FINAL

PROPOSAL TO REMEDIATE

THE MARKETPLACE AND NIELSEN SITES

IN

EMERYVILLE, CALIFORNIA

Prepared for:

Alameda County
Hazardous Materials Unit

May 5, 1988

Revised May 16, 1988

THE MARTIN COMPANY

May 4, 1988

Mr. Lowell Miller
County of Alameda Department of Health Services
470 27th Street
Room 322
Oakland, CA 94612

RE: Nielson and Marketplace Sites, Emeryville, CA

Dear Lowell,

In response to your requests at our meeting on May 2 regarding the subject sites, please be assured we will cooperate in every possible way to address and mitigate your concerns. Specifically, we will do the following:

1. Mitigate the potential hydrocarbon contamination at the manifold area and potential diesel pit contamination using either an aeration or biodegradation process. Our intent is to use Groundwater Technology as the contractor to perform such work. A copy of its proposed clean up plan is included.

2. Complete further research and/or testing on the "so-called" asphalt substance in the underground soil which is of concern to you. This is being done now. Upon completion of this, we will present to you the results, a risk analysis and mitigation plan for your approval.

3. Other than in the area of the asphalt substance of concern (in #2 above), the entire site will be covered by concrete, asphalt or 18" of clean soil (in landscaped areas) to eliminate the accessibility of individuals to any metal contaminated soil. Naturally, the action to be taken on the asphalt substance will be subject to the outcome in #2 above.

4. No contaminated soil will be removed from the site without your approval.

5. During construction we will have a Worker Safety Plan by an industrial hygienist in effect (a copy of such plan will be posted at the construction site for the construction workers to follow). Additionally, during deep excavations (building foundations/footings, storm sewers, sanitary sewers, etc.) an industrial hygienist will be available to

6425 Christie Avenue, Suite 406 ◆ Emeryville, California 94608
(415) 652-5852 ◆ Fax (415) 652-1967

inspect and monitor excavations and be available for other priority or emergency situations.

In addition to the above, a site plan showing the proposed buildings and the proposed undergound activities during construction, along with an overlay showing the potential contaminant areas, will be given to you as soon as possible.

We will be forwarding a detailed construction schedule showing probable dates of underground construction activities.

Lowell, based on this, we are requesting the ability to perform the construction actitivies in the Earth Metrics letter included. We will not proceed further than those activities without your approval. By proposing this program we are mitigating the construction worker risk while also mitigating all other issues/risks other than the underground asphalt substance issue. As I indicated, we will diligently pursue resolution of that issue and in the meantime, will protect worker safety.

If you have any questions, please call me.

Sincerely,

CHRISTIE AVENUE PARTNERS

Walter T. Kaczmarek
General Partner

WTK/dc
enclosure

6425 Christie Avenue, Suite 406 ◆ Emeryville, California 94608
(415) 652-5852 ◆ Fax (415) 652-1967

MARTIN DEVCON PROPERTIES

May 4, 1988

Mr. Lowell Miller
County of Alameda Department of Health Services
470 27th Street
Room 322
Oakland, CA 94612

RE: Construction Schedule for Marketplace and Nielson Sites

Dear Lowell:

Included is the estimated underground construction schedule for the office tower, the marketplace building rehab and the site work for the property. It does not include the work schedule for the movie theatre (northern most building on site) or the hotel (at southern end of site). Those will be forwarded as soon as we have them. Please note, we do not own the property for the hotel but will provide help in coordinating any work to be done since our contamination report covers the entire site (including the hotel).

The contact person on the jobsite for answering questions about daily operations etc., is Mr. Bob Russi with Devcon Construction. His current phone number is 415-652-1904. It may change when he moves his construction trailer to the site. If it does, I will forward it to you.

If you have any questions, please call me (415-652-5852 or 408-945-9700) or Alan McKay (415-283-7766).

Sincerely,

CHRISTIE AVENUE PROPERTIES

Walter T. Kaczmarek
General Partner

WTK/dc
enclosure

cc: Marc Pappineau
Alan McKay

660 East Calaveras Boulevard
Milpitas, California 95035
408-945-9700
Fax = 408-263-9711

ESTIMATED UNDERGROUND CONSTRUCTION SCHEDULE

EMERYVILLE MARKETPLACE REHAB, TOWER, AND SITE WORK
ASSUMING START OF 5/4/88

TOWER	START	DURATION
FOUNDATION/FOOTINGS	5/4	4 WEEKS
ELECTRICAL	5/4	4
FIRE PROTECTION	5/25	2
WATER TANK	6/8	2
DOMESTIC WATER	6/29	2
SANITARY SEWER	6/29	2
GAS LINES	10/10	2
PLUMBING UNDERGROUND	5/4	5
(MARKETPLACE) REHAB		
FOUNDATION/FOOTINGS	5/11	4 WEEKS
ELECTRICAL	5/11	4
SANITARY SEWER	5/4	6
STORM DRAIN	5/4	6
DOMESTIC WATER	5/4	6
IRRIGATION/PLANTING	7/11	3
2 STORY BRICK FOUNDATION	7/6	3
SITE UTILITIES		
GAS LINES	7/11	4 WEEKS
UNDERGROUND PLUMBING	7/11	3
STORM DRAIN	7/11	3
SANITARY SEWER	7/11	3
DOMESTIC WATER	7/11	3
ELECTRICAL-SITE LIGHTING	7/11	4
4" WATER SERVICE	6/8	3
FIRE PROTECTION	6/8	5

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Prepared for:

Alameda County
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Prepared by:

EARTH METRICS INCORPORATED
859 Cowan Road
Burlingame, CA 94010
(415) 697-7103

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PROPOSED PLAN TO REMEDIATE THE MARKETPLACE AND NIELSEN SITES

This final remediation proposal was prepared at the direction and request of the Alameda County Hazardous Materials Unit. The final proposal contains six elements: i) remediation proposals and alternatives, ii) conditions of underground construction approval, iii) underground construction schedule, iv) worker safety and hygiene plan, v) well closure plan, and a vi) directory of responsible personnel and their roles.

1. BACKGROUND

The Marketplace and Nielsen Truck sites are contiguous sites in Emeryville, and subjects of this comprehensive document. The Marketplace site is a site of historic industrial use since the 1800s. Potential contamination conditions left from the historic use by a floor and roof covering manufacturer (The Parrafine Companies/PABCO) is well documented in two previous reports on file with the County. The Woodward-Clyde report on the Marketplace contamination investigation was filed in 1982. The Earth Metrics subsequent report on the same subject site was filed in 1987 and updated again in 1988.

The Nielsen Truck Terminal is also a subject of previous documents on file with the County. All historic underground fuel and waste oil tanks have been removed, as of 1987. A report was filed by Woodward-Clyde at the time of tank closure. A subsequent report by Earth Metrics and Final Tank Closure Permit Application were filed in 1988, these latter to address residual gasoline and diesel fuel left in the gasoline and diesel manifold trenches.

