ENVIRONMENTAL ENGINEERING, INC
2680 Bishop Drive, Suite 203, San Ramon, CA 94583
TEL (925) 244-6600 • FAX (925) 244-6601

Well Decommissioning Report
Shellmound Parcels I, II and III
Emeryville, California

April 13, 1998

Prepared for

City of Emeryville, Redevelopment Agency
Emeryville, California

Prepared by

SOMA Environmental Engineering, Inc.
2680 Bishop Drive, Suite 203
San Ramon, CA 94583

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CERTIFICATION AND LIMITATIONS

This report has been prepared by SOMA Environmental Engineering, Inc. (SOMA) for the exclusive use of City of Emeryville, Redevelopment Agency, located at 2200 Powell Street, 12th Floor, Emeryville, California. SOMA has provided its professional services using the degree of care and skill ordinarily exercised by other scientists and engineers participating in this field. No other warranty, expressed or implied is made as to the conclusions and professional opinions contained in this report.

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California Registered Geologist

REGISTERED GEOLOGIST
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No. 5836
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April 10, 1998
Project 97-2181

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1.0 INTRODUCTION

This report has been prepared by SOMA Environmental Eng., Inc. (SOMA) on behalf of the City of Emeryville, Redevelopment Agency. The purpose of this report is to document the destruction of existing groundwater monitoring wells and piezometers by use of pressure grouting under the Alameda County Public Works Agency Permit Numbers 97WR 139 and 97WR 140. The property on which the work was done consists of three contiguous parcels known as Parcels I, II and III. The property is owned by the City of Emeryville, Redevelopment Agency, and is approximately 7.5 acres.

The property (site) is bounded from the west by the Interstate 80. Adjacent sites of interest include Barbary Coast Steel (formerly Judson Steel) to the south, the Powell Street Plaza Shopping Center (formerly Pacific Intermountain Express (P.I.E)) to the north, and Myers Container Corporation and Elementis (formerly known as Harcros Pigments, Harcros and Pfizer Pigments) to the east, see Figure 1 and Figure 2. Temescal Creek, with a concrete channel and open space, is located between Parcels II and III. The Temescal Creek runs from east to west and eventually discharges into the San Francisco Bay. At the present time, the site and the adjacent parcels are zoned for commercial and mixed use.

The City of Emeryville, Redevelopment Agency, the present owner of the Shellmound parcels site is in the process of selling the property to the Orient and Western (Holdings) Corporation. Orient and Western, in association with Hilton Hotel Corporation proposes to construct a Hilton Garden Inn Hotel at the northern portion of the property. Prior to the construction activities the existing groundwater monitoring

wells need to be decommissioned to the satisfaction of Alameda County Public Works Agency (ACPWA).

1.1 Site Background

The Shellmound site was originally a portion of a larger property called the Judson Manufacturing Company (JMC). JMC was founded in 1882 as an outgrowth of a tack and horseshoe nail manufacturing plant owned by Mr. Egbert Judson. The original facility occupied approximately nine acres located between the Southern Pacific Railway and the San Francisco Bay. Over time, the facility was expanded to 27 acres. The company originally manufactured iron bars, foundry castings, agricultural implements, spikes, bolts, rivets, nuts, tacks, and latching machines. These industrial activities resulted in the contamination of soil and groundwater on the site.

In August 1986, after 104 years of operation, Judson Steel was sold to Peko-Wallsend. In November 1986, Shellmound Partners purchased a portion of the property from Peko-Wallsand. This portion became the subject site, which came to be known as Shellmound Parcels I, II and III.

In 1993, the City of Emeryville, Redevelopment Agency purchased Parcels I, II, and III with total area of 10.5 acres from Shellmound Partners. Subsequently, CalTrans purchased the western portion of the site along I-80. Currently, the area of the property is approximately 7.5 acres. Since the 1980's, large-scale subsurface investigations have been performed on the site.

Data from soil and groundwater samples were used to conduct a human health risk assessment. The study also evaluated the potential impact of chemicals in the

groundwater on water quality conditions of the Temescal Creek. The study concluded that no human health threat exists under the exposure scenarios evaluated in the human health risk assessment (SOMA 1997). If the site is left as is, with no cleanup activities, the site is suitable for industrial or commercial usage. However, the site cannot be used for unrestricted residential land use (e.g., single-family homes).

Extensive remediation and construction has been conducted on the western portion of the property, which now belongs to CalTrans. The western portion of the CalTrans property has been used for the widening of Interstate 80 and the eastern portion has been used primarily to relocate the 80-inch diameter interceptor sewer line for East Bay Municipal Utility District (EBMUD). As a part of the sewer line relocation process, a trench approximately 25-feet wide by 25-feet deep with a total length of 3,500 feet was excavated. During the relocation process, a slurry wall was constructed around the relocated sewer line.

Additionally, in the summer of 1996, the City of Emeryville was involved in the construction of Shellmound Street Extension, traversing through the Site. It involved the construction and realignment of approximately 1,100 linear feet of new roadway and excavation of utility trenches. The utility trenches included storm drains, sanitary sewer lines, electrical conduits and EBMUD drinking water lines, manholes, gas and irrigation lines. As part of this installation process, approximately 5,500 cubic yards of soil was excavated from the trench beneath the Shellmound Street. To reduce the solubility of chemicals in the excavated soils they were treated by cement kiln dust (CKD). CalTrans placed the treated soils below Highway 4 as road-base material.

2.0 GROUNDWATER QUALITY

Groundwater has been encountered at depths ranging from 5 to 11 ft bgs. A total of eleven groundwater monitoring wells and piezometers were historically installed at the site by various environmental consulting firms. Figure 3 presents the location of groundwater monitoring wells. The most current groundwater sampling event was conducted by the former AGI Technologies in April 1994, (AGI, 1995). The groundwater elevation data collected by SOMA in June and July 1996 indicate that the groundwater flow direction is toward the northeast. Therefore, it appears that the groundwater does not discharge directly into the Bay. However, in the past the groundwater flow direction has been reported toward south (AGI, 1995). The seasonal change of groundwater flow direction at the site may be attributed to pumping activities at the surrounding areas for construction/dewatering purposes. Temescal Creek, which traverses between Parcels II and III and acts as a gaining stream during low tides, discharges into San Francisco Bay. Therefore, Temescal Creek appears to be a potential indirect communication conduit between the Bay and groundwater beneath the site.

Periodic groundwater monitoring has also been performed on the site since the 1980's. Total petroleum hydrocarbons (TPH) in the form of diesel fuel and weathered diesel fuel, gasoline, oil and grease have been detected in groundwater beneath the site. TPH as gasoline, diesel, and oil and grease were also detected in the low parts per million range on Parcels I and II. The concentrations of TPH-D were consistently higher on Parcel III than on Parcels I and II. The source of petroleum hydrocarbons in Parcel III is believed to have been the underground storage tanks at the former Pacific Intermountain Express (P.I.E) trucking company site currently known as Powell Street Plaza, located to the north of Parcel III.

VOCs were also detected in groundwater beneath the site. The range of the benzene concentrations on Parcel III was between 0.5 and 190 ppb with the maximum concentration detected in the groundwater sample collected at MG-1/B7. The maximum concentrations, 4 ppb and 1 ppb of toluene and ethylbenzene, were detected in the groundwater sample collected at MG-1/B5. The maximum concentration of xylene (8.9 ppb) was detected in the groundwater sample collected at MG-3/B8. Tetrachloroethylene (PCE) was detected at one location on Parcel III with a concentration of 9.0 ppb at HW-5. A tricholoroethylene (TCE) concentration of 6.8 ppb was detected at HW-5 on Parcel III. Chloroform (5.1 ppb at HW-5, Parcel III), vinyl chloride (2.7 ppb at HP-18, Parcel III) and methylene chloride (20 ppb at HP-11, Parcel II) were also detected beneath the site.

Groundwater samples were also analyzed for metals. Metals in the low parts per million range were detected on all the three Parcels on the site.

The total dissolved solids (TDS) in the groundwater samples ranged between 710.4 and 11,700 mg/liter with a 95% Upper Confidence Limit (UCL) of 3,329 mg/liter. On the basis of the State Water Resources Control Board Resolution 88-63, the groundwater beneath the Site cannot be considered as drinking water source because the 95% UCL of the TDS concentrations is above 3,000 mg/liter.

2.1 Groundwater Monitoring Well Installation

As was discussed earlier, eleven groundwater monitoring wells and piezometers have been installed at the site by various environmental consulting firms. Seven groundwater monitoring wells and one piezometer were installed on Parcel III. The seven wells, namely MG-1, MG-2, MG-3, MG-4, MG-7, MW-17, and MW-18 and one piezometer namely PZ-1 were installed during three separate environmental investigations on Parcel III. Most of the groundwater monitoring wells on Parcel III were installed by the former P.I.E's consultants in order to define the extent of free phase petroleum products which originated from the former P.I.E site.

On March 11, 1988, Alton Geosciences (Alton) of Irvine, California installed well MW-18. Alton was a subcontractor to Cyto Culture International, Inc. of San Francisco. Presumably, the Cyto Culture was a subcontractor to Blymyer and Sona Engineers, Inc. of Alameda, which had the prime contract with the P.I.E.

On April 1989, Tenera Environmental Services (Tenera), of Berkeley, California installed wells MG-1, MG-2, MG-3, and MG-4 on the Parcel III. Tenera performed their investigation for Marriott Corporation. Tenera had originally designated these wells as MW-1, MW-2, MW-3, and MW-4. However, because Alton had previously installed wells on the Powell Street Plaza site with the same "MW-" designation, PES Environmental, another consultant to the P.I.E site, renamed the Tenera wells using the "MG-" designation (the numerals remained the same; i.e., MW-1 was renamed MG-1, MW-2 was renamed MG-2, etc.).

In March 1991, PES Environmental installed monitoring wells of MG-7 and PZ-1 under contract to the Martin Group. Although MW-17 has been presented in the AGI report, it is not clear who installed this well. Based on personal communications with Mr. John Adams of the former AGI, in April 1994, during the groundwater monitoring event AGI could not locate the MW-17. Subsequent extensive search by SOMA during October and November 1997 and February 1998 failed to locate MW-17. It is believed that this well was destroyed or abandoned before 1994.

In 1995, the City of Emeryville Redevelopment Agency installed three additional piezometers in order to evaluate groundwater flow direction beneath the site for the purpose of conducting a risk assessment. Two of the piezometers (P-1 and P-2) were installed on Parcel II, while the third piezometer, P-3 was installed on Parcel I. Table-1 shows depth, construction date, casing diameter, and screening interval of each groundwater monitoring well and piezometer installed at the site.

3.0 REGULATORY STATUS

On August 26, 1997, California Environmental Protection Agency (Cal EPA) Department of Toxic Substances Control (DTSC) approved the human health risk assessment report prepared by SOMA (SOMA 1997) and based on the recommendation of the risk assessment report, DTSC requested that the City of Emeryville Redevelopment Agency to prepare a removal action work plan (RAW).

On September 19, 1997, a case closure letter from Ms. Susan Hugo of Alameda County, Health Care Services to Mr. Ron Gerber of City of Emeryville, Redevelopment Agency indicated that no more groundwater monitoring at the subject property is recommended and that the groundwater monitoring wells can be properly decommissioned. Ms. Hugo referred in her letter to those monitoring wells and one piezometer that were installed on Parcel III. The three piezometers that were installed in 1996 on Parcels II and I by the City (P-1 through P-3) were never used for groundwater monitoring purposes. They were used for evaluation of groundwater flow direction for risk assessment purposes. The Agency drafted the site closure letter after discussing with the Regional Water Quality Control Board (RWQCB).

