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

ENVIRONMENTAL HEALTH SERVICES
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
(510) 337-9335 (FAX)

November 10, 1998

Reissued, because Company name was corrected from Nov 2 '98 copy.

Mr. Steve Pieters
ESA Management, Inc.
58 Mitchell Boulevard
San Rafael, California 94903

Re: Development of the Northwest Area (Parcel C), Marina Village Parkway, Alameda, CA 94501
STID: 3843

Dear Mr. Pieters,

This office has completed our review of Geomatrix's November 3, 1998 Management Plan for Extended Stay America's (ESA) planned development of the above property. The plan is consistent with the conditions of the County's February 14, 1997 Remedial Action Completion Certification letter, in that it complies with the requirements of Geomatrix's September 1996 Site Management Plan for the property. Therefore, this office finds the November 3, 1998 Management Plan acceptable, with the understanding that ESA will strictly adhere to all the proposals and recommendations outlined in this plan.

As outlined in the Management Plan, this office shall be provided with a set of final plans for construction, prior to initiating the work. If this office finds modifications in the final plans that are not consistent with the Site Management Plan, further modifications will be required. After construction is completed, ESA shall provide this office with a report documenting details of the work along with construction as-builts, and file a copy of the same with the property Deed at the City. The Remedial Action Completion Certification granted to the property on February 14, 1997 will remain effective for the site as long as the site continues to comply with all the requirements outlined in the September 1996 Site Management Plan.

If you have any questions or comments, please contact me at (510)567-6763.

Sincerely,

Juliet Shin
Hazardous Materials Specialist

Cc: Elizabeth Nixon
Geomatrix Consultants
100 Pine Street, 10th Flr
San Francisco, CA 94111

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

ENVIRONMENTAL HEALTH SERVICES
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
(510) 337-9335 (FAX)

November 3, 1998

Mr. Steve Pieters
Extended Stay America
58 Mitchell Boulevard
San Rafael, California 94903

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STID: 3843

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Sincerely,

Juliet Shin
Hazardous Materials Specialist

Cc: Elizabeth Nixon, Geomatrix Consultants
100 Pine Street, 10th Flr
San Francisco, CA 94111

Alameda County Environmental Health

1131 Harbor Bay Pkwy., #250
Alameda CA 94502-6577
Telephone (510) 567-6700 FAX (510) 337-9335

FACSIMILE COVER SHEET

TO: Elizabeth Nixon (415) 434-1365

FROM: Juliet Shin

DATE: 11/3/98

Total number of pages including cover sheet 2

-NOTES- Here is the approved letter. A copy for you is also in the mail. Thx. -Juliet Shin

faxdoc.doc/n.arreguin/5-11-98

Alameda County Environmental Health

1131 Harbor Bay Pkwy., #250
Alameda CA 94502-6577
Telephone (510) 567-6700 FAX (510) 337-9335

FACSIMILE COVER SHEET

TO: Steven Pieters – 415-479-0898

FROM: Juliet Shin

DATE: 11/03/98

Total number of pages including cover sheet 2

-NOTES- Per our conversations, here is a faxed copy of approval letter. The original is in the mail. Let me know if you have any questions.
– Juliet Shin

TRANSMIT REPORT

1998,11-03 19:42
510 337 9335
ALAMEDA CO EHS HAZ-OPS

COM No.	REMOTE STATION	START TIME	DURATION	PAGES	RESULT	USER ID	REMARKS
517	415 479 0898	11-03 19:42	00'42	02/02	OK		

7499402046

Alameda County Environmental Health

1131 Harbor Bay Pkwy., #250
Alameda CA 94502-6577
Telephone (510) 567-6700 FAX (510) 337-9335

FACSIMILE COVER SHEET

TO: Steven Pieters – 415-479-0898

FROM: Juliet Shin

DATE: 11/03/98

Total number of pages including cover sheet 2

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TRANSMIT REPORT

1998.11-03 19:41
510 337 9335
ALAMEDA CO EHS HAZ-OPS

COM No.	REMOTE STATION	START TIME	DURATION	PAGES	RESULT	USER ID	REMARKS
516	415 434 1365	11-03 19:40	00'42	02/02	OK		

7499402046

Alameda County Environmental Health

1131 Harbor Bay Pkwy., #250
Alameda CA 94502-6577
Telephone (510) 567-6700 FAX (510) 337-9335

FACSIMILE COVER SHEET

TO: Elizabeth Nixon (415) 434-1365

FROM: Juliet Shin

DATE: 11/3/98

Total number of pages including cover sheet 2

-NOTES- Here is the approved letter. A copy for you is also in the mail. Thx. -Juliet Shin

100 Pine Street, 10th Floor
San Francisco, CA 94111
(415) 434-9400 • FAX (415) 434-1365

GEOMATRIX

October 27, 1998
Project 5017

Ms. Juliet Shin
Senior Hazardous Materials Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

Subject: Oversight Fees for Northwest Area, Marina Village Parkway
Former SLIC Case Number 3843
Alameda, California

Dear Juliet:

As discussed with you over the telephone, Extended Stay America, Inc. (ESA) is planning to purchase the subject site from Alameda Real Estate Investment (AREI) and plans to develop the site for commercial use. Per the Site Management Plan approved for the property by Alameda County Health Care Services Agency (ACHCSA) in 1997, ESA is developing specific procedures to manage environmental conditions at the property during construction activities. ESA wishes to obtain concurrence from ACHCSA regarding the procedures, and wants to address any potential concerns the ACHCSA may have regarding the proposed development.

Therefore, ESA has asked Geomatrix to prepare a report outlining guidelines for environmental health and safety during construction, and recommending soil and surface water management procedures specific to the proposed development. We will submit this report to you for review, and for discussion during our meeting on November 2, 1998 between ACHSCA, Geomatrix, and ESA.

We have enclosed a check for $1000 from ESA to cover your oversight fees, as you indicated during our telephone conversation. The Project Manager from ESA will be Mr. Steve Pieters, and his phone number is 408/229-9489.

Please call me if you have any questions or require additional information.

Sincerely,

GEOMATRIX CONSULTANTS, INC.

Elizabeth Nixon, P.E.
Senior Engineer

cc: Mr. Steve Pieters, Extended Stay America

DATE 10/26/1998 CHECK NUMBER E00017103

INVOICE NUMBER	INVOICE DATE	VOUCHER NUMBER	VOUCHER DUE DATE	GROSS AMOUNT	DISCOUNT	NET AMOUNT
10/22/98-8621	10/22/1998	V0220411	10/22/1998	$ 1,000.00		$ 1,000.00

PRINT BATCH NUMBER	VENDOR CODE	PAY TO NAME	GROSS TOTAL	DISCOUNT TOTAL	NET TOTAL
1701	achcsaalame	ACHCSA/Alameda County Health S			$ 1,000.00

EXTENDED STAYAMERICA

ESA Management, Inc.
450 East Las Olas Boulevard, Suite 1100
Fort Lauderdale, FL 33301

NationsBank, N.A.
Asheville, North Carolina

DATE 10/26/1998 CHECK NUMBER E00017103

PAY One thousand and no/100 **

TO THE ORDER OF

ACHCSA/Alameda County Health Services
c/o Geomatrix
Elizabeth Nixon
100 Pine St., 10th Floor
San Francisco, CA
94111

AMOUNT $ 1,000.00

Gregory R. Moxley

⑈00017103⑈ ⑆053107989⑆ 480095918⑈

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

ENVIRONMENTAL HEALTH SERVICES
1131 Harbor Bay Parkway
Alameda, CA 94502-6577
(510) 567-6777

October 15, 1997

ATTN: Mr Rahn Verhaeghe

Alameda Real Estate Inves
1150 Marina Village Pkwy#100
Alameda CA 94501

RE: Project # 361B - Type A
at 1150 Marina Village Pkwy in Alameda 94501

Dear Property Owner/Designee:

Our records indicate the deposit/refund account for the above project has fallen below the minimum deposit amount. To replenish the account, please submit an additional deposit of $2,500.00, payable to Alameda County, Environmental Health Services.