All reports address three separable issues. These issues are: gasoline in site soil, diesel fuel in site soil, and an asphaltic material in site soil. The State of California action levels for gasoline and diesel in soil are the same, the action criteria being 100 parts per million (ppm) in both cases. Fuels have been identified above the action level in a portion of the former gasoline manifold, in a portion of the former diesel manifold, and in four discrete stockpiles.

As far as we know, there is no action level for the asphaltic material. The asphaltic material has been identified in two deposits, the larger of which is located in the northeast corner of The Marketplace site. All contamination investigation reports on file with the County, from 1982 onward, have acknowledged the presence of this asphaltic material. Recently, on May 2, 1988, the Alameda County Hazardous Materials Unit declared this asphaltic material a potential hazard.

2. REMEDIATION PROPOSALS

2.1 Gasoline and Diesel Manifolds and Tank Pits

Soil stockpiled or to be excavated from the diesel and gasoline manifold trenches will be stored on site for active aeration via venting and landfarming by modified enhanced natural degradation. This remediation will be performed by a qualified biodegradation treatment firm, Groundwater Technology Incorporated. This same firm performed site remediation and monitoring on Emeryville's Bay Center and P.I.E. Truck Terminal. This work was performed by Ms. Jan Jacobsen and Mr. Greg Hoehn under agency supervision by RWQCB's Ms. Beth Levine.

Biodegradation treatment is a viable alternative. Microbiological sreenining tests show that the site soils subject to treatment have adequate hydrocarbon consuming microorganisms to make this a technically feasible treatment method. The complete remediation proposal and screening test report by Groundwater Technology Incorporated are attached as Appendix A.

The gasoline and diesel tank pits themselves will be backfilled. They can be backfilled because test of the bottom soils indicate gasoline and diesel concentrations less than 100 ppm. These tank pits can be filled with crushed rock up to the high water line and stockpiled soil from the former Nielsen building pad (labelled as Stockpile F in Figure 1, map pouch). Stockpile F has been tested to be free of contamination; specifically, it is free of gasoline, diesel, and total oil and grease above 100 ppm.

All excavation for landfarming will be performed prior to construction grading for the proposed theater. Stockpile F will be used for tank pit backfill, before grading of the theater site (see Figure 1, map pouch). Landfarming will occur on the Nielsen site's eastern boundary, out of the way of the proposed theater building pad and undergrounded utilities. The landfarm will occupy an area having maximum dimensions of 220 feet by 40 feet. Excavation of soil for landfarming will be performed under the rules and provisions set forth in the Worker Safety and Hygiene Plan (attached as Appendix B).

After excavation of soil for treatment by landfarming, theater construction should be permitted to proceed. Initial construction procedures are listed below:

> Scraping. Remove any excess material such as the unused portion of Stockpile F, if any is left after backfilling. Remove the top layer of asphalt pavement and any poured concrete slabs. These surfacing materials will be either i) pulverized and used on site as aggregate or ii) hauled off site.

Grading. Level the building pad.

Pier Installation. This will be a vibroflotation installation method in which holes are created in the ground by special equipment which backfills the holes with gravel in one procedure.

The above procedures will require three weeks after completion of the excavation work for landfarming. A longer term schedule of construction activities including underground work is being prepared and will be appended to this document as soon as possible.

2.2 Waste Oil Tank Pit

The oil tank pit will be backfilled. The same conditions of backfill apply as described above for the gasoline and diesel tank pits.

2.3 Asphaltic Material

Asphalt deposits are mapped in the previous Woodward-Clyde and Earth Metrics reports, and again in Figure 1 (map pouch). These deposits are generally away from proposed buildings and underground utilities.

Earth Metrics is evaluating alternatives for remediating the asphalt deposits, including the encapsulation alternative in which alternative the solid deposits would be left on the site beneath paved parking areas or 18 inches of clean imported loam. This encapsulation alternative could be appropriate if the only risk presented by the asphalt is risk of "access", direct dermal contact or ingestion. Proof could entail demonstration by physical and chemical tests by certified test laboratories that:

1. The material is immobile, that is, it is fixed in the site's soils; therefore, the material is not likely to migrate off site.

2. The material is not volatile, that is, under ambient conditions it does not release vapors or gases that contain toxics or carcinogens.

3. The material is insoluble, that is, it is not going to leach into groundwater and migrate off site.

4. The material is chemically inactive and stable, noncorrosive and nonignitable.

Testing of the above mentioned physical and chemical characteristics can be routinely performed pursuant to California Title 22, by local San Francisco Bay Area certified test laboratories. Title 22 specifies all testing that is required to demonstrate that the subject material is hazardous or nonhazardous.

If the asphaltic material is hazardous waste, then other potential remediation alternatives include those listed below:

a. Solidification In Place. Addresses stability, solubility, off gasing and off site migration concerns, if any.

b. Excavate And Dispose In Class III. Potentially viable pending hazard classification as nonhazardous waste, determination of financial feasibility, and acceptance by a local Class III sanitary landfill.

c. Excavate, Solidify Off Site, And Dispose In Class III. Addresses solubility concerns, if any, and minimizes disposal cost relative to disposal in a Class I facility.

d. Excavate And Dispose In Class I. Cost prohibitive relative to financial feasibility of any foreseeable site land use.

e. Biodegradation. Technically infeasible for higher molecular weight hydrocarbons.

f. Perimeter Slurry Wall. Addresses off site migration concerns, if any; viable provided the material presents no on site risks such as off gasing of toxic fumes.

2.4 Asphalt Characterization and Risk Assessment Proposal

A proposal to the Alameda County Hazardous Materials Unit is being prepared to recommend waste characterization tests pursuant to Title 22 of the California Administrative Code. The proposal will be a joint effort of Aqua Terra, Inc. and Earth Metrics Incorporated. Aqua Terra, Inc. has expertise in toxicological assessment.

3. CONDITIONS OF UNDERGROUND WORK APPROVAL

Earth Metrics recommends that underground work on The Marketplace and Nielsen sites be allowed on both sites, inside or outside the mapped asphaltic material deposits and heavy metal deposit (refer to Figure 1, map pouch), subject to the below listed conditions:

Condition #1. Excavation and underground work is performed under the daily supervision of an environmental monitor familiar with the asphaltic substance. The role of the monitor is to direct stockpiling of any encountered subsurface asphalt.

Condition #2. Work is performed under the rules of the Worker Safety and Hygiene Plan contained herein (see Appendix B).

Condition #3. In no event will asphaltic material be brought off site, subject to finalization of the particular remediation pertaining to asphalt. Finalization means County approval.

Condition #4. Weekly progress reports will be filed with the Alameda County Hazardous Materials Unit to inform the Unit of construction progress an encountered materials.

Condition #5. The County may require air or solids tests of any interim stored materials, at the Unit's discretion. These tests will be provided by the developer.

Condition #6. Interim stored materials will be stockpiled on site a maximum of 180 days, after which the County can require off haul to an appropriate disposal facility if no other remediation is acceptable to the County.

Condition #7. The County may require off site disposal at any time based on test results which show volatile airborne contaminants above safe levels.