On September 26, 1997, based on the site closure letter, the Alameda County Public Works Agency, issued well decommissioning permits (Permit Numbers 97WR 139 and 97WR 140, see Appendix I) that allowed the use of pressure grouting to decommission the existing groundwater monitoring wells and piezometers at the subject property.

On November 19, 1997, SOMA on behalf of the City of Emeryville, Redevelopment Agency prepared a draft Remedial Action Workplan (RAW) and submitted it to the DTSC. The objective of the RAW was to describe the proposed alternatives to ensure

the health of the site's future occupants. The draft RAW also provided an opportunity for the public to be involved in the decision-making process during the selection of the removal action alternative

On November 21, 1997 DTSC approved the draft RAW for distribution for public comment. The public comment period was held from December 1, 1997 through December 30, 1997, during which time no comment were received. Consequently, DTSC approved the final RAW on January 9, 1998.

4.0 DECOMMISSIONING OF GROUNDWATER MONITORING WELLS

Because the groundwater monitoring wells and piezometers were not monitored since 1994, except the new piezometers installed by the City, the first step in groundwater monitoring well and piezometer destruction was to locate them. SOMA retained C.U. Surveys, underground utility locators of San Ramon, California to locate the groundwater monitoring wells. On October 28, 1997 C.U. Surveys, located MG-1, MG-2, MG-7. The three new piezometers installed by the City were easily identified. However, the remaining monitoring wells (MG-3, MW-4, PZ-1, MW-17 and MW-18) were not located.

It was believed that MG-3 was destroyed during extensive remediation and construction activities conducted by CalTrans. As was mentioned earlier, the western portion of the CalTrans property has been used for the widening of the Interstate 80 and the eastern portion has been used primarily to relocate the 80-inch diameter interceptor sewer line for East Bay Municipal Utility District (EBMUD).

Part of the reason why the C.U. Survey was unable to locate PZ-1, MW-4, MW-17 and MW-18 was that at the time of survey the approximate location of the wells in the eastern portion of the Parcel III was covered with several feet of newly dumped soils, making the search difficult. The search was postponed until the City removed the dumped soils and uncovered the suspected location of the monitoring wells and piezometer PZ-1.

On October 29, 1997, SOMA supervised the destruction of six groundwater monitoring wells/piezometers at the site. The six groundwater monitoring wells/piezometers of (P1, P2, P3, MG-1, MG-2 and MG-7) were located and destroyed using the pressure

grouting technique. The results of well destruction are presented in the Table-2. Bayland Drilling, Inc. of Menlo Park performed the well destruction.

4.1 Pressure Grouting Procedures

Described below are the procedures used for well destruction:

1. SOMA registered geologist opened the well box and after removing the cap cleaned the top of casing. This was done in order to apply the glue to a clean surface during the inserting a slip cap to the top of casing. The depth of each well/piezometer was measured by extending a metallic rod into the well. This process allows determining whether the well casing is clear of all bridged or poorly compacted materials.

2. A ¾ -inch diameter poly-pipe was set 2 feet above the bottom of the well. The top of casing was closed with a 2-inch slip cap with two ¾ -inch nipples, one to introduce cement and the other one for discharge of water. The slip cap was sealed to the casing by using non-toxic PVC glue and clamped both inlet and outlet tubing.

3. A ¾ -inch poly-pipe was connected to pressure grout with a Portland cement and water mixture (5 gallons water to 1 bag of cement) at an approximate pressure of 65 psi. This was accomplished by pressure grouting in several stages, which allowed for bubble-free grouting.

4. After completion of pressure grouting, both inlet and outlet pipes were pinched and tied with zipties.

5. After the seal had set both inlet and outlet pipes were snapped off, the box removed, and the hole was topped off with cement slurry.

In late December 1997, the dumped soils were removed using a backhoe. During the soil removal process, the backhoe operator unknowingly pulled the PZ-1 casing out of the ground. As such, the exact location of the PZ-1 could not be located. After the soil removal activities the search was continued. Due to excess rainfall depth during January and February of 1998, large puddles of standing water were formed at the suspected location of the monitoring wells.

On February 27, 1998, an extensive search was conducted to locate the remainder of wells. The C.U. Survey crew continued to search the wells using a magnetometer device, two additional field crews dewatered the standing waters around the suspected areas of the hidden wells, and a backhoe operator was called to assist the field crew. After several hours of an exhaustive search and excavating over 300 cubic yards of soil, the field crew could not locate any of the hidden groundwater monitoring wells. Due to the proximity of the wells MW-4 and MW-18 to the new Shellmound Street, it is believed that MW-4 and MW-18 may have been destroyed during the widening of the Shellmound Street in summer of 1996.

5.0 CONCLUSIONS

A total of 11 groundwater monitoring wells/piezometers have been installed on the subject property. From April 1994 through late 1996, three major construction activities have been conducted at the site. The widening of the Interstate 80 by CalTrans and construction of 80-inch interceptor sewer line by EBMUD and construction of Shellmound Street Extension by the City of Emeryville has resulted in the disappearance of a number of existing groundwater monitoring wells. Most likely, CalTrans destroyed MG-3 during the widening of the Interstate 80 and installation of 80-inch diameter interceptor drain of EBMUD. Monitoring wells MW-4 and MW-18 are believed to be destroyed during widening of Shellmound Road in summer of 1996. The backhoe operator destroyed piezometer PZ-1 accidentally during removal of the dumped soils at the site. MW-17 presumably was destroyed prior 1994. Figure 3 presents the documented locations of the groundwater monitoring wells, which could not be located in the field.

The remaining three groundwater monitoring wells namely MG-1, MG-2, and MG-7, and three piezometers (namely P-1, P-2, P-3) were located and abandoned per instruction of Alameda County Public Works Agency. Figure 3 presents the location of the different groundwater monitoring wells and piezometers, which were located and properly abandoned. If during the construction activity, any of the hidden wells are found, the City of Emeryville, Redevelopment Agency will be financially responsible to abandon those wells using Alameda County Public Works Agency guidelines.

6.0 REFERENCES

AGI Technologies, 1995. Environmental Site Characterization, Shellmound Parcels I, II and III, Emeryville, California

SOMA Environmental Engineering, Inc., (1997), Human Health Risk Assessment, Shellmound Parcels I, II and III, Emeryville, California

SOMA Environmental Engineering, Inc., (1998), Final Removal Action Workplan, Shellmound Parcels I, II and III, Emeryville, California

TABLES

Table-1
Summary of Well Completion Details
Shellmound Parcel I, II, and III
Emeryville, California

Well Name	Installation Date	Well Depth ft.	Boring Depth ft.	Screen Interval ft.	Casing Diameter inch	Hole Diameter inch
P1	2/10/95	15	15	3.5-15.0	2	8
P2	2/10/95	15	15	3.5-10.0	2	8
P3	2/10/95	15	15	3.5-10.0	2	8
PZ-1	3/18/91	15	15	3.0-15.0	2	8
MG-1	4/18/89	16.5	17.5	6-16.5	2	8
MG-2	4/19/89	15	16.5	6.0-15.0	2	8
MG-7	3/18/91	17	18	4.0-18.0	2	8
MG-3	4/19/89	14.5	15	4.0-14.5	2	8
MW-4	4/19/89	13.5	13	4.0-13.5	4	12
MW-17	3/11/88	12	14	2.0-12.0	2	8
MW-18	3/11/88	12	14	2.0-12.0	2	8

TABLE-2

Summary of Well Destruction Details

Shellmound Parcel I, II, and III

Emeryville, California

Well No.	Reported Well Depth (Feet)	Recorded Well depth 10/29/97 (Feet)	Remarks
P1	15	11	Solid at the bottom, Pressure grouted
P2	15	18	Pressure grouted
P3	15	17	Pressure grouted
PZ-1	15	-	Destroyed during debris removal
MG-1	16.5	17	Pressure grouted
MG-2	15	14	Pressure grouted
MG-3	14.5		Could not locate
MG-7	17	15	Pressure grouted
MW-4	13.5	-	Could not locate
MW-17	12	-	Could not locate
MW-18	12	-	Could not locate

FIGURES

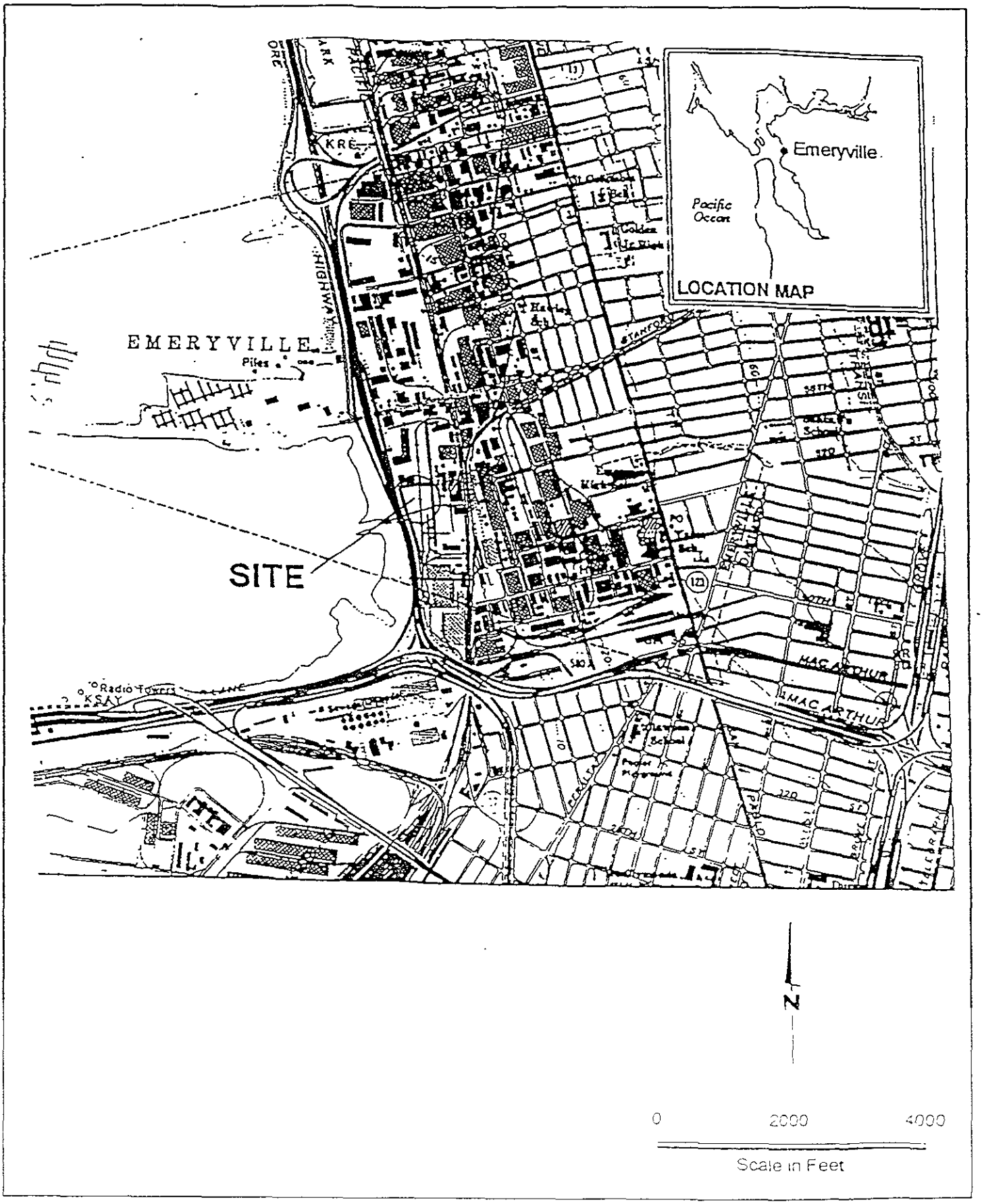


Figure 1: Location Map

ENVIRONMENTAL ENGINEERING, INC.