We must receive this deposit so that future regulatory oversight on the subject site can procede in a timely fashion. At the completion of this project, any unused monies will be refunded to you or your designee.

The deposit refund mechanism is authorized in Section 6.92.040L of the Alameda County Ordinance Code. Work on this project will be debited at the Ordinance specified rate, currently $94 per hour.

Please be sure to write the following on the check to identify your account:
- project #,
- type of project and
- site address (see RE: line above).

If you have any questions, please contact Madhulla Logan at (510) 567-6764.

Sincerely,

Madhulla Logan

Madhulla Logan, HMS
Environmental Protection

c: files/inspector

ALAMEDA COUNTY ENVIRONMENTAL HEALTH SERVICES

ENVIRONMENTAL PROTECTION DIVISION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
Telephone (510) 567-6700 Fax (510) 337-9335

FAX COVER SHEET

DATE: February 4, 1997

TO: Elizabeth Nixon

FAX # (415) 434-1365

Total number of pages including cover sheet 5

FROM: Juliet Shin

~~FAX~~

NOTE:

PLEASE RESPOND BY FAX ONLY.

Elizabeth,

Per my message to you, attached is a copy of the Draft Closure letter and a copy of Sum Arigala's comments on the case closure & my revisions.

(SMILE) HAVE A NICE DAY
DO SOMETHING FOR OUR ENVIRONMENT

JDSB/0396

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

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION (LOP)
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

REMEDIAL ACTION COMPLETION CERTIFICATION

February 4, 1997

DRAFT

Mr. Rahn Verhaeghe
Alameda Real Estate Investments
1150 Marina Village Pkwy., Ste 100
Alameda, CA 94501

Re: Northwest Area, located at 1150 Marina Village, Alameda, CA 94501
STID: [SLIC 3843]

Dear Mr. Verhaeghe,

This letter confirms the completion of site investigation and remedial action for the above site. Enclosed is the Case Closure Summary for the referenced site for your records.

Based on information in the above-referenced file and with the provision that the information provided to this agency was accurate and representative of site conditions, there appears to be no current threat to human health or the environment, and no further investigations will be required at this time. However, due to the remaining soil and groundwater contaminants at the site, this office has requested that the site follow a Site Management Plan, which is outlined in the attached Case Closure Summary.

Please be aware that this closure does not free present and future landowners or operators from cleanup responsibilities in the event that new information indicates a pollutant problem on the site or originating from the site.

If you have any questions or comments, please contact our office at (510) 567-6700.

Sincerely,

Juliet Shin
Senior Hazardous Materials Specialist

Attachment

cc: Elizabeth Nixon, Geomatrix Consultants, 100 Pine St., 10th Flr., S.F., CA 94111
Acting Chief

100 Pine Street, 10th Floor
San Francisco, CA 94111
(415) 434-9400 • FAX (415) 434-1365

GEOMATRIX

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 3

To Ms. Juliet Shin	From Elizabeth Nixon
Co. ACHCSA	Co. Geomatrix
Dept.	Phone #
Fax # 510-337-9335	Fax #

19 November 1996
Project 1736.14

Ms. Juliet Shin
Alameda County Health Care Services Agency
Division of Hazardous Materials
Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502

Subject: Health Risk Evaluation and Site Management Plan for Northwest Area
Marina Village
Alameda, California

Dear Ms. Shin:

This letter is to fulfill requests that you and your colleague Ms. Madhulla Logan have made based on your review of the Health Risk Evaluation and Site Management Plan we submitted to you on the subject site on 24 September 1996. We have organized this letter according to the four requests.

1. *It was requested that we apply a calculation performed in a 1992 risk assessment prepared by Industrial Compliance for the diesel-containing stockpile to diesel concentrations found in subsurface materials in the Northwest Area.*

Our September 1996 Health Risk Evaluation for the Northwest Area evaluated the potential health risks associated with the presence of middle- and high-boiling petroleum hydrocarbons remaining in stockpiled and subsurface soil, respectively. This evaluation was qualitative in nature, relying on the results of other risk evaluations conducted within the Marina Village development (high-boiling petroleum hydrocarbons in shallow soil at 1101 Marina Village Parkway) or in the published literature (middle-boiling petroleum hydrocarbons). Based on this qualitative evaluation, it was concluded that the residual middle- and high-boiling petroleum hydrocarbons in soil should not pose a significant human health risk assuming future commercial development of the site.

Although not used in the Health Risk Evaluation, a human health risk assessment of the middle-boiling petroleum hydrocarbons (i.e., diesel fuel) in the stockpiled soil was completed by Industrial Compliance in 1992 prior to the soil being relocated to the Northwest Area in 1993. As part of this assessment, Industrial Compliance evaluated potential noncarcinogenic health effects associated with dermal contact with total petroleum hydrocarbons (as diesel fuel; TPHd) in the soil. This evaluation was based on a comparison of the estimated exposure (in

GEOMATRIX

milligrams TPHd per kilogram body weight) to exposure levels tested in an animal study using pure diesel fuel. Industrial Compliance concluded that an estimated exposure assuming a TPHd concentration of approximately 700 mg/kg is approximately 160,000 times lower than the lowest exposure level included in the animal study. As shown in Table 1 of the Health Risk Evaluation, the maximum detected concentration of TPHd in subsurface soil was 14,000 mg/kg. Using Industrial Compliance's assumptions, the corresponding exposure would be approximately 8000 times lower than the lowest exposure level included in the animal study. Therefore, we would also conclude that exposure to the residual middle-boiling hydrocarbons in soil at the site should not result in noncarcinogenic health effects that may be associated with dermal exposure to pure diesel fuel.

2. *It was requested that plans for final disposition of the stockpiled soil be made available.*

Plans for site redevelopment are currently conceptual in nature. Therefore, final site grades and cut/fill balance calculations have not been completed. However, the conceptual plan includes demolishing an existing concrete slab that is present in the center of the Northwest Area. Figure 3 in the 24 September 1996 report shows the location and size of this concrete slab. The slab is about 3 feet thick, and there is a void space beneath the slab that is as great as 5 feet thick. Therefore, the volume of available space that will need to be filled once the slab is removed is on the order of 6,000 or more cubic yards, depending on final site grades. It is the intention of Alameda Real Estates Investment (AREI) to use this space to relocate the stockpiled material. If there is left over material after this space has been filled, then remaining material would be used beneath parking lots. AREI estimates that the commercial development that is envisioned will require on the order of 38,000 square feet of parking lot for a 60,000 square-foot building, and that final grades can be adjusted to accommodate placement of fill materials. More detailed engineered plans for site grading would not be developed until project planning is much further along.

3. *It was requested that current zoning status be confirmed.*

AREI was contacted regarding current zoning status. The overall zoning of the entire Marina Village development is mixed use. There is a Master Plan that the City of Alameda has accepted that identifies more specific uses for parcels of property within the development. To make changes to the Master Plan, a development plan amendment, as well as Master Plan amendment, must be approved by the City of Alameda. The Master Plan currently on file with the City of Alameda contains plans for the Northwest Area to be a parking lot to service an office building proposed for an adjacent parcel. AREI intends on submitting an amendment to the City of Alameda to build a 60,000 square-foot office building, with associated parking lots, on the Northwest Area.

GEOMATRIX

4. *It was requested that a minimum amount of clean fill material be placed in any landscaped areas as a precautionary measure to prevent incidental contact of landscape workers with petroleum-containing materials during routine maintenance after redevelopment.*

We discussed with AREI the typical scenario of routine maintenance on landscaped areas to assess what would be a reasonable fill cover. AREI indicated that all major planting such as trees or shrubs, installation of the irrigation system, and grading would occur at the time of site development. Potential contact with petroleum-containing soil would be handled as part of the overall health and safety plan implemented during construction activities. Post-development care consists nearly exclusively of surface weeding, irrigation system repairs, lawn mowing, edge trimming and pruning. All of these activities do not involve disturbing site soil; the most intrusive task is occasional repair of irrigation piping, that typically is buried no deeper than about 6 inches below the ground/lawn surface. Repairs typically consist of digging up a very small quantity of surface soil to access the piping. Given this typical scenario of landscape maintenance, it seems reasonable that a covering of 1/2-foot of clean soil over petroleum-containing soil in areas that are landscaped would be a sufficient barrier to incidental contact with landscape workers. It should be noted that the only situation where surface soil could contain petroleum hydrocarbons is if stockpiled soil was redistributed at the site surface and was not covered by parking lots or buildings. Otherwise, the in-place soil that contains petroleum hydrocarbons already is at least several feet below the ground surface.