Condition #8. The owner/developer will complete promised documents (e.g., Title 22 waste characterization and remediation proposal for the asphaltic material) within a reasonable time, prior to finalization of which only those remediation and construction activities listed on the near term construction schedule will be allowed to progress.

4. CONSTRUCTION SCHEDULE

The long term construction schedule is being prepared and will be delivered to the County as soon as possible. The short term schedule provided herein addresses the detailed timing of excavation and underground work. A 1"=40' blue line base map in the attached map pouch illustrates proposed foundations and all underground utilities.

The short term construction schedule addresses the six week period beginning from the time of creation of soil stockpiles for landfarming. This schedule addresses only those aspects of the development that are subsurface, that is, below the existing asphalt pavement or concrete slabs. In the near term, construction below the surface is limited to i) various foundation preparations for the proposed theater building and eight-story building, and ii) plumbing preparations for the Emeryville Marketplace restoration (see Figure 1). These foundation and plumbing preparations, and timing, are described below:

Proposed Theater

ACTIVITY	TIMING
SCRAPING excess stockpiled soil left from the former Nielsen building pad (labelled "F" in Figure 1). Scraping and off hauling asphalt pavement.	Start to 3rd workday
LEVELING the site to desired grade.	3rd to 5th workday
VIBROFLOTATION piers installed.	6th to 15th workday

Proposed Eight-Story

ACTIVITY	TIMING
TRENCHING foundation footings around 80'x 200' building pad.	0 to 15th workday
TRENCHING utility laterals.	0 to 20th workday

Marketplace Restoration

ACTIVITY	TIMING
SUBSLAB DIGGING for replumbing to existing UBC requirements.	0 to 30th workday

6. WELL CLOSURE PLAN

Table 6-1 summarizes the proposed status of monitoring/vadose zone wells located on the former Marketplace and Nielsen Freight Lines sites. Five (5) of the wells are expected to require closure owing to the location of the proposed UA Cinema. Wells are shown in Figure 1 (map pouch).

Three (3) monitoring wells on the Marketplace site and five (5) vadose zone wells on the Nielsen site are not expected to conflict with the future building pads or construction. These eight will, therefore, be preserved as operating wells.

Proper well closure was described by Zone 7 of the Alameda Flood Control and Water Conservation District. Proper closure entails drilling out the existing casing and filling the hole with grout (Killingstead, 1988).

Zone 7 is the responsible agency for well closure activities in Emeryville. Both the California Department of Health Services (DHS) and Alameda County Health Services Agency directed our inquiries on well closure to Zone 7. The Emeryville Fire Department stated that they do not have a role in well abandonment in Emeryville.

TABLE 6-1. PROPOSED STATUS OF WELLS ON MARKETPLACE AND NIELSEN SITES IN EMERYVILLE

SITE	MONITORING WELL (MW)/ VADOSE ZONE WELL (VW) NO. (SEE FIGURE 1)	PROPOSED STATUS
Marketplace	5,5A (MW)	To Remain Active
Marketplace	4 (MW)	To Remain Active
Marketplace	10 (MW)	To Remain Active
Marketplace	12 (MW)	Cannot Locate
Nielsen Freight Lines	W1 (MW)	To Remain Active
Nielsen Freight Lines	W2 (MW)	Close
Nielsen Freight Lines	W3 (MW)	Cannot Locate
Nielsen Freight Lines	W4 (MW)	Close
Nielsen Freight Lines	W5 (MW) (a)	Close
Nielsen Freight Lines	W5A (MW) (a)	Close
Nielsen Freight Lines	W6 (MW)	Cannot Locate
Nielsen Freight Lines	W6A (MW)	Cannot Locate
Nielsen Freight Lines	W7 (MW)	To Remain Active
Nielsen Freight Lines	W8 (MW)	To Remain Active
Nielsen Freight Lines	B2 (VW)	To Remain Active
Nielsen Freight Lines	B3 (VW)	To Remain Active
Nielsen Freight Lines	B4 (VW)	Close

(a) W5 and W5A appear to be the same well, based upon field check.

MW: water monitoring well
VW: soil vapor monitoring well
Close: properly abandon

Source: Earth Metrics Incorporated, 1988.

7. RESPONSIBLE PERSONNEL AND THEIR ROLES

The below assigned personnel agree to perform the functions involved in Nielsen and Marketplace site remediaton and underground construction, as heretofore listed and described. Changes of assigned personnel, telephone numbers, or other data given below shall not be made without first consulting/notifying the Alameda County Hazardous Materials Unit and other team members.

MEMBER	AUTHORITY/ROLE
Mr. Lowell Miller Alameda County Hazardous Materials Unit 80 Swan Way Oakland, CA 94621 (415) 271-4320	Authorized to review/approve final remediation proposals and inspect interim work progress.
Mr. David Martin Mr. Walter Kaczmarek c/o The Martin Company 6425 Christie Street #406 Emeryville, CA 94608	Authorization of work contracted to/by the General Contractor (Devcon, Inc.). Authorization of work contracted to/by environmental and remediation firms designated in the Final Proposal.
Mr. Tom Gram Same address as above (415) 654-7500	Same as above.
Mr. Bob Russi DEVCON 555 Los Coches Street Milpitas, CA 95035 Emeryville (415) 652-1904 Milpitas (408) 942-8200	Responsible for responding to inquiries of Alameda County concerning the construction schedule. Responsible for coordinating with the designated industrial hygienist (IH) and implementing the Final Worker Safety and Hygiene Plan. Authorized to stop work if so indicated by the IH.
Mr. Alan McKay Office (415) 283-7766 Car (415) 860-5643	Responsible for civil engineering liaison with Alameda County. Will provide up-to-date plan revisions/ drawings as required by the County.

Mr. Neal Ferrar Groundwater Technology, Inc. 4080 Pike Lane Suite D Concord, CA 94520 (415) 671-2387	Responsible for bioreclamation by landfarming of diesel and gasoline contaminated soil.
Mr. Marc Papineau Earth Metrics Incorporated 859 Cowan Road Burlingame, CA 94010 (415) 697-7103	Responsible for contamination characterization, document control, administration, liaison, and the Final Remediation Proposal required by Alameda County.
Mr. Greg Raymond J.M. Cohen 155 Bovet Road Suite 300 San Mateo, CA 94402 Office (415) 349-9737 Pager (415) 571-4356	Industrial Hygienist
Mr. Al Toy J.M. Cohen (same as above) Office (415) 349-9737	Environmental Monitor
Dr. Pat Sheehan AQUA TERRA 2950 Buskirk Ave. Suite 120 Walnut Creek, CA 94596 (415) 934-4884	Toxicologist, Lead Responsibility for Asphalt Risk Assessment Proposal
Mr. Tim Babcock URIAH, Inc. P.O. Box 3833 Modesto, CA 95352 (209) 579-2007	Microbiologist, Contributing to the Asphalt Risk Assessment Proposal
Mr. Robert Wyatt Brobeck, Phleger & Harrison Spear Street Tower San Francisco, CA 94105 (415) 442-0900	Legal Counsel for The Martin Company

APPENDIX A

GROUNDWATER TECHNOLOGY, INC.