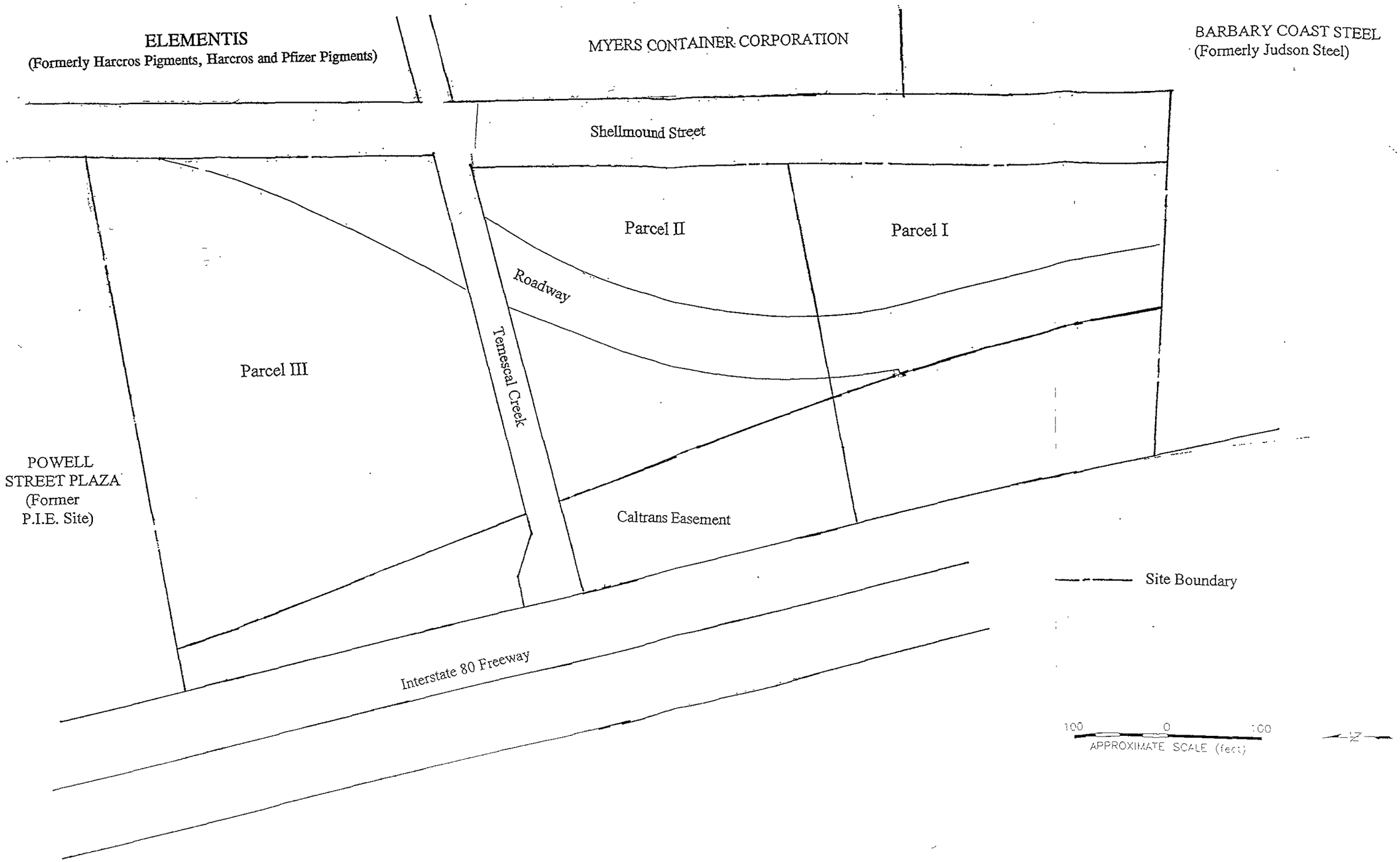


Figure 2: Site Plan Showing the Locations of the Three Shellmound Parcels

ENVIRONMENTAL ENGINEERING, INC.

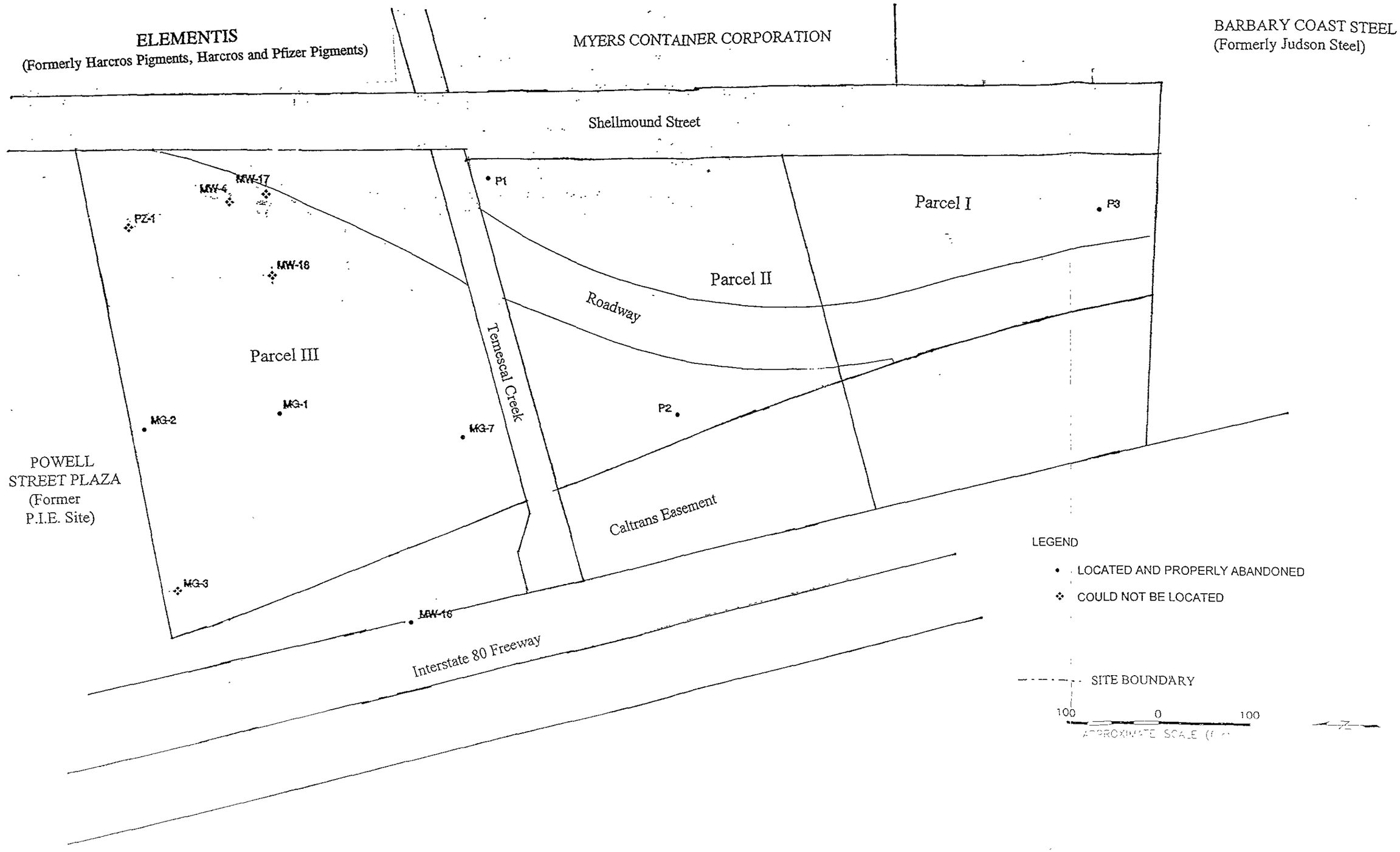


Figure 3: Groundwater Sample Location Map

ENVIRONMENTAL ENGINEERING, INC.

APPENDIX I

Well Permits and Case Closure Letter from

Alameda County

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
951 TURNER COURT, SUITE 300, HAYWARD, CA 94545-2651
PHONE (510) 670-5575 ANDREAS GODFREY FAX (510) 670-5262
(510) 670-5248 ALVIN KAN

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Shellmound Parcels I,II,III
Emeryville, Ca 94608

California Coordinates Source _____ ft. Accuracy ± ___ ft.
CN _____ ft. CCE _____ ft.
PN _____

CLIENT
Name City of Emeryville Redevelopment Agency
Address 2200 Powell #1200 Phone (510)596-4357
City Emeryville Ca Zip 94608

APPLICANT
Name SOMA Environmental Engineers
Address 680 Bishop Dr. #203 Fax 244-6601
City San Ramon Ca Zip 94583 Phone 244-6600

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	☐	General	☐
Water Supply	☐	Contamination	☐
Monitoring	☒	Well Destruction	☒ (8 Wells)

PROPOSED WATER SUPPLY WELL USE

New Domestic	☐	Replacement Domestic	☐
Municipal	☐	Irrigation	☐
Industrial	☐	Other _____	☐

DRILLING METHOD:

Mud Rotary	☐	Air Rotary	☐	Auger	☐
Cable	☐	Other	& (pressure grouting)		

DRILLER'S LICENSE NO. 374152

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 4 in. Depth _____ ft.
Surface Seal Depth _____ ft. Number _____

GEOTECHNICAL PROJECTS
Number of Borings _____ Maximum
Hole Diameter _____ in. Depth _____ ft.

ESTIMATED STARTING DATE October 15, 1997
ESTIMATED COMPLETION DATE October 20, 1997

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE _____ DATE 9/24/97

FOR OFFICE USE

PERMIT NUMBER 97 WR 159
WELL NUMBER _____
APN _____

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A) **GENERAL**
1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

B. **WATER SUPPLY WELLS**
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

C. **GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS**
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. **GEOTECHNICAL**
Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

E. **CATHODIC**
Fill hole above anode zone with concrete placed by tremie.

(F) **WELL DESTRUCTION**
See attached.