We hope that these responses to your requests have been sufficient. Please let us know if there is anything else you need to process your case closure summary letter.

Sincerely,

GEOMATRIX CONSULTANTS, INC.

Elizabeth Nixon, P.E.
Senior Engineer

EN/nht
1736\AREIQREQ.LET

cc: Ms. Madhulla Logan, ACHCSA
Mr. Rahn Verhaeghe, AREI

100 Pine Street, 10th Floor
San Francisco, CA 94111
(415) 434-9400 • FAX (415) 434-1365

GEOMATRIX

19 November 1996
Project 1736.14

12/17/96
Acceptable, except w/ condition that seals placed in planter boxes in parking lot w/ small plants, have at least 1 foot of clean cover soil on them. (No trees allowed in this area. Put in closure)

Ms. Juliet Shin
Alameda County Health Care Services Agency
Division of Hazardous Materials
Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502

Subject: Health Risk Evaluation and Site Management Plan for Northwest Area
Marina Village
Alameda, California

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We hope that these responses to your requests have been sufficient. Please let us know if there is anything else you need to process your case closure summary letter.

Sincerely,

GEOMATRIX CONSULTANTS, INC.

Elizabeth Nixon, P.E.
Senior Engineer

EN/nht
1736\AREIQREQ.LET

cc: Ms. Madhulla Logan, ACHCSA
Mr. Rahn Verhaeghe, AREI

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

RAFAT A. SHAHID, Assistant Agency Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Division
80 Swan Way, Rm. 200
Oakland, CA 94621
(510) 271-4320

June 22, 1995

Mr. Rahn Verhaeghe
Alameda Real Estate Investments
1150 Marina Village Parkway, Ste. 100
Alameda, CA 94501

STID 3843

Re: Work plan for groundwater sampling at Marina Village Parkway, in the Northwest Area (Lots 1 and 5), Alameda

Dear Mr. Verhaeghe,

This office has reviewed the work plan for the above site. This work plan is acceptable to this office on the condition that Well LF-9 be made accessible prior to implementing the work at the site.

Field work shall commence within 60 days of the date of this letter. A report documenting the results of this investigation must be submitted to this office within 45 days after completing field activities.

If you have any questions or comments, please contact me at (510) 567-6763.

Sincerely,

Juliet Shin
Senior Hazardous Materials Specialist

cc: Elizabeth Nixon
Geomatrix
100 Pine Street, 10th Flr
San Francisco, CA 94111

File

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

RAFAT A. SHAHID, Assistant Agency Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Division
80 Swan Way, Rm. 200
Oakland, CA 94621
(510) 271-4320

February 4, 1993

Elizabeth Nixon
Project Manager
Geomatrix Consultants, Inc.
100 Pine Street, 10th Floor
San Francisco, CA 94111

RE: MARINA VILLAGE DEVELOPMENT, PARCEL H, BUILDINGS 4 AND 5

Dear Ms. Nixon:

I am in receipt of your letter dated 12/27/93. I also have reviewed your 6/92 risk assessment report on the asphaltic fill material found at the above site. I am also satisfied with the extent of soil characterization that were performed to determine the lead contamination at this site. Based on the current available data, this site does not pose a threat to public health.

I have also reviewed your 1/18/93 report on long-term groundwater management plan for this site. I also understand that you are conducting further leachability studies, to evaluate the potential threat of the residual lead to the groundwater. Once these results are available, a revised groundwater management plan should be submitted for review and approval. In the mean time, I have no objection to the development of this site for its intended commercial use.

Please be aware that this does not free present or future landowners or operators from cleanup responsibilities in the event that new information indicates a pollutant problem on the site or originating from the site.

Should you have any questions, please call me at 510/271-4320.

Sincerely,

Ravi Arulanantham
Senior Hazardous Materials Specialist

c: Richard Hiett, RWQCB
Kevin Tinsley, ACDEH
Files
GEOMALA93

(510) 540-3324

100 Pine Street, 10th Floor
San Francisco, CA 94111
(415) 434-9400 • FAX (415) 434-1365

GEOMATRIX

27 January 1993
Project 1736.10

Ravi Arulanantham, Ph.D., CHMM
Alameda County Health Care Services Agency
Division of Hazardous Materials
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Subject: Request for Approval for Development
Marina Village Development
Parcel H, Buildings 4 and 5
Alameda, California

Dear Dr. Arulanantham:

On behalf of Alameda Real Estate Investment (AREI), of Alameda, California, Geomatrix Consultants, Inc. (Geomatrix), is requesting concurrence from the Alameda County Health Care Services Agency (ACHCSA) for AREI to proceed with development of the subject property for its intended commercial use. This request is based on data collected at the Buildings 4 and 5 site and presented in the January 1993 reported entitled "Phase I and Phase II, Evaluation of Fill Material, Proposed Building 4 and 5 - Parcel H, Marina Village Development, Alameda, California."

Based on meetings with ACHCSA in May and July of 1992, Geomatrix developed a sampling and analysis program for addressing human health issues regarding lead and high-boiling petroleum hydrocarbons in shallow fill soil. As part of this program, a Health Risk Assessment was performed by Industrial Compliance of Little Rock, Arkansas; the risk assessment concluded that the petroleum hydrocarbons in fill soil would not present a significant health risk to site tenants of the proposed commercial development. This Health Risk Assessment is included in Geomatrix's January 1993 report.

Discussions with you indicated that the ACHCSA does not consider total lead concentrations in soil below 180 milligrams/kilogram to be a health-risk consideration for unrestricted site use; this consideration is based on a 90 percent upper confidence limit on the arithmetic mean concentration. Data presented in our January 1993 report indicates that the fill soil at the subject site meets this criterion for lead.

The Toxicity Characteristic Leaching Procedure (TCLP) was performed on eight soil samples to assess the solubility characteristics of lead in the samples. Results indicated that the lead solubility was relatively low (less than 0.1 to 0.7 milligrams per liter).

We understand from our telephone conversation with you on 27 January 1993 that you are developing general health risk evaluation criteria for the Regional Water Quality Control Board (RWQCB). These recommendations include conducting simulated rainwater leaching tests using California Waste Extraction Test (WET) procedures to assess solubility characteristics under site-specific conditions, and comparing results to federal maximum contaminant levels (MCLs) to evaluate the need for further monitoring. Although we have conducted leachability tests in accordance with the TCLP, we plan to perform simulated rainwater WETs on soil samples containing the highest total lead concentrations for consistency with your new recommendations.

To address RWQCB site monitoring requirements, we have proposed a site management plan, which includes a groundwater monitoring plan for petroleum hydrocarbons, and notification mechanisms for handling soil, should soil be disturbed in the future. Depending on the results of further lead leachability tests, we can, if necessary, incorporate lead analysis into the proposed groundwater monitoring program for the site to address possible RWQCB monitoring requirements regarding lead.

Based on the above, we believe the developed site will not present a threat to public health, and that AREI can proceed with their commercial development plans without restrictions on the property, other than the proposed site management plan that addresses RWQCB requirements.

If you have any questions regarding this request, please contact either of the undersigned.