4080 Pike Lane, Suite D, Concord, CA 94520 (415) 671-2387
Fax: (415) 685-9148

SOIL REMEDIATION PROPOSAL
FORMER NIELSEN FREIGHT LINES SITE
EMERYVILLE, CALIFORNIA

Prepared for:

Mr. Mark Papineau
Earth Metrics Incorporated
859 Cowan Road
Burlingame, CA 94010

Prepared by:

GROUNDWATER TECHNOLOGY, INC.
4080 Pike Lane, Suite D
Concord, CA 94520

Greg Hoehn
Hydrogeologist

Neal Farrar
Geologist/
District Sales Manager

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1. A minimum of 1,000 cubic yards of soil will be excavated from the ground prior to constructing the land-farming mounds.

2. There is available room on the site for treatment.

3. Earth Metrics Inc. will supply the necessary equipment for moving the soil and constructing the land-farming mounds.

4. A power source is present to operate a high-vacuum blower.

5. The soil is contaminated with gasoline and diesel fuel.

PROPOSED SCOPE OF WORK

The proposed scope of work will involve securing all applicable permits to begin work, followed by the construction of a soil-treatment mound on the property. The soil mound will be approximately 4-feet deep by 40-feet wide and 220-feet long (the dimensions and number of mounds may be modified based upon available space and volume of soil to be treated.) The specifics of the treatment program and construction details are presented in the following sections.

AERATION

The Bay Area Air Quality Management District (BAAQMD) developed regulations regarding on-site aeration of soils contaminated by organic chemicals or petroleum chemicals (Regulation 8, Rule 40). This regulation stipulates allowable rates of uncontrolled aeration, exemptions from the rule, and controlled

aeration criteria. The remediation system has been designed to ensure the controlled aeration process is in compliance with all applicable air quality regulations.

AERATION MOUND CONSTRUCTION

The soil mound will be constructed in the following manner:

- Two-inch diameter slotted vent pipes will be placed on a plastic tarp for the entire length of the soil mound.
- Two feet of soil will be placed on the plastic tarp and vent pipes.
- Nutrients will be applied to the surface of the soil mound.
- Two feet of soil will be placed on top of the mound, and will be followed by another round of nutrient addition.
- The entire pile will be covered with a plastic tarp to retain moisture.

Subsequent to the construction of the aeration mound, a high-vacuum blower will be attached to the vent pipes to create a vacuum and thus induce movement of air through the soil pile which increases volatilization of the hydrocarbons. Although diesel fuel is primarily comprised of heavier, less-volatile hydrocarbons, induced aeration will expedite the removal of the adsorbed diesel contamination.

SOIL SAMPLING

Soil samples will be collected from various locations within the soil mound for the following analyses:

1. Prior to system startup:

   - Ten samples for analysis of total petroleum hydrocarbons (TPH) as diesel fuel and TPH as gasoline.

2. Subsequent to system startup:

   - Ten samples at four-week intervals (three months maximum) for microbial analysis to verify the increase of the hydrocarbon utilizers.

   - Ten samples at four-week intervals (three months maximum) for total petroleum hydrocarbons as diesel and TPH as gasoline for verification of contamination reduction.

ABOVE-GROUND ENHANCED NATURAL DEGRADATION (END™)

The existence of naturally occurring microbes within the subsurface which degrade hydrocarbon contaminants is well documented. It has also been well documented that stimulation of the microbes by adding oxygen and nutrients (i.e., phosphates) creates population "booms". The increase in population in turn increases the degradation of hydrocarbons as the microbes seek out a food source. The technique of enhancing the naturally occurring degradation process has been used by GTI at sites across the country and has been coined with the acronym END™.

This same above-ground process, which is commonly referred to as land farming, has been used previously for diesel-fuel contaminated-soil remediation in the Emeryville area. Because of the action of the vent system, an additional oxygen source is not required for land farming. The addition of nutrients, however, will enhance the population growth of existing microbes which will result in expedited degradation of the hydrocarbon contaminants.

Earth Metrics/Emeryville
April 1988

JOB COMPLETION

Groundwater Technology, Inc. anticipates a reduction from the current soil contamination levels to less than 100 ppm to occur within three months. At the three-month-mark, if data indicates sufficient contamination for reduction has occurred, soils samples will be collected for each 100-cubic yards of soil to verify hydrocarbon concentrations. After contamination reduction below 100 ppm is verified, the soil can be disposed of at a Class III sanitary landfill by Earth Metrics Inc.

Bacterial Enumeration: Soil Samples

Background

Plate counts are a widely utilized means for isolating and enumerating bacteria. This method offers two distinct advantages over other methods: it is a count of viable bacteria and allows for isolation of pure cultures. Therefore individual members can be studied if necessary.

Procedure

With a flame sterilized spatula, 1 g of soil is aseptically transferred to a sterile phosphate dilution blank. Samples are then serially diluted in phosphate buffer. From the appropriate dilutions, a 100 ul aliquot is withdrawn and spread with a flame sterilized glass spreader on mineral media with the contaminant as the sole carbon and energy source. The mineral media lacks any exogenous carbon source other than the contaminant so that only bacteria capable of metabolizing the contaminant will be expressed as colonies. Samples are plated in duplicate to account for variations in distribution. Ideally this results in plates with 30-300 colonies each. Counts not in this range are reported as estimated counts.

Plates are incubated aerobically in the dark at 15$\pm$.1°C. Counting colony forming units will be performed after incubation has allowed sufficient growth.

Results

See attached page.

GTI Bioreclamation Services
Concord Laboratory
4080-B Pike Ln.
Concord, CA 94520
415-671-2387

 4-27-88

Pro. Mgr: N. Farrar
4080-D Pike Ln.
Concord, CA 94520
Pro. #: 203-799-5067
Location: Emeryville, CA
Sampled: 4-5,6-88 By: S. Billings
Received: 4-6-88 By: S. Billings
Analyzed: 4-6-88 By: S. Billings
Test: C
Matrix: soil

N.A.= nutrient agar
MIN.M.= mineral media
CFU/g= colony forming units per gram dry soil

Lab No.	Sample ID		CFU/g
271-W	SD-1	MIN.M.	2.7E+07
272-W	D-2	MIN.M.	6.7E+06
273-W	WS	MIN.M.	7.9E+05
274-W	Pit D	MIN.M.	1.9E+07
275-W	Gas Site	MIN.M.	1.1E+06

Authorization: Steve Billings
Laboratory Supervisor

APPENDIX B

WORKER SAFETY AND HYGIENE PLAN
THE MARKETPLACE AND NIELSEN SITES, EMERYVILLE

INTRODUCTION

This Worker Safety and Hygiene Plan has been prepared for use during the soil excavation phase of proposed construction and remediation on The Marketplace and Nielsen sites in Emeryville. The plan was adapted from the worker safety and hygiene plan approved for the Bay Center site in Emeryville. The plan describes the procedures to be implemented to protect the health and safety of the employees performing the excavation, remediation, and underground work, adapted to local conditions on the subject sites. These local conditions have been described in characterization reports on file with the Alameda County Hazardous Materials Unit.