G. **SPECIAL CONDITIONS**

APPROVED _____ DATE 9/26/97

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
951 TURNER COURT, SUITE 300, HAYWARD, CA 94545-2651
PHONE (510) 670-5575 ANDREAS GODFREY FAX (510) 670-5262
(510) 670-5248 ALVIN KAN

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Shellmound Parcels I, II, III
Emeryville, Ca 94608

California Coordinates Source _____ ft. Accuracy ± ____ ft.
CN _____ ft. CCE _____ ft.
PN _____

CLIENT
Name City of Emeryville Redevelopment Agency
Address 2200 Powell #1200 Phone 596-4357
City Emeryville Ca Zip 94608

APPLICANT
Name SOMA Environmental Engineers Fax 244-6601
Address 2680 Bishop #203 Phone 244-6600
City San Ramon Ca Zip 94583

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	☐	General	☐
Water Supply	☐	Contamination	☐
Monitoring	XXX	Well Destruction	☐

3 Piezometers

PROPOSED WATER SUPPLY WELL USE

New Domestic	☐	Replacement Domestic	☐
Municipal	☐	Irrigation	☐
Industrial	☐	Other _____	☐

DRILLING METHOD:

Mud Rotary	☐	Air Rotary	☐	Auger	☐
Cable	☐	Other	☒	(pressure grouting)	

DRILLER'S LICENSE NO. 374152

WELL PROJECTS
Drill Hole Diameter 4 in. Maximum
Casing Diameter 2 in. Depth _____ ft.
Surface Seal Depth _____ ft. Number _____
(2) piezometer

GEOTECHNICAL PROJECTS
Number of Borings _____ Maximum
Hole Diameter _____ in. Depth _____ ft.

ESTIMATED STARTING DATE October 15, 1997
ESTIMATED COMPLETION DATE October 20, 1997

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE _____ DATE 9/24/97

FOR OFFICE USE

PERMIT NUMBER 97 WR 140
WELL NUMBER _____
APN _____

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A) **GENERAL**
1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

B. **WATER SUPPLY WELLS**
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

C. **GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS**
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. **GEOTECHNICAL**
Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

E. **CATHODIC**
Fill hole above anode zone with concrete placed by tremie.

(F) **WELL DESTRUCTION**
See attached.

G. **SPECIAL CONDITIONS**

APPROVED _____ DATE 9/26/97

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
951 TURNER COURT, SUITE 300, HAYWARD, CA 94545-2651
PHONE (510) 670-5575 ANDREAS GODFREY FAX (510) 670-5262
(510) 670-5248 ALVIN KAN

Name Mansour Sepehr Date 9/29/97

Company SOMA

Address

City/State/Zip

Dear Mansour:

Enclosed are drilling permit number(s) 97WR139 97WR140 for

- ☐ a geotechnical investigation
- ☐ a contamination investigation
- ☐ a monitoring well construction project
- ☐ a water supply well construction project
- ☐ a cathodic protection well project
- ☒ the destruction of well(s)

at SHELLMOUND PARCELS I, II, III EMERYVILLE

for your client SOMA ENVIRONMENTAL ENGR

Please note that permit condition:

- ☐ A-1 requests that an application be submitted five days prior to your proposed start of work.
- ☒ A-2 requires that a well (~~construction~~) (destruction) report be submitted after completion of the work.

The report should include:

- ☒ permit number
- ☒ drilling and completion logs
- ☒ location sketch
- ☒ date of destruction
- ☒ a description of methods and materials used to destroy the well
- ☐ a Water Well Drillers Report (for drillers)

Please submit the original of your completion report. We will forward your submittal to the California Department of Water Resources.

If you have any questions, please contact Alvin Kan at (510) 670-5248 or myself at (510) 670-5575.

Sincerely,

Andreas Godfrey

Andreas Godfrey
Engineer-Scientist

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
951 TURNER COURT, SUITE 300, HAYWARD, CA 94545-2651
PHONE (510) 670-5575 ANDREAS GODFREY FAX (510) 670-5262
(510) 670-5248 ALVIN KAN

SOMA ENVIRONMENTAL

Date 1/14/98

MANSOUR SEPEHR

2680 BISHOP DR #203

SAN RAMON CA 94583

Dear MANSOUR: 97WR140 97WR139

We have not received the report required by drilling permit ____.

This permit was issued to you on 9/26/97 for

- ☐ a geotechnical investigation
- ☐ a contamination investigation
- ☐ a monitoring well construction project
- ☐ a water supply well construction project
- ☐ a cathodic protection well project
- ☒ the destruction of well(s)

at SHELLMOUND PARCELS I, II, III.
EMERYVILLE

Notice for start of work was given for 10/15/97 and completion of work on 10/20/97.

Please submit the required destruction well construction report or a letter explaining why the report cannot be submitted at this time.

The report should include:

- ☑ permit number
- ☑ drilling and completion logs
- ☑ location sketch
- ☑ date of destruction
- ☑ a description of methods and materials used to destroy the well
- ☐ Water Well Drillers Report (for drillers)

Please submit your report or letter so that it is received within ten days of the date of this letter.

If your report or letter is not received within the ten day period, your project will not be in compliance with the Alameda County Ordinance 73-68, and we may restrict the issuance of future permits to your company

If you have any questions, please contact Alvin Kan at (510) 670-5248 or myself at (510) 670-5575

Sincerely,

Andreas Godfrey
Engineer-Scientist

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

September 19, 1997
STID # 1184

Mr. Ron Gerber
City of Emeryville Redevelopment Agency
2200 Powell Street, 12th Floor
Emeryville, California 94608

RE: Case Closure - Shellmound Parcels III, Emeryville, California 94608

The Alameda County Department of Environmental Health, Environmental Protection Division has received a letter of request from Soma Environmental Engineering, Inc. for the decommissioning of seven groundwater monitoring wells and one piezometer at the above referenced site. As you know, this office and the Regional Water Quality Control Board have evaluated the petroleum hydrocarbons found at the subject property for closure. Both agencies agreed that the site can be closed with an approved risk management plan and no groundwater monitoring is required.

The wells and piezometer at the site must be properly decommissioned prior to future construction activities. A report must be submitted documenting the abandonment of the monitoring wells and piezometer. Additionally, you will need to notify this office 72 hours in advance of the well abandonment field activities.

If you have any questions concerning this letter, please contact me at (510) 567-6780.

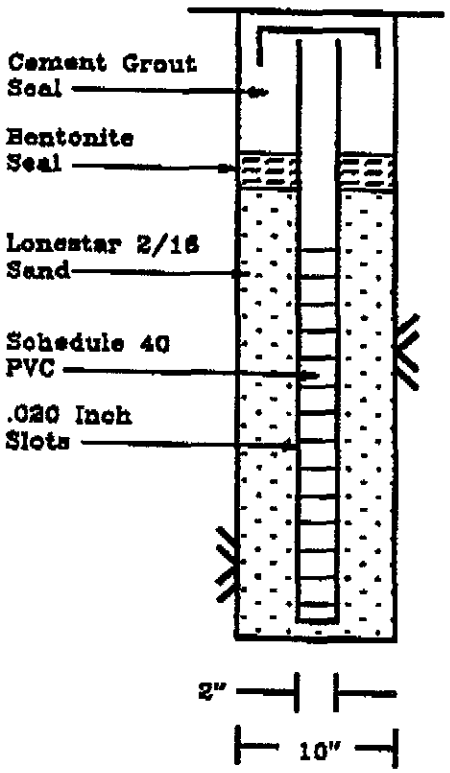
Sincerely,

Susan L. Hugo
Hazardous Materials Specialist

c: Mee Ling Tung, Director, Environmental Health
Gordon Coleman, Chief, Environmental Protection Division
Ravi Arunalantham, San Francisco Bay RWQCB
Mansour Sepehr, Soma Environmental Engineering, Inc. 2680 Bishop Drive, Suite 203
San Ramon, CA 94583
SH / files

APPENDIX II

Lithologic Logs of Groundwater Monitoring Wells



MG-1

LOG OF BORING 5 (~~NEW~~)
Equipment: CME 55 10" H.S.
Elevation N/A Date: 4/18/89

Depth (ft)	Sample	
0		DARK BROWN SILTY GRAVEL (GM) moist, loose w/sand, slag, concrete rubble (fill)
5		
10		MOTTLED BROWN AND GREEN BROWN SILTY SAND (SM), saturated, loose, fine grained firm sand, strong odor (petroleum, per test)
15		Becomes very dark grey w/ some shells, very strong odor,
		Bottom of boring at 17.5 feet

LOG OF BORING 6
Equipment: CME 55 10" H.S.
Elevation N/A Date: 4/18/89

Depth (ft)	Sample	
0		DARK BROWN SILTY CLAY (CL), moist, firm, w/fine to coarse gravel, sand, debris, bricks, slag (fill)
5		
10		Bottom of boring at 10 feet

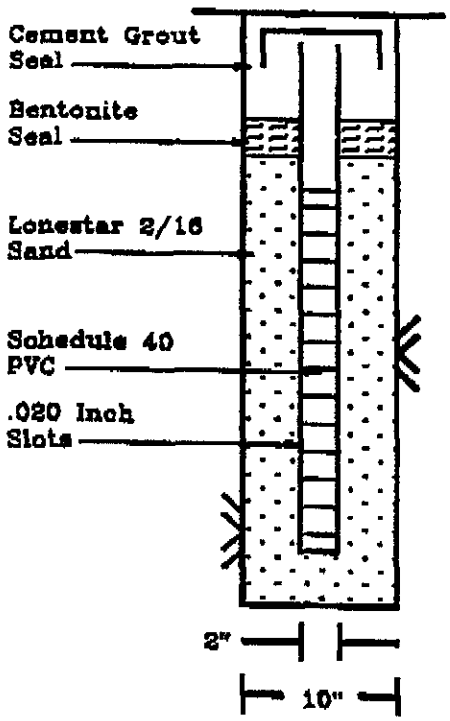
TRANS TECH CONSULTANTS
HYDROGEOLOGISTS AND ENGINEERS

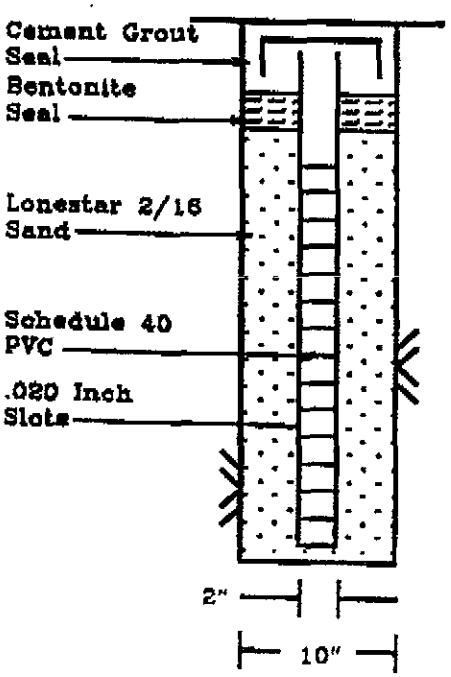
LOGS OF BORINGS 5 (~~NEW~~) AND 6
Marriott Project C943 MG-1
Emeryville, California

PLATE 3

DRAWN	JOB NUMBER	APPROVED	DATE
SMR	1017.07.01	DGM	5/31/89

MG-2





LOG OF BORING 7 (~~MW-7~~)

Equipment: CME 55 10" H.S.
Elevation N/A Date: 4/19/89

Depth (ft)	Sample	
0		BROWN SILTY GRAVEL (GM), dry, loose w/sand, some clay, slag, bricks, steel rubble (fill)
5		Becomes saturated w/product at 6.8 feet, very strong odor (petroleum)
10		Glass debris w/some sand
15		DARK GREEN GREY SILTY CLAY (CL) saturated, firm, some peat, trace fine sand
		Bottom of boring at 16.5 feet

MG-3

LOG OF BORING 8 (~~MW-8~~)