Sincerely,

GEOMATRIX CONSULTANTS, INC.

for: Elizabeth Nixon
Project Manager

Thomas A Delfino
for: Tom Graf, P.E.
Vice President

EAN/slr
CONTR\1736APRV.LTR

Attachment

cc: R. Verhaeghe, AREI
R. Hiett, RWQCB

100 Pine Street, 10th Floor
San Francisco, CA 94111
(415) 434-9400 • FAX (415) 434-1365

GEOMATRIX

Transmittal

Date 19 January 1993

To Ravi Arulanantham and Kevin Tinsley
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, CA 94621

Transmitted via
- ☐ Messenger
- ☐ U.S. Mail
- ☒ Overnight Mail
- ☐ Fax

Total Pages _____

Project Number 1736.10

Project Name Marina Village - Buildings 4 and 5

Item	Description
1	Evaluation of Fill Material - Proposed Buildings 4 and 5 - Parcel H

Remarks

From Elizabeth Nixon

cc: Rahn Verhaeghe, Alameda Real Estate Investments

100 Pine Street, 10th Floor
San Francisco, CA 94111
(415) 434-9400 • FAX (415) 434-1365

GEOMATRIX

Transmittal

Date	8 October 1992
To	Kevin Tinsley
	Alameda County Health Care
	Services Agency
Project Number	1736.12
Project Name	Marina Village

Transmitted via

- ☐ Messenger
- ☐ U.S. Mail
- ☐ Federal Express
- ☐ Fax

Total pages _____

Item	Description
1	Figure: Well Locations & Proposed Development, Parcel H
1	Report: 6 October 1988 Levine-Fricke
1	Report: 26 June 1989 Levine-Fricke
1	Report: 13 April 1990 Levine-Fricke

Remarks As requested. Please call if you have questions.

Signed Elizabeth A. Nixon

cc: Rahn Verhaeghe, AREI

Geomatrix Consultants, Inc.
Engineers, Geologists, and Environmental Scientists

100 Pine Street, 10th Floor
San Francisco, CA 94111
(415) 434-9400 • FAX (415) 434-1365

GEOMATRIX

29 September 1992
Project 1736.12

Mr. Lester Feldman
California Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, 5th Floor
Oakland, CA 94612

Subject: Transfer of Petroleum-Affected Soil On Site
Marina Village Development
Alameda, California

Dear Lester:

At the request of Kevin Tinsley of the Alameda County Health Care Services Agency, Department of Environmental Health, (ACDEH), we are writing to confirm agreements reached regarding the subject soil transfer during our initial meeting with you, Mr. Tinsley, Alameda Real Estate Investments, (AREI), and Geomatrix on 19 May 1992. During that meeting, we discussed transferring approximately 6,000+ cubic yards of heavy-diesel-affected soil from Parcel H to Parcel C, within the Marina Village Development. The soil is to be stockpiled for future use over soil affected by significantly higher concentrations of diesel and oil. It was our understanding from the meeting that the soil could be transferred to and stockpiled on parcel C without specific written permits from the RWQCB. Additionally, because the underlying soil is already affected by similar compounds, specific site surface treatment at Parcel C, such as a plastic membrane, would not be required for the soil transfer and stockpiling. For your information, we have attached our 4 September 1992 Work Plan describing soil relocation procedures and monitor control mechanisms.

Mr. Tinsley has indicated that he will need verbal approval from you before the soil transfer process can be initiated. Since the onset of rains could occur, we would appreciate your confirmation of the above with Mr. Tinsley at your earliest convenience.

If you have any questions regarding this issue, please call me or Elizabeth Nixon.

Sincerely,

GEOMATRIX CONSULTANTS, INC.

Tom Graf, P.E.
Vice President

TEG/slr
CONTR\1736-12.LTR

Attachment

cc: K. Tinsley, ACDEH
R. Verhaeghe, AREI

100 Pine Street, 10th Floor
San Francisco, CA 94111
(415) 434-9400 • FAX (415) 434-1365

GEOMATRIX

4 September 1992
Project 1736.12

Mr. Kevin Tinsley
Alameda County Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, California 94621

Subject: Stockpiled Soil Relocation Work Plan
Parcel H
Marina Village Development
Alameda, California

Dear Mr. Tinsley:

On behalf of Alameda Real Estate Investments (AREI), Geomatrix Consultants, Inc. (Geomatrix), has prepared for your review the subject work plan to relocate about 9,000 cubic yards of petroleum hydrocarbon-containing soil stockpiled at Parcel H within the Marina Village Development in Alameda, California (Figure 1). AREI plans to relocate the stockpiled soil to Parcel C, located at the northwest corner of Marina Village as shown on Figure 2, so that Parcel H can be prepared for construction and development by October of this year.

In a meeting with you and Mr. Lester Feldman of the Regional Water Quality Control Board (RWQCB) on 19 May 1992, Mr. Feldman verbally approved relocation of the stockpile to Parcel C provided that the stockpile be protected against soil erosion into the nearby Oakland Inner Harbor. The following plan describes present site conditions, describes procedures for preparing Parcel C and transporting the soil from Parcel H to Parcel C, presents our proposed design of a soil storage area at Parcel C, and recommends erosion control measures for the stockpile.

EXISTING SITE CONDITIONS

Parcel H

As described in our letter to you dated 13 May 1992 providing background information on soil conditions at Parcel H, about 5,000 cubic yards of soil containing petroleum hydrocarbons are presently stockpiled on Parcel H. The stockpile was generated in 1988 during removal of soil containing weathered petroleum hydrocarbons, mostly heavy diesel fuels, from a nearby site. Additionally, original fill soil at the parcel was found to contain asphalt-like petroleum hydrocarbons. The diesel-containing stockpile and some of the original fill material has been used to surcharge a portion of Parcel H in preparation for proposed development. To reach final grades of the proposed development, it is planned to remove the 5,000 cubic yards of diesel-containing soil and 4,000 cubic yards of asphalt-containing soil from the parcel and store it on Parcel C.

GEOMATRIX

Parcel C

Parcel C is a vacant lot at the northwest corner of the Marina Village Development adjacent to the Oakland Inner Harbor; Figure 2 shows the layout of Parcel C. Environmental investigations performed by Levine-Fricke, Inc., in 1988 and 1989 identified the presence of petroleum hydrocarbons in near-surface soil beneath Parcel C, as reported in their 1988 and 1989 reports, entitled "Investigation of Northwest Area, Marina Village, Alameda, California" and "Continued Soil and Groundwater Investigation of Parcel 5, Marina Village, Alameda, California," respectively. The reports were submitted to ACHCSA in 1988 and 1989. Because the near-surface soil contains significantly higher concentrations of petroleum hydrocarbons than the soil to be relocated from Parcel H, it is our understanding that the RWQCB will not require that the relocated soil be separated from the underlying soil by a physical barrier.

TRANSPORT AND SOIL STORAGE AREA CONSTRUCTION

AREI will retain O.C. Jones & Sons, a licensed earthwork contractor from Berkeley, California, to transport and stockpile the soil and perform site clearing and grading work. Geomatrix will provide oversight services to observe transport and placement activities.

Site Preparation

Surface vegetation will be stripped (except trees) and debris removed from the proposed storage pile area on Parcel C. The area will be lightly regraded to create a smooth, even surface before soil is placed.

Soil Transportation

The haul route between Parcels H and C will be along the backside of a parking lot adjacent to Parcel H and nearby railroad tracks, and along a 200-foot stretch of Marina Village Parkway, within Marina Village Development boundaries, as shown on Figures 1 and 2. The contractor will use 10-wheel end-dump trucks to transport the soil and an excavator and bulldozer to load and spread the soil. So that soil is not tracked onto the haul route, the contractor will sweep the loose dirt from all equipment, including tires, each time the equipment leaves either of the two sites during stockpile relocation activities. Dust control measures during loading and unloading activities will include spraying the soil with water, as needed.

SOIL STORAGE AREA DESIGN

Layout

The proposed layout of the soil storage area at Parcel C is shown on Figure 2. The soil storage area will parallel the Oakland Inner Harbor shoreline on one side as shown on Figure 2. Based on an estimated 9000 cubic yards of soil to be relocated, the height of the pile will be 3 to 5 feet. Side slopes of the soil pile will be 3:1 (three feet horizontal to one foot vertical). A "V"-shaped swale will be constructed at the base of the slopes along

the perimeter of the storage area to collect rain or surface water draining from the storage pile and route it to an existing storm drain near the southern corner of the storage area (Figure 2). Additionally, the top of the soil pile will be graded to a 1 percent slope away from the shoreline so that surface water runoff will flow into the swale along the southwest edge of the pile. A cross section of the proposed soil pile and drainage configuration is shown on Figure 3.