In general, preliminary investigations have indicated that the hazard potential at the site is primarily associated with potential contact with petroleum hydrocarbons including gasoline, diesel, and potential asphaltic material. Personal and area air samples for organic vapors will be collected during the different construction processes and locations to assure safe working conditions. Personal air samples will be collected during excavation of a "worst case" area to determine whether or not respirators are necessary.

The purpose of the plan is to provide construction personnel with adequate protection against possible contamination in The Marketplace area of Emeryville, California, located south of 64th Street and east of Shellmound Street. The types of exposure hazards that may potentially be encountered during the investigation are: fuels (BTEX) and related organic vapor exposures. The safety plan will address these two types of hazards.

The Martin Company will assign an Industrial Hygienist to implement the plan. The Industrial Hygienist is trained in appropriate industrial hygiene and safety information. Training includes, but is not limited to: safety awareness and response, use of respiratory protection equipment, qualitative fit testing of respiratory protection equipment, explosive conditions and lower explosive limits, confined space entry, eye and head protection, skin protections, and use of impervious clothing. Before work at the site begins, the Industrial Hygienist will review the Worker Safety and Hygiene Plan to become acquainted with the proposed Remediation Plan, Site Characterization, and contingency emergency response, requisite for safe work at the site. The Industrial Hygienist will remain on site at his discretion after initial soil excavation activities, in order to assess changing exposure conditions and to initiate emergency response actions, if required.

MEDICAL INFORMATION

The Site Characterization investigation does not address airborne vapor levels. Benzene, toluene, ethyl benzene, and xylene are volatile components of petroleum fuels. Table 1 presents OSHA exposure limits.

TABLE 1. OSHA MAXIMUM WORKER EXPOSURE LIMITS (ppm)

VOLATILE ORGANIC	MAXIMUM ALLOWABLE EXPOSURE EIGHT HOUR AVERAGE (ppm)
Benzene	10
Ethyl benzene	100
Toluene	200
Xylene	100

Source: Earth Metrics Incorporated, 1988.

The owner has agreed that, as a precaution, before and after blood lead tests will be made available to all workers, if desired, at the owner's expense. However, lead contamination is not widespread on this site.

In the event that unusual circumstances arise during the performance of field work, the Industrial Hygienist will interview involved employees at the site to determine whether any exposure may have occurred and if the employees are experiencing any symptoms which may be related to contaminant exposure. If the employees indicate any adverse effects or, if in the judgement of the Industrial Hygienist such adverse effects are apparent or probable, the Industrial Hygienist will require each of the involved employees to be evaluated by competent medical personnel. Such evaluation will be noted in the Industrial Hygienist's daily log. Emergency care will be provided.

EDUCATION AND TRAINING PROGRAM

Each employee involved in the plan will be trained in the necessary hygiene and safety precautions. The safety requirements for this kind of work are largely dependent upon the professional judgement of the Industrial Hygienist.

Two particular kinds of potential hazards are addressed in the plan. These are: potential fuels or organic vapor exposure and potential exposure to unknown hazardous wastes that are associated with the disposal sites within the general Emeryville area. The Industrial Hygienist will be responsible for instructing each of the involved construction personnel in the appropriate health and safety measures for corresponding job functions.

All personnel involved in excavation of contaminated soil will be trained in the following aspects:

- Health Hazards. All invloved personnel will be made aware of the possible health related problems associated with unmitigated exposure to fuels and BTEX.

- All employees who will wear personal protective equipment will be instructed in the use, care and fitting of personal protective equipment and of the necessity for wearing the equipment, its effectiveness and limitation.

- The Industrial Hygienist will also be responsible for training underground construction personnel concerning the necessity for protection from the potential adverse effects of hazards associated generally with Emeryville historic filled baylands. Personnel will be advised of the potential hazards and precautions which are to be taken in the event that discolored, odorous, or containerized materials are encountered.

- Proper hygiene, which will include use of wash facilities as appropriate.

The Industrial Hygienist will be responsible for training construction personnel. Personnel will be advised of the notification procedures which are to be followed in the event that odorous or containerized materials are encountered.

ON SITE MONITORING PRESENCE

Industrial Hygienist. A certified industrial hygienist be on site at the start of construction and, thereafter, at his discretion, to oversee excavation and underground work and to ensure that proper hygiene and safety measures are being implemented. Construction workers will be required to report any unexpected or irregular occurrences which may be encountered during the field work to the Industrial Hygienist. Such occurrences include, for example, unearthing of drums, pockets of darkened wet soil, and odors.

In this former industrial site, the fill materials are generally below the surface of the existing asphalt pavement. If the activities at the site cause considerable disturbance, the Industrial Hygienist will adjust procedures and protection levels accordingly, making notes of any such changes in the daily log. This procedure will provide continued safety to all personnel on site.

Since the identities and extent of potential chemical contamination other than gasoline and diesel are not completely known, avoidance procedures, monitoring, and personal protection will be required. Added safety precautions will be taken for the inherent hazards of drilling and deep trenching procedures.

Environmental Monitor. An environmental monitor (EM) will be on site to inspect all subgrade excavation and trenching. The roles of the environmental monitor will be threefold:

1. Direct stockpiling of unknown asphaltic deposits if any are encountered by trenching or drilling activities.

2. Perform air sampling for BTEX as needed at the property line downwind of the landfarming remediation.

3. Perform contingency water sampling of interim stored groundwater pumped from pits, trenches, or other excavations.

JOB SITE RISKS

There is a potential hazard associated with organic vapors inhaled during subsurface soil excavation. The greatest risk of inhalation will occur with those activities which disturb surface soil in contaminated areas, causing release of volatiles. There are secondary exposure routes of skin absorption and ingestion. Skin absorption will be reduced or eliminated by the use of gloves and coveralls.

HYGIENE AND SAFETY PRECAUTIONS

Site Entry Procedures. Eating, drinking, smoking and any other practice which increases the probability of hand-to-mouth transfer is prohibited in the work zones. All field personnel will be instructed to thoroughly wash their hands and face upon leaving the work area. The Industrial Hygienist will be responsible for designating a wash area at each work site.

A first aid kit, eye wash kit, 20 pound ABC fire extinguisher, stretcher and blanket, and potable water will be available at the work site.

Levels of Protection. The site will be considered a Zone D work area. Level D Personal Protection will be required. This designation is based upon the existing knowledge that airborne concentrations are expected to be below the present permissible exposure limits. The Zone D designation will exist at all underground operations. Zone D safeguards will include:

- Where necessary, air purifying respirators approved by NIOSH for toxic fumes.
- Coveralls and gloves and, where necessary, chemical-resistant Tyvek-type clothing, or equivalent.
- Rubber boots with steel toes, or equivalent.
- Hard hat.

All drilling activities will start at Level D protection (Level D protection is described in the U.S. EPA Standard Operating Safety Guides, November 1984) with continuous organic vapor monitoring. Disposable latex gloves, hard hat, and eye protection will be used to minimize injury from engine-driven drilling equipment and to minimize illnesses from skin contact of chemicals. The ground around drilling activities will be wetted to prevent entrainment of airborne dust.