Equipment: CME 55 10" H.S.
Elevation N/A Date: 4/19/89

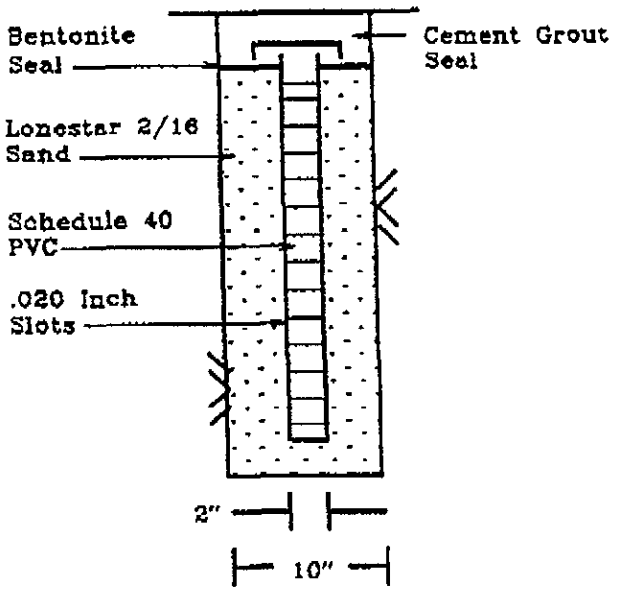
Depth (ft)	Sample	
0		BROWN SILTY GRAVEL (GM), dry, loose w/fine to coarse sand, slag, bricks, metal rubble (fill)
5		VERY DARK GREY SILTY CLAY (CL) moist to wet, firm, some debris, very strong odor (petroleum)
10		Becomes saturated w/oily product at 7.5 feet
		VERY DARK GREEN GREY SILTY CLAY (CL), wet, firm, some peat
		Bottom of boring at 15 feet

TRANS TECH CONSULTANTS
HYDROGEOLOGISTS AND ENGINEERS

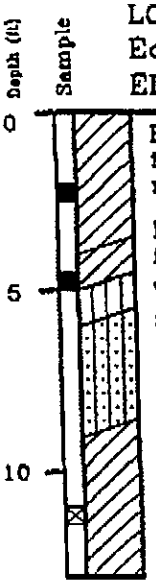
LOGS OF BORINGS 7 (~~MW-7~~ MG-2) AND 8 (~~MW-8~~ MG-3)
Marriott Project C843
Emeryville, California

PLATE 4

DRAWN	JOB NUMBER	APPROVED	DATE
SMR	1017.07.01	DOM	5/31/89



LOG OF BORING 9 (MW-4)
Equipment: CME 55 10" H.S.
Elevation N/A Date: 4/19/89



BROWN SILTY CLAY (CL), moist, firm w/gravel and concrete rubble (fill)

DARK BROWN SILTY CLAY (CL), wet, firm. w/fine gravel, some sand (fill)

VERY DARK BROWN CLAYEY SILT (ML) saturated, some fine gravel

DARK BROWN SILTY SAND (SM) saturated, loose

DARK GREEN GREY SILTY CLAY (CL) saturated, firm

Bottom of boring at 13 feet

TRANS TECH CONSULTANTS
HYDROGEOLOGISTS AND ENGINEERS

LOG OF BORING 9 (MW-4)
Marriott Project C943
Emeryville, California

PLATE 5

DRAWN	JOB NUMBER	APPROVED	DATE
SMR	1017.07.01	OGM	5/31/89

PES Environmental, Inc.
Engineering & Environmental Services

LOG OF MONITORING WELL MG-7

PAGE 1 OF 1

WELL CONSTRUCTION DETAIL

Christy Box

2-in. dia. Schedule 40 PVC blank casing

2-in. dia slotted (.020-inch) screen

bentonite cement seal

bentonite pellet seal

Monterey #3 sand pack

Bottom of Well Cap @ 17 feet bgs

Bottom of borehole @ 18.5 feet bgs

DEPTH (FT)	PID (PPM)	BLOWS/6 IN	SYMBOLS	MATERIALS DESCRIPTION
0	0			Gravel (fill). Slag, wood, brick and metal debris.
5	0	14 33 18		Trace clay and sand content.
10	0	2 2 4		Water encountered at 8.0 feet bgs. DARK GREENISH BROWN WELL-GRADED GRAVEL WITH SAND AND CLAY (GW) Dense, moist. (Fill.) BLACK ELASTIC SILT (MH) Soft, saturated.
15	0	2 4 6		DARK GREENISH GREY SILT WITH SAND (ML) Loose, saturated. ~30 - 35% very fine- to fine-grained sand. Thin clay lenses. DARK GREENISH GREY CLAY WITH SAND (CH) Soft, saturated, high plasticity. ~10 - 15% very fine- to fine-grained sand. DARK GREENISH GREY SILT WITH SAND (ML) Loose, moist. ~40 - 45% very fine- to fine-grained sand.
20				*Bottom of Boring @ 18.5 feet below ground surface*
25				
30				

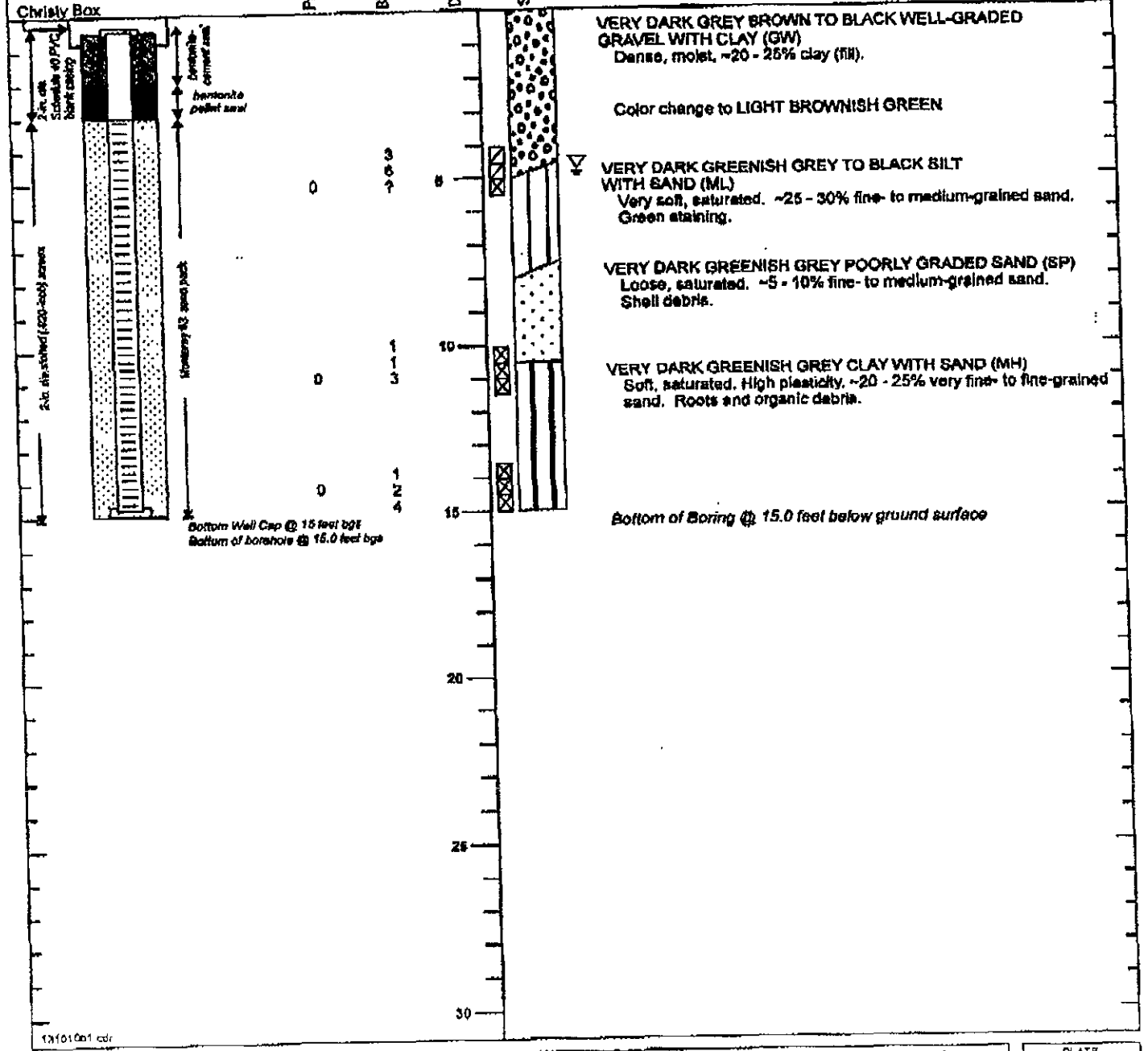
131010b2.cdr

CLIENT	Shellmound	DIAMETER OF HOLE	8 inches
LOCATION	Emeryville, CA	TOTAL DEPTH OF HOLE	18.5 feet
JOB NUMBER	131.0100.003	TOP OF CASING ELEVATION	NA
GEOLOGIST/ENGINEER	Jane Gill	DATE STARTED	3/18/91
DRILL RIG	Mobil	DATE COMPLETED	3/18/91

PLATE **A-3**

PES Environmental, Inc.
Engineering & Environmental Services

LOG OF MONITORING WELL PZ-1



131010n1.cdr

CLIENT	Shellmound	DIAMETER OF HOLE	8 inches
LOCATION	Emeryville, CA	TOTAL DEPTH OF HOLE	15.0 feet
JOB NUMBER	131 0100.003	TOP OF CASING ELEVATION	NA
GEOLOGIST/ENGINEER	Jane Gill	DATE STARTED	3/18/91
DRILL RIG	Mobil	DATE COMPLETED	3/18/91

PLATE **A-2**

Equipment CME 75, Hollowstem Auger (8" Dia.)

Land Surface Elevation 9 feet Date 7 Feb 95

OVM (ppm)	Blows per Foot	Depth (feet)	Sample	
		0		RED-BROWN GRAVEL (GW) loose, moist, with sand (Fill).
		5		BROWN SILTY CLAY (CL) soft, wet, with gravel (fill).
		▽		BLACK CLAY (CL) very soft, saturated, with sand.
		10		Groundwater encountered at 8.5 feet.
		15		Boring terminated at 16.5 feet.
		20		
		25		
		30		
		35		
		40		

AGI TECHNOLOGIES

Log of Piezometer P1

Emeryville Redevelopment Agency/Shellmound Parcels I, II & III

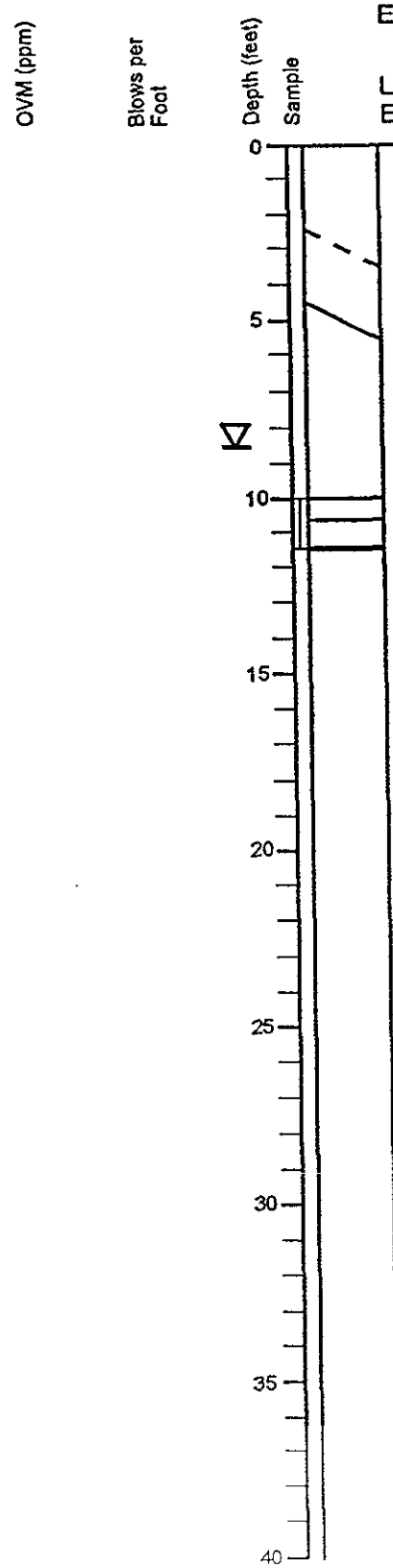
Emeryville, California

PLATE 20

D:\JBOR-LOG1.CDR	PROJECT NO 15681.003.04	DRAWN JBA	DATE 3 Mar 95	APPROVED	REVISED	DATE

Equipment CME 75, Hollowstem Auger (8" Dia.)