The toe of the soil pile will be at least 25 feet away from the top of the shoreline slope along the northeast perimeter. Along the southwest perimeter, the toe of the soil pile will be at least 15 feet from the parcel boundary to allow vehicle access.

Erosion Control Measures

Erosion of the soil pile will be controlled by several methods:

- grading the pile to direct surface-water runoff to an existing storm drain, as described above;
- compacting the side slopes to keep gullies from forming;
- hydroseeding the pile to create an erosion-resistant vegetative cover; and
- maintaining the integrity of the pile and erosion control mechanisms.

After the first rains of the season, the pile will be visually monitored and surface runoff will be observed to determine if sediment is being transported into the storm drain inlet. If sediment transport is observed, additional control measures, such as silt fencing, will be installed within the perimeter swale or along the pile sideslopes to resist further erosion. Visual monitoring of the erosion control mechanisms will be performed periodically thereafter.

If you have any questions regarding this plan, please call either of the undersigned at (415) 434-9400. We would appreciate your prompt review of this plan.

Sincerely,

GEOMATRIX CONSULTANTS, INC.

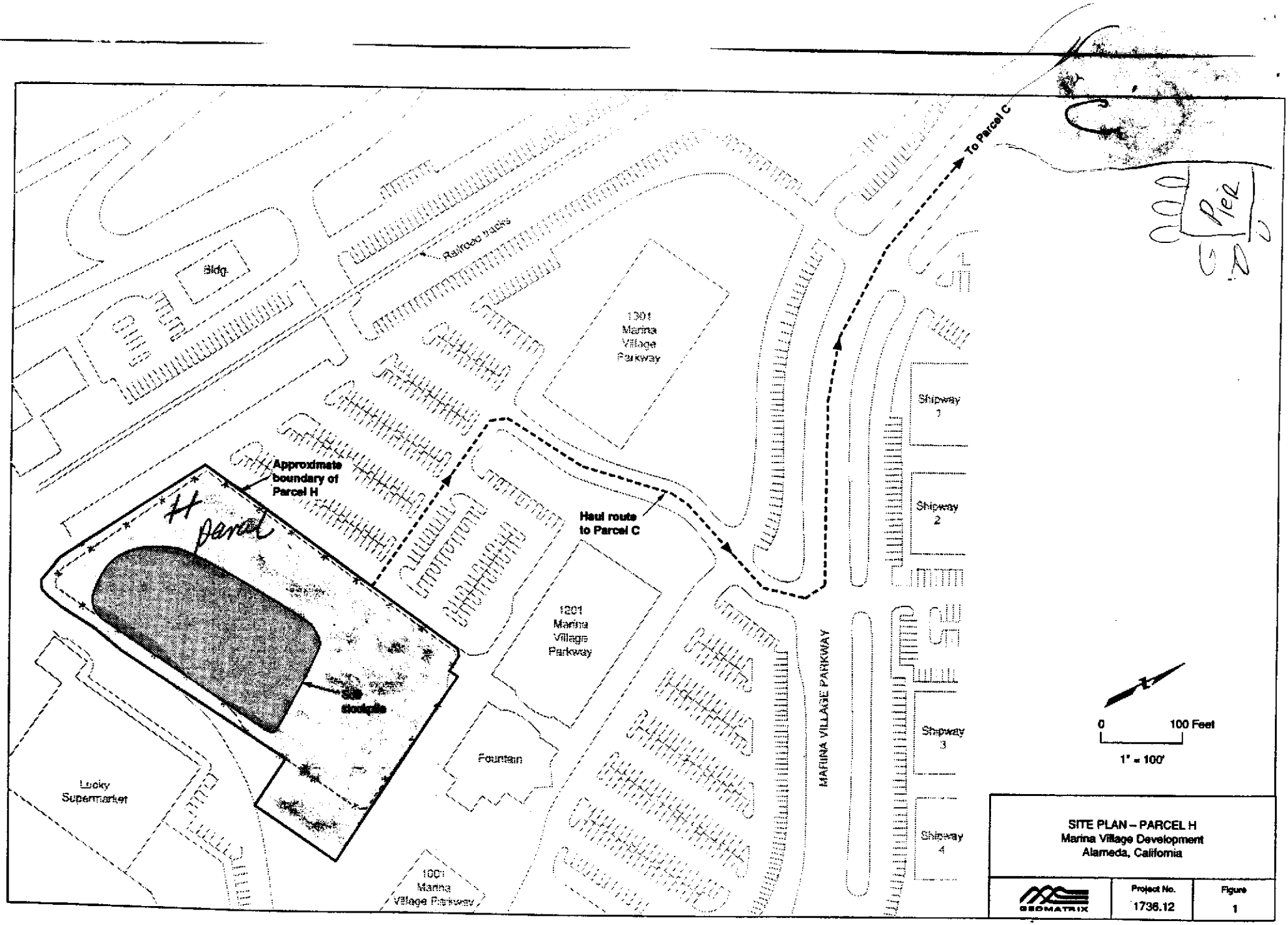
Steven H. Sanders, P.E.
Senior Staff Engineer