The level of protection will be upgraded to Level C if earthwork encounters irregular materials, or if organic vapor levels exceed 0.5 ppm above background levels continuously for more than five minutes. Personal protective equipment at Level C will include, at a minimum, the following:

- Double cartridge respirator for organic vapors.
- Escape masks.
- Underwear - cotton.

- Coveralls - chemical resistant.
- Apron - PVC, butyl rubber, or other material impervious to chemicals.
- Gloves - PVC, butyl rubber, or other material impervious to chemicals.
- Safety boots - neoprene or other material impervious to chemicals.
- Boots - chemical resistant, steel toes and shank.
- Hard hat with face shield.
- Safety glasses when face shield not used.

CONTAMINATION REDUCTION

All disposable protective clothing will be put into plastic bags, sealed, and provided with a label describing the contents before field personnel leave the sampling area. The plastic bags will be retained on site until chemical analyses are performed on the field samples. Disposable clothing shall not be re-used from day to day.

PERSONAL MONITORING

BTEX Monitoring. Air samples will be taken by the Industrial Hygienist (IH) in the breathing zone for peak exposures during digging and soil handling operations and long-term exposures in high activity operations. All samples will be taken as personal samples worn by the individuals.

Site perimeter samples will be taken by the Environmental Monitor (EM) in a similar fashion, except that the samples will be collected as fixed source area samples. The monitors will be set at approximately five feet above the ground at the site boundary. These samples will be analyzed for BTEX absorbed onto charcoal tubes.

Organic Vapor Monitoring. The Industrial Hygienist will monitor for ambient levels of organic vapors using a Century Organic Vapor Analyzer (GC/FID). The Industrial Hygienist will be notified if organic vapor levels exceed ambient levels by more than 0.5 ppm. Drilling will cease, equipment will be shut down, and personnel will withdraw from the area if any of the following conditions occur:

- The organic vapor concentrations in the operator's breathing zone exceeds 5 ppm.
- The organic vapor concentration two feet above the bore hole exceeds 5,000 ppm or 50 percent of the lower explosive limit.

The Industrial Hygienist will determine when personnel may return to the work area.

In the event that near ambient levels of organic vapors are detected, personnel will not be required to wear respirators. Need for respirators will be at the

discretion of Industrial Hygienist (IH) only, not the Environmental Monitor (EM). The Industrial Hygienist will attempt to identify the nature and source of vapors if any are detected.

CONTINGENCY PLAN

The Industrial Hygienist (IH) designated by The Martin Company will be present for the construction start and, thereafter, for periodic inspections at his discretion. The IH will be on call at all times to respond to emergencies. The Industrial Hygienist will be knowledgeable of expected contaminants, hazards, and risks, and will be responsible for coordinating emergency responses. It will also be the responsibility of the Industrial Hygienist to inform and train the work party members before the work begins at each site. Training will include information on the risks that may be encountered, and techniques to minimize exposures from these hazardous materials. The Industrial Hygienist will also implement the safety plan, hold safety meetings with employees, evaluate employees' understanding of risks and preventive measures, inform all employees of designated escape routes and locations of all emergency medical aid.

Before site work begins, the Industrial Hygienist will notify emergency response personnel who may be called upon to respond to emergency situations if they occur, and will brief them on the nature of anticipated hazard and potential emergency scenarios. The groups to be notified will include local clinics and/or hospitals, and fire personnel. The name of the clinics and/or hospitals which have been designated to serve construction personnel shall be posted on site and made available to construction personnel.

The Industrial Hygienist's primary responsibility in the event of an accident will be evacuation, on site first aid, and assistance to follow up medical attention of injured team members. The Industrial Hygienist will determine safe evacuation areas and begin first aid. A qualified member of the work team will accompany the injured party to the medical facility to advise on matters concerning contamination, if applicable. A specific evacuation route will be selected based on traffic congestion at the time of the emergency.

RECORD KEEEPING

The Industrial Hygienist will maintain a record of all health and safety related matters in a daily log. Air monitoring data and any unusual field data will be recorded in the daily log. In addition, the Industrial Hygienist will maintain pertinent medical records of all field personnel, safety and health documentation, contingency plans, and communications and contracts on site. These records will be available to all employees upon request.

J. M. COHEN, Inc.
ENVIRONMENTAL & OCCUPATIONAL HEALTH SERVICES

May 16, 1988

Walter Kaczmarek
The Martin Company
6425 Christie Ave., Suite 406
Emeryville, CA 94608

Dear Mr. Kaczmarek,

Pursuant to conversations with Mark Papineau of Earth Metrics, and Lowell Miller of the Alameda County Hazardous Materials Unit, we will modify our scope of work as follows:

1.) We will conduct a thorough site evaluation along with a review of written material so that we can better prepare our air sampling strategy. Odorous components will be evaluated by mass spectrometry, gas chromatographic odorgrams, or other techniques suitable for assessing the potential exposures. Non-specific direct reading instrumentation may also be used during our site assessments. The Worker Safety and Hygiene Plan will be modified as necessary based on our site evaluation and initial monitoring.

2.) Respiratory protection methods will be suggested following our site investigation. We will recommend appropriate personal protective equipment and conduct worker training on the equipment needed. Most likely, gloves, boots, body covering and respirators will be required.

Please feel free to call me if you have any questions.

Very truly yours,

J.M. COHEN, INC.

Joel Cohen KC.

Joel M. Cohen, CIH

cc: Mark Papineau

JMC/kc

J. M. COHEN, Inc.

ENVIRONMENTAL & OCCUPATIONAL HEALTH SERVICES

THIS AGREEMENT made and entered into on ___May 11___ 1988, between J.M. Cohen, Inc., a corporation incorporated under the laws of the State of California (hereinafter referred to as "JMC") and ____The Martin Company_____(hereinafter referred to as "Client").

PURPOSE

The purpose of this agreement is to state the terms and conditions under which JMC will furnish to Client services relating to worker health and safety and environmental control in conformity with various Occupational Safety and Health Administration (hereinafter referred to as OSHA), Environmental Protection Agency, Bay Area Air Quality Management District, and other relevant environmental regulations and guidelines.

SERVICES

JMC agrees to provide to Client the following services:

Health, safety and environmental services at Nielsen and Marketplace sites, Emeryville, CA as described in letter to Walter Kaczmarek, from J.M. Cohen, Inc., dated May 11, 1988.

Services may be added to this agreement by client's written request and written authorization by JMC.

CLIENT'S RESPONSIBILITIES

Client shall provide, upon request and in a timely manner, access for appropriate JMC personnel to the property, facilities, records and employees as necessary for JMC to fulfill its responsibilities to Client. Client shall provide access to contact persons within its organization. Implementation of procedures, equipment, et al., recommended by JMC, including all direct and indirect costs thereof, shall be the sole responsibility of the Client.

TERMS OF AGREEMENT

The terms of this agreement shall commence as of the date of execution and shall continue in full force until a date agreed upon at execution or until terminated by written agreement of both parties. In the event of termination, JMC shall receive from client in writing, or shall issue to client in writing, no less than 30 days notice of intent to terminate the agreement.