Land Surface Elevation 9 feet Date 7 Feb 95



BROWN SANDY GRAVEL (GP) medium dense, moist, with metal fragments and debris (Fill).

GREY-BROWN SAND (SW) loose, moist, with metal fragments (Fill).

BLACK SAND (SP) loose, moist, with silt (Fill).

Groundwater encountered at 8.5 feet.

BROWN SAND (SW) loose, saturated, with debris (Fill).
GREY SANDY GRAVEL (GW) loose, saturated.

Boring terminated at 11.5 feet.

AGI TECHNOLOGIES

Log of Piezometer P2

Emeryville Redevelopment Agency/Shellmound Parcels I, II & III
Emeryville, California

PLATE 21

D:\JBOR-LOG1.CDR	PROJECT NO	DRAWN	DATE	APPROVED	REVISED	DATE
	15681.003.04	JBA	3 Mar 95			

Equipment CME 75, Hollowstem Auger (8" Dia.)

Land Surface Elevation 9 feet Date 7 Feb 95

OVM (ppm)	Blows per Foot	Depth (feet)	Sample	
		0		RED-BROWN SANDY GRAVEL (GW) medium dense, moist, (Fill).
				BLACK SILTY SAND (SM) loose, moist, with gravel (Fill).
		5		RED-BROWN SAND (SP) loose, moist to wet, with metal fragments (Fill).
				Groundwater encountered at 6.0 feet.
		10		BLACK SAND (SM) loose, saturated, fine-grained, with silt and gravel (Fill).
				Boring terminated at 11.5 feet.
		15		
		20		
		25		
		30		
		35		
		40		

AGI TECHNOLOGIES

Log of Piezometer P3

Emeryville Redevelopment Agency/Shellmound Parcels I, II & III

Emeryville, California

PLATE 22

PROJECT NO	DRAWN	DATE	APPROVED	REVISED	DATE
15681 003.04	JBA	3 Mar 95			

D:\JBOR-LOG3.CDR

ALTON GEOSCIENCE
BORING LOG

PROJECT: 25-157 BORING DATE: 3/11/88

LOCATION: EMERYVILLE CA GEOLOGIST: T. FOX / S. DEFIBAUGH

TYPE: 8" AND 10" HSA BORING NO.: B-21 / MW-17

DEPTH	I	BLOW CTS	MATERIAL ENCOUNTERED	USCS
			Hand excavated first four feet.	
		40-43-31	4.0' to 4.5' Loose,dry, dusky yellowish brown gravelly SAND.	SW
			4.5' to 4.8' Loose, saturated, black gravelly SAND.	SW
5'			4.8' to 4.9' Loose, saturated, olive gray SAND, fine-grained.	SP
			4.9' to 5.3' Soft, wet, black, silty CLAY.	CH
		19-24-23	8.0' to 8.3' Loose, saturated, black, silty SAND.	SM
			8.3' to 8.8' Soft, saturated, black, silty CLAY.	CH
			8.8' to 9.1' Loose, saturated, olive gray SAND, fine-grained, trace silt.	SP
10'	↔		9.1' to 9.4' Soft, wet, olive gray CLAY.	CH
		3-2-3-11	12.0' to 12.9' Loose, saturated, black, gravelly SAND, some clay.	SW
			12.9' to 14.0' Medium stiff, moist, grayish olive green, silty CLAY, some organics	CH
15'				

HC = Hydrocarbon
VMR = Vapor Meter Reading
I = Sampling Interval
Total Depth =14.0 feet.

↔ = Sample Analyzed for HC concentration
ppm = Parts per Million
LEL = Lower Explosion Limit

ALTON GEOSCIENCE
BORING LOG

PROJECT: 25-157 BORING DATE: 3/11/88

LOCATION: EMERYVILLE, CA GEOLOGIST: T FOX / S DEFIBAUGH

TYPE: 8" HSA BORING NO. : B-22 / MW-18

DEPTH	I	BLOW CTS	MATERIAL ENCOUNTERED	USCS
			Hand excavated first four feet.	
5'	++	1-2-1-3	4.0' to 4.5' Loose, saturated, olive gray SAND, fine-grained. 4.5' to 5.3' Loose, saturated, black, organic SAND, fine-grained, occasional lenses of soft, black silty clay.	SP SP
		6-2-2-4	8.0' to 8.5' Loose, saturated, olive gray SAND, some gravel and clay, occasional shell fragments.	SP
			8.5' to 9.5' Soft, saturated, dusky yellowish green, sandy CLAY, some gravel.	CL
10'		3-2-2-3	Medium stiff, moist, olive gray, silty CLAY, trace sand, occasional organics.	CH
15'				

HC = Hydrocarbon
VMR = Vapor Meter Reading
I = Sampling Interval
Total Depth =12.0 feet.

++ = Sample Analyzed for HC concentration
ppm = Parts per Million
LEL = Lower Explosion Limit

Table-1
Summary of Well Completion Details
Shellmound Parcel I, II, and III
Emeryville, California

Well Name	Installation Date	Well Depth ft.	Boring Depth ft.	Screen Interval ft.	Casing Diameter inch	Hole Diameter inch
P1	2/10/95	15	15	3.5-15.0	2	8
P2	2/10/95	15	15	3.5-10.0	2	8
P3	2/10/95	15	15	3.5-10.0	2	8
PZ-1	3/18/91	15	15	3.0-15.0	2	8
MG-1	4/18/89	16.5	17.5	6-16.5	2	8
MG-2	4/19/89	15	16.5	6.0-15.0	2	8
MG-7	3/18/91	17	18	4.0-18.0	2	8
MG-3	4/19/89	14.5	15	4.0-14.5	2	8
MW-4	4/19/89	13.5	13	4.0-13.5	4	12
MW-17	3/11/88	12	14	2.0-12.0	2	8
MW-18	3/11/88	12	14	2.0-12.0	2	8

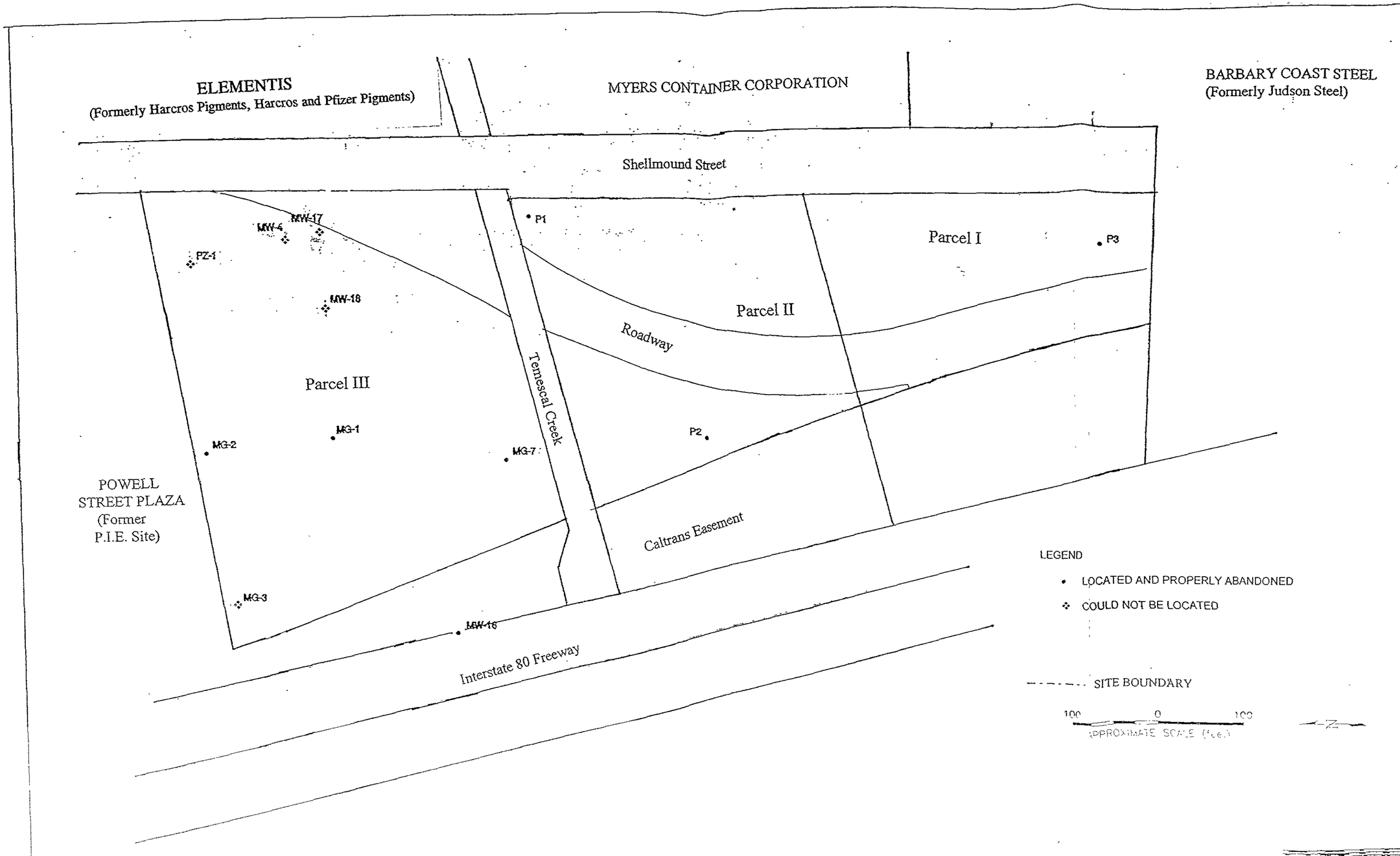


Figure 3: Groundwater Sample Location Map

ENVIRONMENTAL ENGINEERING, INC

Equipment CME 75, Hollowstem Auger (8" Dia.)

