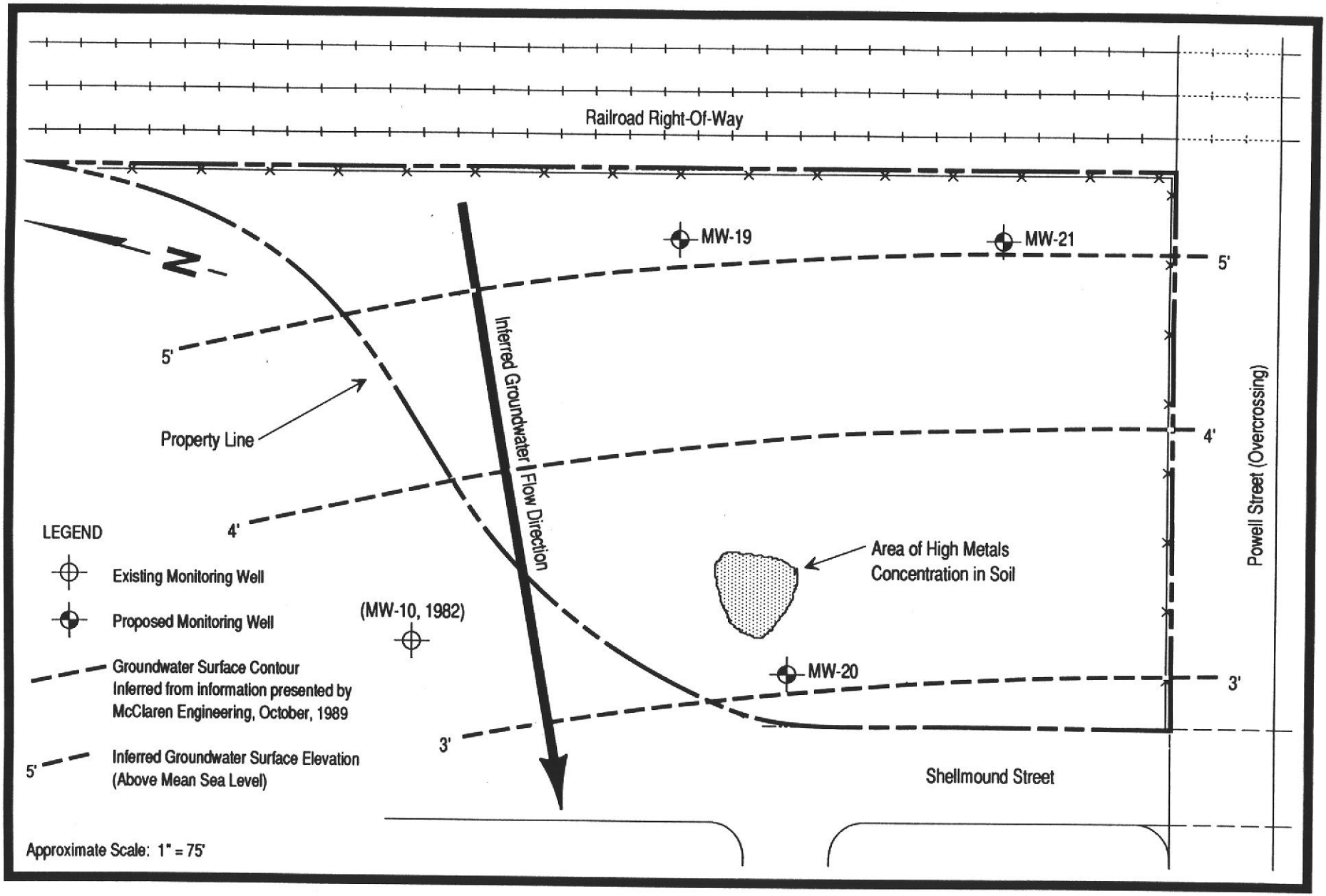


Figure 4-1
Proposed Monitoring Wells
on Site of Another Tree Emeryville Project

Table 4-1

Proposed Analytical Determinations on Samples from New Monitoring Wells
Another Tree Emeryville Project Site

Laboratory Determination	Well MW-19	Well MW-20	Well MW-21
Total Dissolved Solids (TDS)	X	X	X
Electrical Conductivity	X	X	X
Title 22 Inorganics Antimony Arsenic Barium Beryllium Cadmium Chromium Cobalt Copper Fluoride Lead Mercury Molybdenum Nickel Silver Thallium Vanadium Zinc	X	X	X
Total Petroleum Hydrocarbons	X	X	X
Volatile Aromatic Compounds Benzene Toluene Ethylbenzene	X	X	X
Polynuclear Aromatic Hydrocarbons		X	
Purgeable Halocarbons	X		X