COMPENSATION

Client agrees to pay JMC $____*see below_____ for the services described herein as follows:

JMC provides services on a time and materials basis. Rates and conditions are described in the attached fee schedule. An administrative charge of $100 per month will be assessed.

155 BOVET ROAD SUITE 300 SAN MATEO CALIFORNIA 94402 415/349-9737

Terms are net 15 days. A service charge of one and one-half percent (1 1/2%) per month, eighteen percent (18%) per annum will be charged on all past due accounts until paid in full. Services may be suspended for accounts more than forty-five (45) days past due.

LIMITATION OF LIABILITY

JMC and Client agree pursuant to this contract that no liability shall attach to either party or to such party's employees for any causes of action for negligence, injury to employees of Client, injuries to third persons, or any other claimants for causes of action stemming from any alleged breach of or in the performance of this agreement. Client shall not be liable for causes of action based on grossly negligent, reckless or intentional conduct of JMC or its employees.

Client shall indemnify, hold harmless and defend JMC against any liability stemming from any alleged acts of errors and omissions by JMC and its employees. Neither party shall be responsible or held liable to the other for consequential damages including, but not limited to, loss of use, loss of profit, loss of investment, loss of product or business interruption. Indemnifications, releases from liability and limitations of liability shall apply notwithstanding the fault or negligence, active or passive, the party indemnified, released or whose liability is limited.

CONFIDENTIAL DATA AND SECURITY

Any and all information revealed by one of the parties hereto to the other party during the term of this agreement, any information gathered or obtained during the term of this agreement and any reports or draft reports generated pursuant to this agreement, shall at all times be deemed confidential and each party to the agreement agrees not to disclose any such confidential information to any third party. JMC agrees that it will observe all Client security for any property of JMC which may be on Client's premises.

ATTORNEYS' FEES

If either party to this agreement, or any party hereunder, shall bring an action, in any court of competent jurisdiction, against the other party to enforce any covenant or condition of this agreement, not stemming from negligence, the prevailing party shall be entitled to recover its reasonable attorneys fees and all costs and expenses. No such fees, costs or expenses shall be recoverable by either party for suits stemming from alleged negligent causes of action.

PERSONNEL

JMC shall furnish the professional personnel, non-professional staff personnel, and all other labor required to perform the services covered by this agreement. All personnel employed in the work shall be competent and qualified to perform the covered services. JMC reserves the right to exchange personnel at times for good management or for reasons beyond JMC's control.

GOVERNING LAW, ENTIRETY OR AGREEMENT AND PARTIAL INVALIDITY

This agreement shall be governed by the laws of California. It constitutes the entire agreement between the parties regarding its subject matter, superseding all prior agreements, oral or written. It may be modified by a written supplemental agreement requested in writing by Client and authorized by JMC, as stated under Services. If any provisions of this agreement is held by any court to be invalid, void or unenforceable, the remaining provisions shall nevertheless continue in full force.

ACCEPTANCE

Signature of this professional services agreement by an authorized Client representative constitutes acceptance of the terms and conditions set forth.

CLIENT: Christie Ave Partners

Representative: [signature]

Title: Controller

Dated: 5-12-88

[signature]

JOEL M. COHEN, President JMC, Inc.

Dated: 5/13/88

J. M. COHEN, Inc.
ENVIRONMENTAL & OCCUPATIONAL HEALTH SERVICES

May 11, 1988

Walter Kaczmarek
The Martin Company
6425 Christie Avenue
Suite 406
Emeryville, CA 94608

Re: Worker health and safety services at Nielsen and Marketplace Sites, Emeryville, CA.

Dear Mr. Kaczmarek:

J.M. Cohen, Inc. is pleased to submit the following proposal for the provision of worker health and safety services during remediation and construction at Nielsen and Marketplace sites, Emeryville, CA. The proposed services are designed to mitigate health and safety risk to workers on the subject site.

SCOPE OF WORK

Based on our review of the remediation and construction plans submitted to the Alameda County Hazardous Materials Unit by Earth Metrics Incorporated, J.M. Cohen, Inc. will do the following work:

1. Review the Worker Safety and Hygiene Plan (hereinafter referred to as "Plan") submitted to Alameda County by Earth Metrics Incorporated. Make necessary changes and additions to adequately protect remediation and construction personnel.

The Plan will address Medical Information, Hygiene and Safety, Education and Training, On-Site Monitoring, Contamination Reduction, Contingency Planning and Recordkeeping.

On-site monitoring will include evaluation of potential exposure hazards from fuels and related organic vapors, representative vapors and odors from asphaltic deposits on subject property and additional potentially hazardous compounds determined to be present at the site.

All personnel involved in excavation of contaminated soil will be trained in health hazard recognition, use of personal protective equipment, safe work practices and proper hygiene. Employees and contractors will be instructed in the use, care and fitting of personal protective equipment and of the necessity for use of the equipment.

J.M. Cohen, Inc. will implement all aspects of the final Plan.

2. Provide on site monitoring at the start of construction, and thereafter, at the project industrial hygienist's discretion, to ensure that proper hygiene and safety measures are being implemented. The industrial hygienist will review the work and recommendations of a designated environmental monitor.

The industrial hygienist will monitor personnel for exposure to BTEX and additional organic vapors to determine time-weighted average (8-hr) and peak exposures during digging, soil handling and other activities where there is potential for excessive exposures. In the event that breathing zone or ambient levels of the monitored substances exceed levels specified in the Plan, the industrial hygienist will take appropriate action, including work stoppage and withdrawal of personnel from the area. The industrial hygienist will determine when work may resume.

In addition, J.M. Cohen, Inc. is prepared to provide an environmental monitor on the site. The environmental monitor will: (1) inspect all subgrade excavation and trenching, (2) oversee stockpiling of asphaltic deposits, (3) perform air sampling of BTEX as needed at the property line downwind of construction, (4) perform contingency water sampling of interim groundwater pumped from pits, trenches and other excavations.

The environmental monitor will report to the project industrial hygienist and will report weekly to the designated representative at the Alameda County Hazardous Materials Unit. As specified by the Alameda County Hazardous Materials Unit, the environmental monitor will be on site approximately 20 hours per week for the duration of underground construction.

SCHEDULE

J.M. Cohen, Inc. has been advised by Earth Metrics that 5 to 6 weeks will be required to complete underground construction as described in its proposed remediation plan submitted to the Alameda County Hazardous Materials Unit. Based on this information and the schedule provided in the plan, J.M. Cohen, proposes the following:

Industrial Hygienist

Weeks 1 & 2 --

Preparatory (4 working days)

- Review and amend Plan.
- Review site reports and plans.
- Prepare contingency program.
- Inform and prepare participants.

On-site activities

- Conduct safety and hygiene training.
- Conduct background monitoring as needed.
- Review activities of environmental monitor.

Weeks 3 - 5(6) --
Provide on-site inspections.
Conduct personal monitoring.
Provide additional training as required.
Perform additional testing as needed.
Review activities of environmental monitor.