Land Surface Elevation 9 feet Date 7 Feb 95

OVM (ppm)	Blows per Foot	Depth (feet)	Sample	
		0		RED-BROWN GRAVEL (GW) loose, moist, with sand (Fill).
		5		BROWN SILTY CLAY (CL) soft, wet, with gravel (fill).
		▽		BLACK CLAY (CL) very soft, saturated, with sand.
		10		Groundwater encountered at 8.5 feet.
		15		Boring terminated at 16.5 feet.
		20		
		25		
		30		
		35		
		40		

AGI TECHNOLOGIES

Log of Piezometer P1

Emeryville Redevelopment Agency/Shellmound Parcels I, II & III

Emeryville, California

PLATE 20

D:\J\BOR-LOG1.CDR	PROJECT NO 15681.003.04	DRAWN JBA	DATE 3 Mar 95	APPROVED	REVISED	DATE

Equipment CME 75, Hollowstem Auger (8" Dia.)

Land Surface Elevation 9 feet Date 7 Feb 95

OVM (ppm)	Blows per Foot	Depth (feet)	Sample	
		0		BROWN SANDY GRAVEL (GP) medium dense, moist, with metal fragments and debris (Fill).
		5		GREY-BROWN SAND (SW) loose, moist, with metal fragments (Fill).
				BLACK SAND (SP) loose, moist, with silt (Fill).
			▽	Groundwater encountered at 8.5 feet.
		10		BROWN SAND (SW) loose, saturated, with debris (Fill).
				GREY SANDY GRAVEL (GW) loose, saturated.
				Boring terminated at 11.5 feet.
		15		
		20		
		25		
		30		
		35		
		40		

AGI TECHNOLOGIES

Log of Piezometer P2

Emeryville Redevelopment Agency/Shellmound Parcels I, II & III

Emeryville, California

PLATE 21

D:\JBOR-LOG1.CDR	PROJECT NO 15681.003.04	DRAWN JBA	DATE 3 Mar 95	APPROVED	REVISED	DATE

Equipment CME 75, Hollowstem Auger (8" Dia.)

Land Surface Elevation 9 feet Date 7 Feb 95

OVM (ppm)	Blows per Foot	Depth (feet)	Sample	
		0		RED-BROWN SANDY GRAVEL (GW) medium dense, moist, (Fill).
				BLACK SILTY SAND (SM) loose, moist, with gravel (Fill).
		5		RED-BROWN SAND (SP) loose, moist to wet, with metal fragments (Fill).
				Groundwater encountered at 6.0 feet.
		10		BLACK SAND (SM) loose, saturated, fine-grained, with silt and gravel (Fill).
				Boring terminated at 11.5 feet.
		15		
		20		
		25		
		30		
		35		
		40		

AGI TECHNOLOGIES

Log of Piezometer P3

Emeryville Redevelopment Agency/Shellmound Parcels I, II & III

Emeryville, California

PLATE 22

D:\JBOR-LOG3.CDR	PROJECT NO 15681 003 04	DRAWN JBA	DATE 3 Mar 95	APPROVED	REVISED	DATE

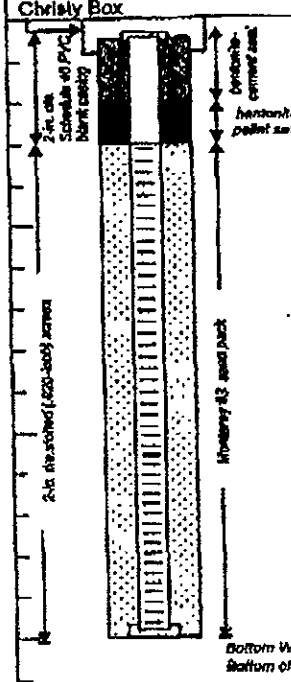
PES Environmental, Inc.
Engineering & Environmental Services

LOG OF MONITORING WELL PZ-1

PAGE 1 OF 1

WELL CONSTRUCTION DETAIL

Christy Box



PID (PPM)	BLOWS/6 IN	DEPTH (FT)	SYMBOLS	MATERIALS DESCRIPTION
				VERY DARK GREY BROWN TO BLACK WELL-GRADED GRAVEL WITH CLAY (GW) Dense, moist, ~20 - 25% clay (fill).
				Color change to LIGHT BROWNISH GREEN
0	3 6 7	5		VERY DARK GREENISH GREY TO BLACK SILT WITH SAND (ML) Very soft, saturated. ~25 - 30% fine- to medium-grained sand. Green staining.
				VERY DARK GREENISH GREY POORLY GRADED SAND (SP) Loose, saturated. ~5 - 10% fine- to medium-grained sand. Shell debris.
0	1 1 3	10		VERY DARK GREENISH GREY CLAY WITH SAND (MH) Soft, saturated. High plasticity. ~20 - 25% very fine- to fine-grained sand. Roots and organic debris.
0	1 2 4	15		*Bottom of Boring @ 15.0 feet below ground surface*
		20		
		25		
		30		

131010b1.cdr

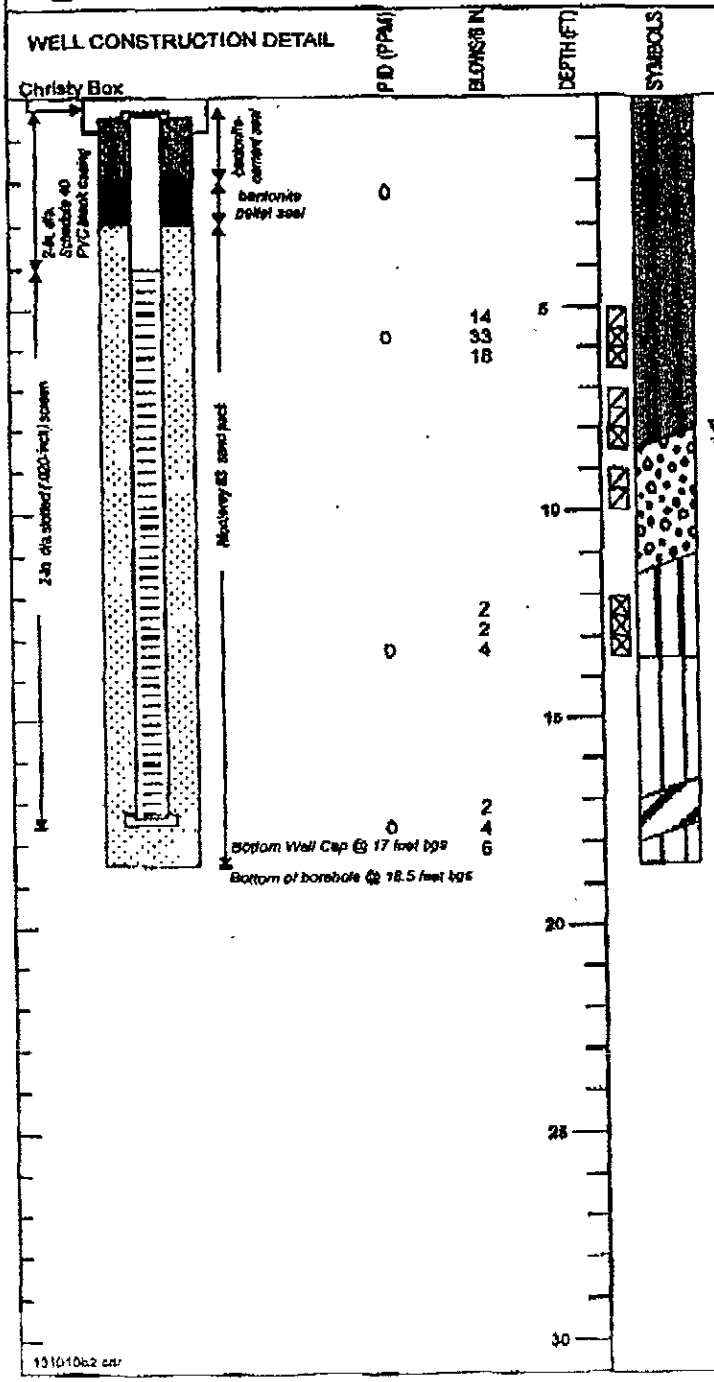
CLIENT	Shellmound	DIAMETER OF HOLE	8 inches
LOCATION	Emeryville, CA	TOTAL DEPTH OF HOLE	15.0 feet
JOB NUMBER	131 0100.003	TOP OF CASING ELEVATION	NA
GEOLOGIST/ENGINEER	Jane Gill	DATE STARTED	3/18/91
DRILL RIG	Mobil	DATE COMPLETED	3/18/91

PLATE **A-2**

PES Environmental, Inc.
Engineering & Environmental Services

LOG OF MONITORING WELL MG-7

PAGE 1 OF 1



MATERIALS DESCRIPTION

Gravel (fill). Slag, wood, brick and metal debris.

Trace clay and sand content.

Water encountered at 8.0 feet bgs.

DARK GREENISH BROWN WELL-GRADED GRAVEL WITH SAND AND CLAY (GW)
Dense, moist. (Fill.)

BLACK ELASTIC SILT (MH)
Soft, saturated.

DARK GREENISH GREY SILT WITH SAND (ML)
Loose, saturated. ~30 - 35% very fine- to fine-grained sand.

Thin clay lenses.

DARK GREENISH GREY CLAY WITH SAND (CH)
Soft, saturated, high plasticity. ~10 - 15% very fine- to fine-grained sand.

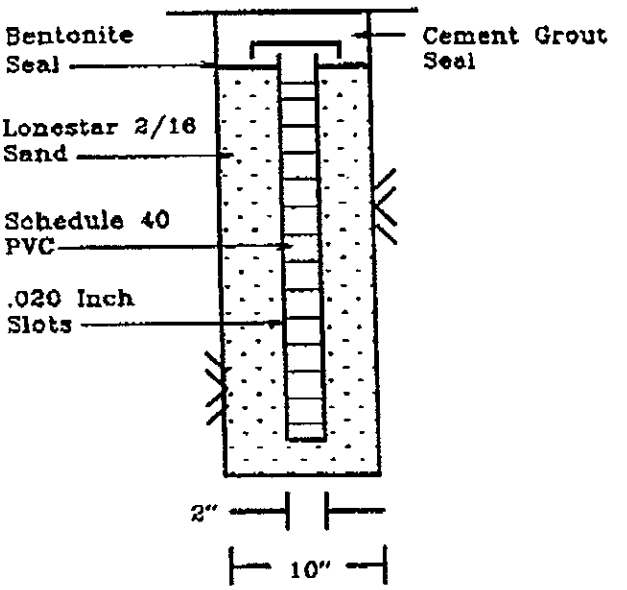
DARK GREENISH GREY SILT WITH SAND (ML)
Loose, moist. ~40 - 45% very fine- to fine-grained sand.