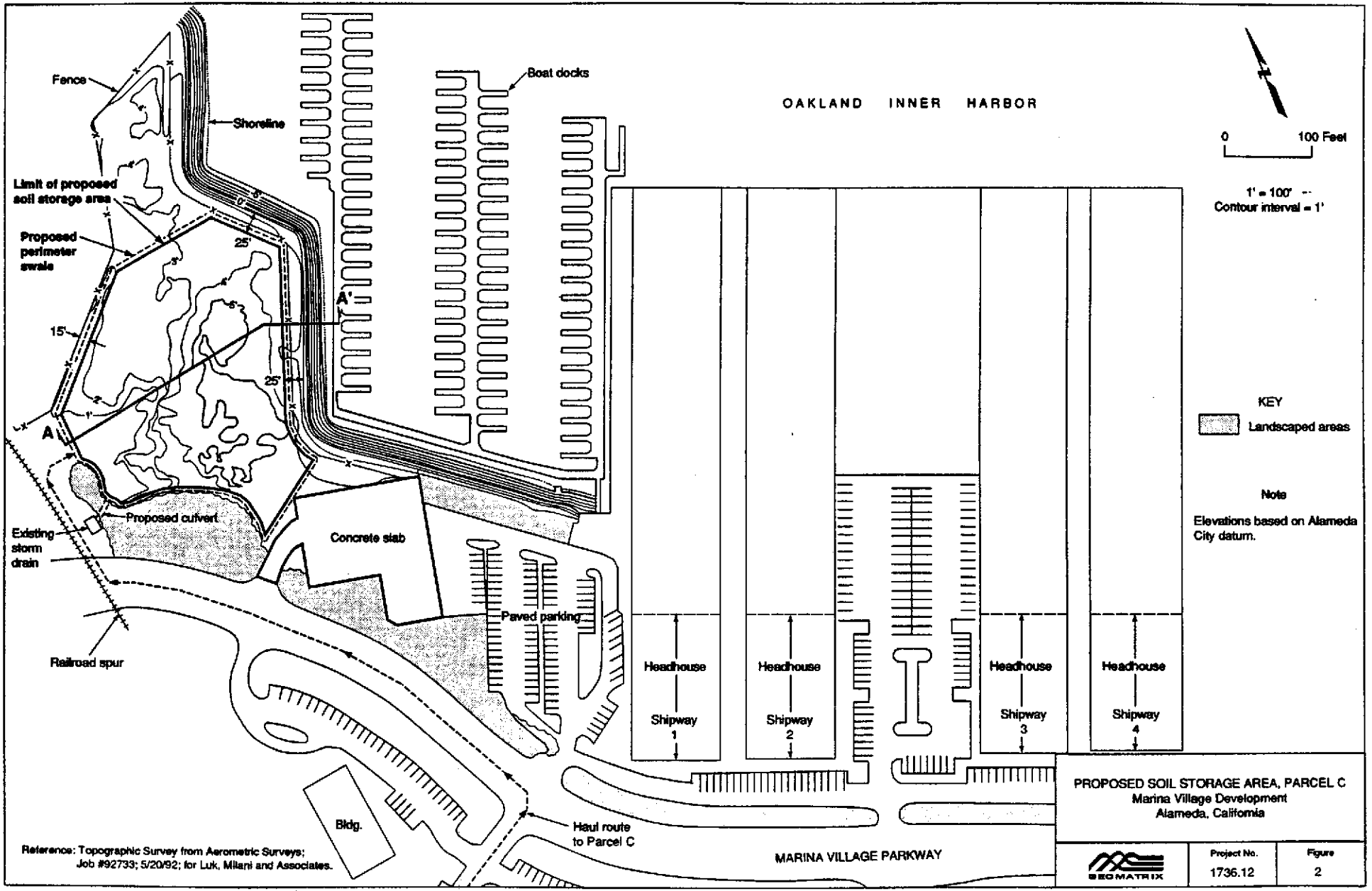
Elizabeth Nixon
Project Manager

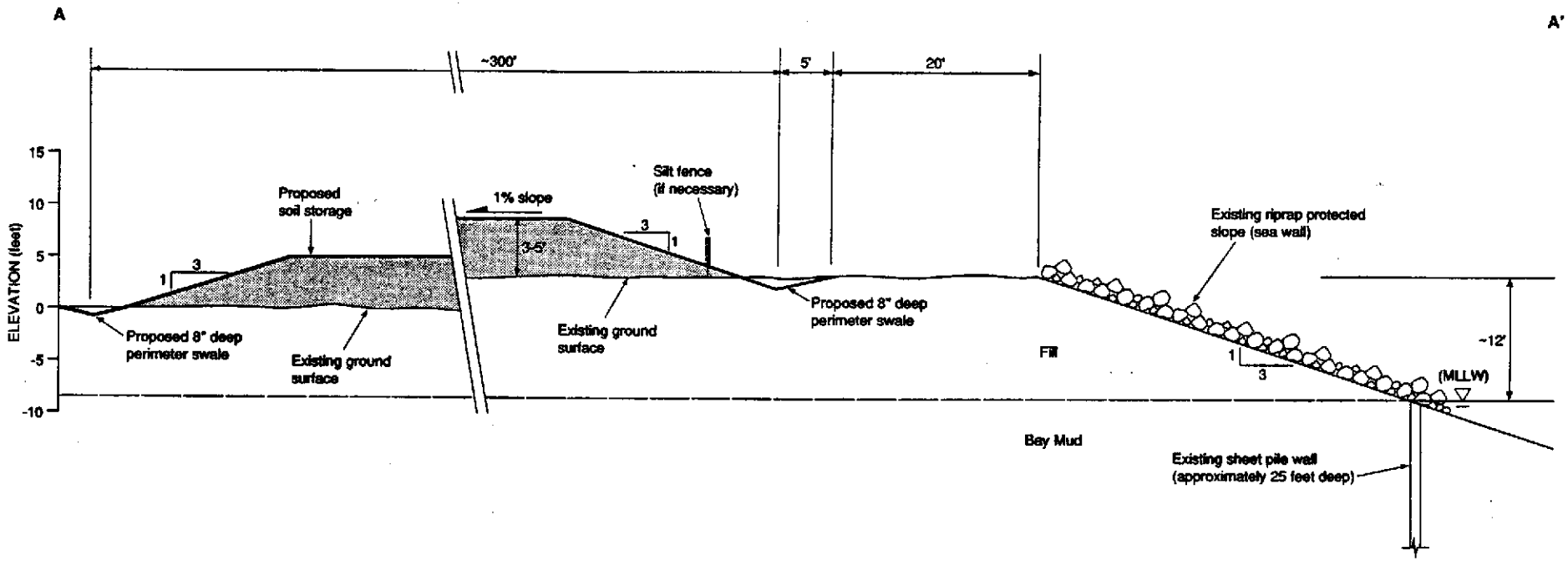
EAN/SHS/ab
CONTR\1736TINS.LTR

cc: Rahn Verhaeghe - AREI

Attachments: Figures 1, 2, and 3


Bldg.
Railroad tracks
1301 Marina Village Parkway
To Parcel C
Pier
Shipway 1
Shipway 2
Shipway 3
Shipway 4
Approximate boundary of Parcel H
H parcel
Haul route to Parcel C
1201 Marina Village Parkway
MARINA VILLAGE PARKWAY
Site stockpile
Fountain
Lucky Supermarket
1001 Marina Village Parkway
0
100 Feet
1" = 100'
SITE PLAN – PARCEL H
Marina Village Development
Alameda, California
GEOMATRIX
Project No.
1736.12
Figure
1


Fence
Shoreline
Boat docks
OAKLAND INNER HARBOR
0
100 Feet
1" = 100'
Contour interval = 1'
Limit of proposed soil storage area
Proposed perimeter swale
25'
15'
25'
A
A'
KEY
Landscaped areas
Note
Elevations based on Alameda City datum.
Proposed culvert
Existing storm drain
Concrete slab
Paved parking
Railroad spur
Headhouse
Shipway 1
Headhouse
Shipway 2
Headhouse
Shipway 3
Headhouse
Shipway 4
Bldg.
Haul route to Parcel C
MARINA VILLAGE PARKWAY
Reference: Topographic Survey from Aerometric Surveys; Job #92733; 5/20/92; for Luk, Milani and Associates.
PROPOSED SOIL STORAGE AREA, PARCEL C
Marina Village Development
Alameda, California
GEOMATRIX
Project No.
1736.12
Figure
2



Notes

1. Surface elevations and distances referenced from topographic survey map, dated 20 May 1992 by Aerometric Surveys, for Luk, Milani and Associates.
2. Elevations based on Alameda City datum.
3. Sheetpile location and sea wall slope configuration adapted from the Aerometric Surveys topographic map and original proposed construction drawings provided by AREI.
4. Fill and Bay Mud interface is presented for illustrative purposes only and was interpolated from 26 June 1989 Levine-Fricke, Inc. report "Continued Soil and Groundwater Investigation, Parcel 5, Marina Village, Alameda, California."

0 10 Feet

1" = 10'

SECTION A - A'
Marina Village Development
Alameda, California

GEOMATRIX	Project No. 1736.12	Figure 3

100 Pine Street, 10th Floor
San Francisco, CA 94111
(415) 434-9400 • FAX (415) 434-1365

GEOMATRIX

(I)

92 JUL 27 PM 12:56

Noted 8/3/92

27 July 1992
Project 1736.10

Mr. Don Parker
Alameda Real Estate Investments
1150 Marina Village Pkwy, Suite 100
Alameda, CA 94501

Subject: Summary of 15 July 1992 Meeting with Regulatory Staff
Proposed Buildings 4 and 5 Site
Marina Village Development
Alameda, California

Dear Don:

This letter serves to summarize the issues and conclusions discussed during our subject meeting with Dr. Ravi Arulanantham and Mr. Kevin Tinsley of the Alameda County Health Care Services Agency (ACHCSA). During the meeting, the basis for characterizing the lead content in fill soil was discussed. We also discussed relocating the diesel-containing stockpile at the Buildings 4 and 5 site to another parcel.