Environmental Monitor

Weeks 1 - 5(6) --
Inspect excavation and trenching.
Inspect site for environmental hazards.
Oversee stockpiling of asphaltic deposits.
Perform air sampling for BTEX.
Perform contingency water sampling.

PROJECT COSTS

J.M. Cohen, Inc. provides services on a time and materials basis. A fee schedule is attached. Based on the scope of work, projected schedule and our experience at the Bay Center site, J.M. Cohen, Inc. estimates the following labor costs:

Industrial Hygienist -- $8,750
Environmental Monitor --$7,800

Due to the nature of environmental and occupational health work, contingencies may arise which will increase labor, analytical and administrative charges. An accounting of activities will be provided with each invoice.

The extent and cost of analytical work will be contingent upon the findings of the industrial hygienist and environmental monitor.

TERMS

Terms and conditions for the provision of services and payment are described in the service agreement accompanying this proposal. J.M. Cohen, Inc. is prepared to begin work upon receipt of the signed and dated agreement.

We appreciate your interest in the services of J.M. Cohen, Inc. and look forward to supporting you on this project. Do not hesitate to call if you have questions.

Sincerely,

J.M. Cohen, Inc.

Susan Spencer

TABLE C-1. DIESEL FUEL ANALYSIS RESULTS IN SOIL AND GROUNDWATER AT THE FORMER NIELSEN FREIGHT LINES SITE IN EMERYVILLE, CALIFORNIA (PPM)

SAMPLE I.D. NO.	DESCRIPTION (SEE FIGURE 1)	DEPTH (a) (FEET)	PETROLEUM HYDROCARBONS (b) DIESEL IN SOIL	PETROLEUM HYDROCARBONS (b) DIESEL IN WATER
DM1-1	Diesel Manifold	2	2.2	NA
DM1-2	Diesel Manifold	2	230	NA
DP1-1	Diesel Tank Pit Bottom Soil	5 to 6	96	7.7
DP1-2	Diesel Tank Pit Bottom Soil	5 to 6	16	(c)
Stock-pile A	On Site Stockpile	Composite	310	NA
Stock-pile B	On Site Stockpile	Composite	330	NA
Stock-pile C	On Site Stockpile	Composite	920	NA
Stock-pile E	On Site Stockpile	Composite	Detected (less than 18 ppm)	NA
Stock-pile F	On Site Stockpile	Composite	<1.0	NA

EPA Methods 3510/8015 Modified Diesel.
(a) Relative to existing grade.
(b) All samples were collected and analyzed in April, 1988.
(c) One water sample was analyzed from the diesel pit.

NA: Not Applicable.

Source: Earth Metrics Incorporated, 1988.

TABLE C-2. GASOLINE FUEL ANALYSIS RESULTS IN SOIL AND GROUNDWATER AT THE FORMER NIELSEN FREIGHT LINES SITE IN EMERYVILLE, CALIFORNIA (PPM)

SAMPLE I.D. NO.	DESCRIPTION (SEE FIGURE 1)	DEPTH (a) (FEET)	GASOLINE IN SOIL (b)
GM1-3	Gasoline Manifold	2	5.3
GM1-4	Gasoline Manifold	2	4.7
GM1-6	Gasoline Manifold	2	17
GM1-10	Gasoline Manifold	1	2.9
GMC	Gasoline Manifold	Composite (c) 5	9500
Stockpile C	On Site Stockpile	Composite	160
Stockpile D	On Site Stockpile	Composite	8
Stockpile F	On Site Stockpile	Composite	4.5
	Native Soil Under Stockpile F	Composite (6 inches)	<2.2
P-1	Backhoe Test Pit	5 1/2	<0.1
P-7	Backhoe Test Pit	6	<0.1

EPA Method 8015 Gasoline
(a) Relative to existing grade.
(b) All samples were collected and analyzed in April 1988.
(c) Composite of samples from GM1-2, GM1-8, GM1-12, GM1-13, P-3 and P-4.

Source: Earth Metrics Incorporated, 1988

TABLE C-3. POLYCHLORINATED BIPHENYLS IN SOIL AND GROUNDWATER SAMPLES FROM MARKETPLACE TOWER CONSTRUCTION SITE (PPM)

SAMPLE I.D. NO. (SEE FIGURE 1)	DESCRIPTION	CONCENTRATION (PPM)
S-1	Soil sample in excavation area (Marketplace Tower)	ND (<0.1)
W-1A	Groundwater sample in excavation area (Marketplace Tower)	ND (<0.1)

Modified EPA SW-846 Method 8080
ND - Not Detected

Source: Earth Metrics Incorporated, 1988.

TABLE C-4. TOTAL PETROLEUM HYDROCARBONS IN GROUNDWATER SAMPLE FROM MARKETPLACE TOWER CONSTRUCTION SITE (PPM)

SAMPLE I.D. NO. (SEE FIGURE 1)	DESCRIPTION	CONCENTRATIONS (PPM)
W-1C	Groundwater sampled from excavation area at proposed eight-story tower site	Gasoline: ND <1 Kerosene: ND <1 Diesel: ND <1

Modified EPA SW-846 Method 8015
ND = Not Detected

Source: Earth Metrics Incorporated, 1988.

TABLE C-5. PURGEABLE HALOCARBONS IN GROUNDWATER SAMPLE (I.D. NO. W-1B) FROM MARKETPLACE TOWER CONSTRUCTION SITE (PPB)

COMPOUND	DETECTION LIMIT	CONCENTRATION (PPB)
Chloromethane	5	ND < 5
Bromomethane	5	ND < 5
Vinyl chloride	10	ND <10
Dichlorodifluoromethane	5	ND < 5
Chloroethane	5	ND < 5
Methylene chloride	40	ND <40
Trichlorofluoromethane	5	ND < 5
1,1-Dichloroethene	2	ND < 2
1,1-Dichloroethane	5	ND < 5
trans-1, 2-Dichloroethene	5	ND < 5
Chloroform	5	ND < 5
1,2-Dichloroethane	5	ND < 5
1,1,1-Trichloroethane	5	ND < 5
Carbon tetrachloride	5	ND < 5
Bromodichloromethane	5	ND < 5
1,2-Dichloropropane	5	ND < 5
cis-1,3-Dichloropropene	5	ND < 5
Trichloroethylene	5	ND < 5
1,1,2-Trichloroethane	5	ND < 5
trans-1,3-Dichloropropene	5	ND < 5
Dibromochloromethane	5	ND < 5
2-Chloroethylvinyl ether	10	ND <10
Bromoform	5	ND < 5
Tetrachloroethene	5	ND < 5
1,1,2,2-Tetrachloroethane	5	ND < 5
Chlorobenzene	5	ND < 5
1,3-Dichlorobenzene	5	ND < 5
1,2-Dichlorobenzene	5	ND < 5
1,4-Dichlorobenzene	5	ND < 5

MDL = Method Detection Limit
ND = Not Detected
Note: Sample foamed. Diluted factor of 10 for analysis.
EPA Method 601

Source: Earth Metrics Incorporated, 1988.