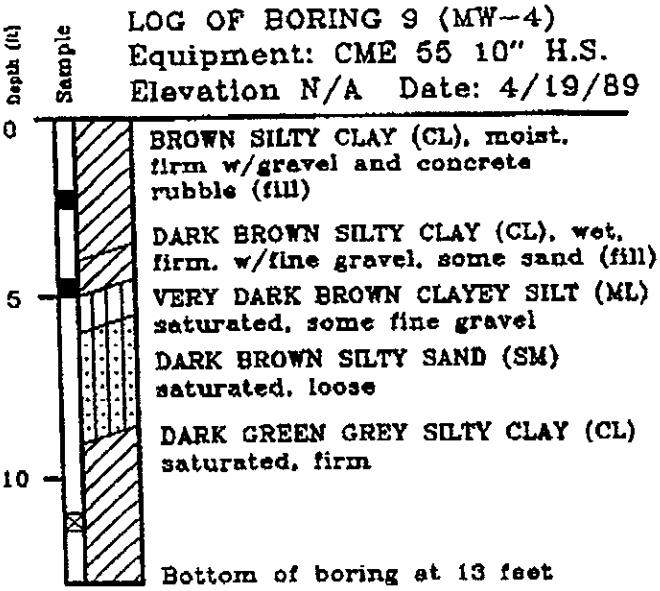
Bottom of Boring @ 18.5 feet below ground surface

131010b2.cdr

CLIENT	Shellmound	DIAMETER OF HOLE	8 inches
LOCATION	Emeryville, CA	TOTAL DEPTH OF HOLE	18.5 feet
JOB NUMBER	131.0100.003	TOP OF CASING ELEVATION	NA
GEOLOGIST/ENGINEER	Jane Gill	DATE STARTED	3/18/91
DRILL RIG	Mobil	DATE COMPLETED	3/18/91

PLATE **A-3**





LOG OF BORING 9 (MW-4)
Equipment: CME 55 10" H.S.
Elevation N/A Date: 4/19/89

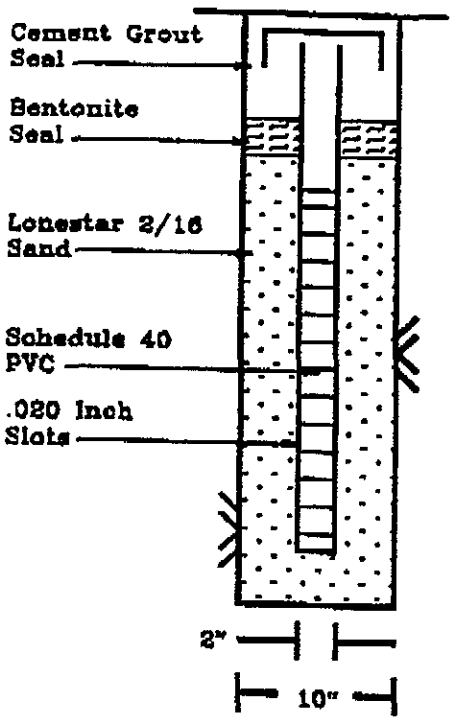
TRANS TECH CONSULTANTS
HYDROGEOLOGISTS AND ENGINEERS

LOG OF BORING 9 (MW-4)
Marriott Project C943
Emeryville, California

PLATE 5

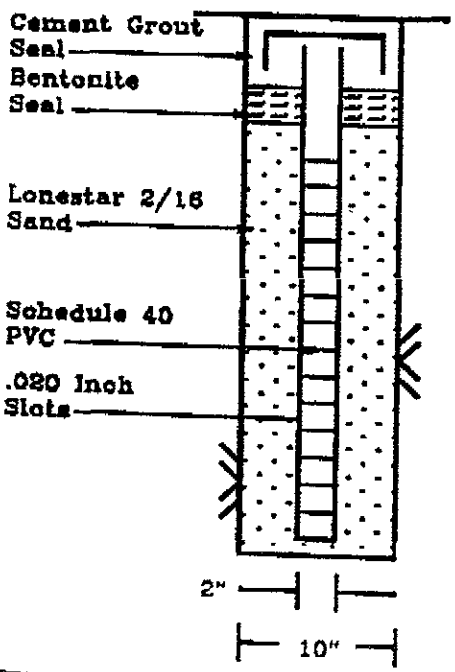
DRAWN	JOB NUMBER	APPROVED	DATE
SMR	1017.07.01	OGM	5/31/89

MG-2



LOG OF BORING 7 (MW-2)
Equipment: CME 55 10" H.S.
Elevation N/A Date: 4/19/89

Depth (ft)	Sample	
0		BROWN SILTY GRAVEL (GM), dry, loose w/sand, some clay, slag, bricks, steel rubble (fill)
5		Becomes saturated w/product at 6.8 feet, very strong odor (petroleum)
10		Glass debris w/some sand
15		DARK GREEN GREY SILTY CLAY (CL) saturated, firm, some peat, trace fine sand
		Bottom of boring at 16.5 feet



MG-3

LOG OF BORING 8 (MW-8)
Equipment: CME 55 10" H.S.
Elevation N/A Date: 4/19/89

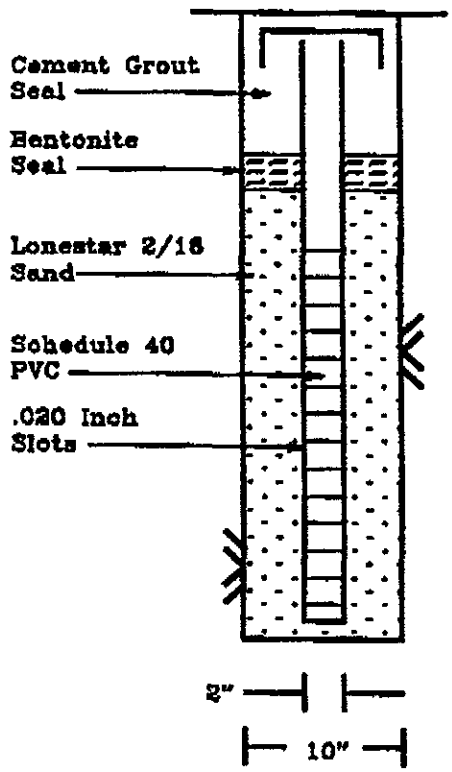
Depth (ft)	Sample	
0		BROWN SILTY GRAVEL (GM), dry, loose w/fine to coarse sand, slag, bricks, metal rubble (fill)
5		VERY DARK GREY SILTY CLAY (CL) moist to wet, firm, some debris, very strong odor (petroleum)
10		Becomes saturated w/oily product at 7.5 feet
		VERY DARK GREEN GREY SILTY CLAY (CL), wet, firm, some peat
		Bottom of boring at 15 feet

TRANS TECH CONSULTANTS
HYDROGEOLOGISTS AND ENGINEERS

LOGS OF BORINGS 7 (MW-2 / MG-2) AND 8 (MW-8 / MG-3)
Marriott Project C943
Emeryville, California

PLATE 4

DRAWN	JOB NUMBER	APPROVED	DATE
SMR	1017.07.01	DAM	5/31/89



MG-1

LOG OF BORING 5 (MW-1)
Equipment: CME 55 10" H.S.
Elevation N/A Date: 4/18/89

Depth (ft)	Sample	
0		DARK BROWN SILTY GRAVEL (GM) moist, loose w/sand, slag, concrete rubble (fill)
5		
10		MOTTLED BROWN AND GREEN BROWN SILTY SAND (SM), saturated, loose, fine grained firm sand, strong odor (petroleum, per test)
15		Becomes very dark grey w/ some shells, very strong odor,
		Bottom of boring at 17.5 feet

LOG OF BORING 6
Equipment: CME 55 10" H.S.
Elevation N/A Date: 4/18/89

Depth (ft)	Sample	
0		DARK BROWN SILTY CLAY (CL), moist, firm, w/fine to coarse gravel, sand, debris, bricks, slag (fill)
5		
10		Bottom of boring at 10 feet

TRANS TECH CONSULTANTS
HYDROGEOLOGISTS AND ENGINEERS

LOGS OF BORINGS 5 (MW-1) AND 6
Marriott Project C843 MG-1
Emeryville, California

PLATE 3

DRAWN	JOB NUMBER	APPROVED	DATE
SMR	1017.07.01	DGM	5/31/89

ALTON GEOSCIENCE
BORING LOG

PROJECT: 25-157 BORING DATE: 3/11/88

LOCATION: EMERYVILLE CA GEOLOGIST: T FOX / S. DEFIBAUGH

TYPE: 8" AND 10" HSA BORING NO.: B-21 / MW-17

DEPTH	I	BLOW CTS	MATERIAL ENCOUNTERED	USCS
			Hand excavated first four feet.	
		40-43-31	4.0' to 4.5' Loose,dry, dusky yellowish brown gravelly SAND.	SW
			4.5' to 4.8' Loose, saturated, black gravelly SAND.	SW
5'			4.8' to 4.9' Loose, saturated, olive gray SAND, fine-grained.	SP
			4.9' to 5.3' Soft, wet, black, silty CLAY.	CH
		19-24-23	8.0' to 8.3' Loose, saturated, black, silty SAND.	SM
			8.3' to 8.8' Soft, saturated, black, silty CLAY.	CH
			8.8' to 9.1' Loose, saturated, olive gray SAND, fine-grained, trace silt.	SP
10'	++		9.1' to 9.4' Soft, wet, olive gray CLAY.	CH
		3-2-3-11	12.0' to 12.9' Loose, saturated, black, gravelly SAND, some clay.	SW
			12.9' to 14.0' Medium stiff, moist, grayish olive green, silty CLAY, some organics	CH
15'				

HC = Hydrocarbon
VMR = Vapor Meter Reading
I = Sampling Interval
Total Depth =14.0 feet.

++ = Sample Analyzed for HC concentration
ppm = Parts per Million
LEL = Lower Explosion Limit

ALTON GEOSCIENCE
BORING LOG

PROJECT: 25-157 BORING DATE: 3/11/88

LOCATION: EMERYVILLE, CA GEOLOGIST: T. FOX / S. DEFIBAUGH

TYPE: 8" HSA BORING NO.: B-22 / MW-18

DEPTH	I	BLOW CTS	MATERIAL ENCOUNTERED	USCS
			Hand excavated first four feet.	
5'	++	1-2-1-3	4.0' to 4.5' Loose, saturated, olive gray SAND, fine-grained. 4.5' to 5.3' Loose, saturated, black, organic SAND, fine-grained, occasional lenses of soft, black silty clay.	SP SP
		6-2-2-4	8.0' to 8.5' Loose, saturated, olive gray SAND, some gravel and clay, occasional shell fragments.	SP
			8.5' to 9.5' Soft, saturated, dusky yellowish green, sandy CLAY, some gravel.	CL
10'		3-2-2-3	Medium stiff, moist, olive gray, silty CLAY, trace sand, occasional organics.	CH
15'				

HC = Hydrocarbon
VMR = Vapor Meter Reading
I = Sampling Interval
Total Depth = 12.0 feet.

++ = Sample Analyzed for HC concentration
ppm = Parts per Million
LEL = Lower Explosion Limit

ENVIRONMENTAL ENGINEERING, INC
2680 Bishop Drive, Suite 203, San Ramon, CA 94583
TEL (925) 244-6600 • FAX (925) 244-6601

April 13, 1998

Ms. Lynn Nakashima
Cal EPA
700 Heinz Avenue, Suite 200
Berkeley, CA 94710-2737

VIA Hand Delivery

Subject: Well Decommissioning Report, Shellmound Parcels I, II and III
Emeryville, California

Dear Lynn:

Thank you for your comments dated April 6, 1998 on our report entitled "Well Decommissioning Report, Shellmound Parcels I, II and III, Emeryville, California". The enclosed report is a copy of the same document, which has been revised based on your comments. Again, thank you very much for your valuable suggestions. Meanwhile please do not hesitate to call me at (925) 244-6600 if you have any questions.

Sincerely;

Mansour Sepehr, Ph.D., P.E.
Principal

Cc: Ron Gerber, Redevelopment Agency
Alvin Kan, County of Alameda, Public Works Agency
Susan Hugo, Alameda County Health Care Services