Total Lead in Fill Soil

We presented the results of total lead analyses that were performed on samples collected from the fill soil in response to Dr. Arulanantham's request that we asses the potential presence of residual metals in existing fill soil. We noted that results vary, depending on sample preparation technique. The following summarizes the results:

Sample Number	Lead Concentrations (mg/kg)		
	Laboratory Composite Sample	Discrete Sample Sieved through 9.5 μm Mesh Sieve	Discrete Sample Homogenized and Milled, Passed through 9.5 um Mesh Sieve
A & B	160		
A		250	110
B		230	18
C & D	210		
C		140	17
D		310	120
E & F	110		
E		78	--
F		60	--
G & H	47		
G		140	--
H		26	--

EPA Method 6010 for lead analysis specifies that the analysis be conducted on soil passing a 9.5 um sieve (i.e., silts and clay-size particles). We discussed the difficulty in obtaining representative metal concentrations for a soil matrix with variable grain sizes, and problems associated with laboratory sample preparation and analytical procedures specified in the EPA analytical methods. We expressed our concern that standard laboratory sample preparation techniques may bias results toward the high side because the fill soil at the site contains gravel, and standard preparation procedures include only fine-grained sediments. We suggested that the following sample collection and preparation methods be used to reduce the variability in a given sample and to represent soil conditions at the site:

1) Collect a relatively large sample in the field, on the order of a 1-gallon bucket.
2) Mix the sample in the field to homogenize as much as possible; then take a smaller subsample, such as in a 16-oz glass jar, to provide a reasonably-sized sample for the laboratory to handle.
3) Instruct the laboratory to mill the entire sample to a 9.5 um mesh grain size.
4) Analyze the sample for total lead.

Dr. Arulanantham and Mr. Tinsley agreed that the above procedure was a reasonable method for obtaining representative samples and reducing variability in results.

We then discussed methods for selecting the appropriate sample number and locations to adequately characterize the site. We proposed that a sampling and analysis plan be implemented after the site is graded, explaining that removing the surcharge and regrading the site in preparation for building construction will cause mixing of the fill soil. The purpose of the characterization is to establish soil conditions once the site has been developed, and the ACHCSA agreed that implementing a statistically random near-surface fill sampling program after regrading is completed was a reasonable approach. We mentioned that we had calculated a preliminary "n" value (a sample number sufficient for statistical significance) of 30 based on lead concentration data from the discrete, sieved samples (26 to 310 mg/kg) and a "regulatory threshold" value of 180 mg/kg. We suggested collecting 40 random samples, to be conservative, and initially analyzing 30 samples according to the homogenization and milling procedure discussed above; depending on results, the remaining 10 may or may not be analyzed. The ACHCSA agreed that 30 samples was a reasonable number, based on available data and the size of the property (two acres). ACHCSA also agreed that a 3-dimensional randomly selected sample location distribution would be appropriate and that the 5-foot depth of fill would be used for the vertical dimension.

Lead Leachability

We then discussed testing leachability of lead from the soil. Dr. Arulanantham said recently he had researched the applicability of the California Waste Extraction Test (WET) on field conditions, and had found that the WET may be too aggressive to realistically assess the leachability of lead in soil at sites such as Alameda. Dr. Arulanantham recommended that we instead use the federal Toxicity Characteristic Leaching Procedure (TCLP) to characterize lead leachability at the site. We agreed to analyze the eight samples that contained the highest concentration of total lead using the TCLP to characterize leachability. We would evaluate the data using a linear regression calculation. Dr. Arulanantham recommended that we analyze one or two samples with the highest total lead concentrations using the WET procedure, to address the Regional Water Quality

Control Board's (RWQCB) concerns about leachability into groundwater, recognizing that the test would represent "worst-case" conditions. We also agreed with ACHCSA that incorporating lead analysis into the planned groundwater monitoring program for the site would provide useful data to evaluate whether lead is leaching into groundwater.

At the end of the meeting, the ACHCSA requested they be notified when the soil sampling was scheduled, so they could be present to observe sample collection techniques. We told the ACHCSA we would prepare a detailed work plan describing the sampling and analysis plan for their review and would notify them of the sampling schedule.

It is our understanding that if the soil sampling program indicates a 95 percent upper confidence limit total lead concentration less than 180 parts per million, no further action would be required by the ACHCSA.

Relocating Diesel-Containing Fill Soil

Mr. Tinsley asked about plans for relocating the surcharge stockpile of diesel-affected soil at the Buildings 4 and 5 site to another parcel. We clarified that Mr. Lester Feldman of the RWQCB had verbally approved the relocation during a meeting on 19 May 1992, with the condition that the stockpile be protected against erosion into the nearby Oakland Inner Harbor. We said we intended to develop an erosion control plan for the stockpiled soil that would include grading to control surface water runoff, and mechanisms to reduce soil erosion. This plan would be submitted to the ACHCSA and RWQCB for review and approval before initiation of soil relocation.

If you have questions regarding this summary of the meeting, please call either of us.

Sincerely,

GEOMATRIX CONSULTANTS, INC.

Elizabeth K. Wells for
Elizabeth Nixon
Project Manager

Tom Graf, P.E.
Vice President

EAN/TEG/bap
CONTR\1736-MTG.LTR

cc: Dr. Ravi Arulanantham, ACHCSA

bcc: Joe Seiger
Peter Twining

POST MEETING

100 Pine Street, 10th Floor
San Francisco, CA 94111
(415) 434-9400 • FAX (415) 434-1365

GEOMATRIX

29 May 1992
Project 1736.10

92 JUN -1 AM 8:09

Mr. Don Parker
Alameda Real Estate Investments
1150 Marina Village Parkway, Ste. 100
Alameda, CA 94501

Subject: Summary of 19 May 1992 Meeting with Regulatory Staff
Proposed Buildings 4 and 5 Site
Marina Village Development
Alameda, California

Dear Don:

This letter serves to summarize the issues and conclusions discussed during our subject meeting with Mr. Lester Feldman of the Regional Water Quality Control Board (RWQCB) and Mr. Kevin Tinsley of the Alameda County Health Care Services Agency (ACHCSA). During this meeting, which also included Mr. Joe Seiger of Alameda Real Estate Investments and Ms. Elizabeth Nixon of Geomatrix Consultants, the basis for leaving elevated concentrations of high-boiling petroleum hydrocarbons in soil underlying the site was discussed. We understand that Alameda Real Estate Investments (AREI) plans to develop the site as commercial offices and the site will be covered by buildings, pavement, and landscaping.

Lester Feldman summarized the RWQCB and ACHCSA issues as follows:

- Surface Water - Potential erosion of unprotected petroleum-affected soil into adjacent surface water appears to be the primary concern. AREI must address site disturbances such as excavation, during and after development, that could allow erosion and off-site migration of affected soil.

- Groundwater - Continued groundwater monitoring would be required over time. Remediation alternatives need to be addressed should groundwater monitoring indicate a problem in the future.

- Health Risk - Must address risk of exposure to public due to the presence of affected soil under buildings and pavements. ACHCSA will review risk data to decide if the proposed development is an acceptable property use.

Based on discussions during the meeting, it appears that all of the above issues can be addressed to allow agency approval of proposed site use without removal of underlying affected soil. Surface water concerns can be addressed with a disclosure notice (deed notification) regarding excavation of underlying soil in any future construction project, since no affected soil will be exposed at the site following development. Groundwater

concerns can be addressed with a RWQCB-approved monitoring plan including an annual report showing status of groundwater parameters, and a back-up remedial plan, should concentrations in groundwater show unacceptable increases in petroleum hydrocarbon concentrations. As envisioned, the site would be handled on a "self management" status, rather than under a RWQCB cleanup and abatement order.

A subsequent meeting on 26 May 1992 with Kevin Tinsley and Ravi Arulanantham of ACHCSA, and Tom Graf and Elizabeth Nixon of Geomatrix served to provide the basis for completion of a health risk analysis for the site. Specific issues to be addressed in a health risk analysis for ACHCSA are as follows:

- The health risk analysis should include an assessment of health affects from exposure to the petroleum hydrocarbons proposed to remain on site.
- Additional composite sampling of surface soil for metals (California Administrative Code series) should be conducted and incorporated into the health risk analysis.
- Confirmation sampling will be required to document removal of soil currently stockpiled on site.

Once these issues have been addressed and the plan accepted by the RWQCB and the ACHCSA, a "no objection to proceeding" letter will be generated by the two agencies.

If you have any questions regarding this summary of the meeting, please call me.

Sincerely,

GEOMATRIX CONSULTANTS, INC.

Tom Graf, P.E.
Vice President

TEG/slr
CONTR\1736-MTG.LTR

cc: Lester Feldman, RWQCB
Kevin Tinsley, ACHCSA

PRE - MEETING

100 Pine Street, 10th Floor
San Francisco, CA 94111
(415) 434-9400 • FAX (415) 434-1365

GEOMATRIX

13 May 1992
Project No. 1736.10

Mr. Kevin Tinsley
Alameda County Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, California 94621

May 26, 1992

Subject: Background Information
Proposed Buildings 4 and 5
Marina Village Development
Alameda, California

Dear Mr. Tinsley:

On behalf of Alameda Real Estate Investments (AREI), Geomatrix Consultants, Inc. has prepared this letter to provide you with background information on the subject site in preparation for our meeting scheduled for 19 May 1992. We have included a description of the site, distribution and type of chemical compounds in the soil, analytical data and the proposed future development. Copies of pertinent analytical data are attached. Additionally, we are enclosing a copy of a 8 October 1988 report prepared by Levine-Fricke, Inc. that describes the excavation that generated soil now stockpiled at the subject site.

SITE SETTING

The site is about two acres in area, and is located in Alameda, California (see Figure, attached). Approximately 5,000 cubic yards of soil containing petroleum hydrocarbons, primarily highly weathered diesel fuels, were stockpiled at the site in June 1988 during excavation of a nearby area. The soil was stockpiled on plastic sheeting spread onto the ground surface and surrounded by an earthen berm. Additionally, fill soil beneath the stockpiled material was found to contain petroleum hydrocarbons that were classified as high boiling, asphalt-like hydrocarbons. This fill soil consists of an approximately [redacted] thick layer that overlies native bay sediments; only the upper three feet of fill appear to contain the petroleum hydrocarbons. The volume of this underlying petroleum - affected fill soil is estimated to be [redacted] cubic yards.

The location of the stockpiled soil and area of proposed site development are shown on the attached figure. As shown on the figure, the site currently is fenced. Groundwater monitoring wells have been installed in the vicinity of the site to monitor groundwater quality.

PROPOSED DEVELOPMENT

The subject site is part of continuing development of the area (Marina Village) being performed by AREI. The proposed development of the site includes construction of two office buildings, paved parking lots and walkways, and landscaping. At this time, AREI proposes to move the stockpiled soil to another area within Marina Village and leave original fill to be used beneath the proposed development. A layer of imported fill will be placed over the petroleum affected soil to form the subbase for the buildings, pavement, and landscaped areas.

PREVIOUS SAMPLING ACTIVITIES AND ANALYTICAL RESULTS

Various phases of investigation and characterization have been completed on the stockpiled soil and original fill material that underlies the site. Pertinent data regarding gas chromatographic fingerprinting of the petroleum hydrocarbons are attached. In general, the petroleum hydrocarbons in the stockpiled soil are medium to high boiling, falling in the range of diesel #2 to diesel #6 fuel oil, with a lesser contribution of heavier oils. Petroleum hydrocarbon concentrations range from about 100 to 4,000 mg/kg, averaging on the order of 1,000 mg/kg. Aromatics and halogenated volatile organic compounds are generally absent. Petroleum hydrocarbons detected in the original fill material are characterized as high boiling, asphalt-like hydrocarbons ranging in concentration from 30 to 4,100 mg/kg, averaging on the order of 700 to 800 mg/kg.

Fingerprinting and historical information indicate the petroleum in the stockpiled soil is highly weathered and has been in the subsurface for probably 50 years or more. The petroleum hydrocarbons in the original fill material was likely contained in the fill when first placed at the site in the early 1900s. Site groundwater data indicates that the petroleum hydrocarbons are very low in solubility. For background purposes, the following is a chronological list of analytical results from sampling activities performed to characterize the stockpiled soil and original fill material.

STOCKPILED SOIL

April 1988

An investigation performed by Levine-Fricke, Inc., (Levine-Fricke) of petroleum hydrocarbons in soil was performed before soil was excavated from a nearby site and stockpiled. Soil samples were submitted to Friedman & Bruya (F&B) of Seattle, Washington for fingerprint characterization. Results indicated that soil contains heavy

diesel fuel oil such as diesel #6. A heavier product, possibly motor oil, also was reported in the soil samples in lesser amount.

June - September 1988
After the soil was excavated and stockpiled on the site, the stockpiled soil was sampled by Levine-Fricke and analyzed for characterization to evaluate remedial options. Stockpiled soil samples collected from the stockpiled material were reported to contain TPH characterized as diesel at concentrations ranging from 85 to 370 mg/kg. Selected composited soil samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX). These soil samples contained only toluene above the laboratory detection limit, at concentrations of 0.013 to 0.018 mg/kg.

Soil excavated from around two fuel tanks that were encountered during excavation of petroleum-containing soil in 1988 was included in the stockpiled material. Hydrocarbon characterization analysis was performed on several samples of the soil excavated from around the tanks by F&B. Results of these fingerprint analyses indicate that soil contains several types of petroleum hydrocarbons, including #2 diesel, Bunker C fuel oil, and heavy diesel oil (possibly #6).

October 1990
Stockpiled soil samples were collected by Geomatrix and analyzed by Anametrix, Inc. of San Jose, California to evaluate possible biotreatment options. Soil samples collected from the stockpiled material in October 1990 revealed total petroleum hydrocarbons (TPH) characterized as diesel at concentrations ranging from 140 to 1,200 milligrams per kilogram (mg/kg).

January 1991
Geomatrix collected soil samples from the stockpiled material for field analysis using thin layer chromatography (TLC) using a diesel standard for comparison. Results of the TLC field screening indicated that the stockpiled soil contained TPH at concentrations greater than 1,000 mg/kg. Two soil samples were forwarded to F&B for analytical testing and fingerprint characterization. Results indicated the samples contained TPH characterized as oil at concentrations of 23 and 290 mg/kg, respectively. Fingerprint results indicated high boiling petroleum hydrocarbons, such as a heavy crude oil.

Geomatrix also forwarded a sample of the stockpiled soil to Enviros of Redmond, Washington for a biotreatability study. Initial analytical testing of the soil sample using gravimetric analytical methods indicated the soil contained oil and grease at a concentration of 2,050 mg/kg. Results of the treatability study after approximately 17 weeks indicated

only about a 3 percent reduction in TPH concentrations, suggesting the availability of petroleum to micro-organisms was very low.

ORIGINAL FILL SOIL

June 1991

In response to AREI's need to move the stockpiled soil into a surcharge pile within the same area, Geomatrix collected soil samples from fill soil beneath the stockpile to assess soil quality in the fill material. The analytical results of composited soil samples indicate that fill soil beneath the stockpile also contained TPH; however, the TPH was different than the TPH in the overlying material, and was characterized as a heavier oil that resembled asphalt. Concentrations of TPH detected ranged from 30 to 4,100 mg/kg. Two of the soil samples were forwarded to F&B for reanalysis for TPH using a silica gel cleanup method to remove biogenic/non-petroleum based material; the analytical results of the two samples analyzed using the silica gel cleanup revealed concentrations 1.5 to 2 times lower than previously reported. The petroleum hydrocarbons were characterized as high boiling, asphalt-like hydrocarbons.

→ 67% Reduction (?)

August 1991

To further evaluate the distribution of petroleum hydrocarbons in the underlying fill soil, Geomatrix collected samples from beneath the stockpiled soil for field analysis using TLC using a diesel standard for comparison. Results indicated TPH concentrations ranged from 100 to greater than 1,000 mg/kg in a 3-foot thick layer of soil.

We look forward to meeting with you to discuss activities at the site and the proposed development. If you have any questions or require further information, please contact either of the undersigned.

Sincerely,

GEOMATRIX CONSULTANTS, INC.

Elizabeth A. Nixon
Senior Project Engineer

Tom Graf, P.E.
Vice President

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Attachments