## JOHN C. HOM & ASSOCIATES, INC.

1618 Second Street San Rafael, CA 94901 (415) 258-9027

REPORT
ENVIRONMENTAL SERVICES
19051 LAKE CHABOT ROAD
CASTRO VALLEY, CALIFORNIA

Oct. 27, 1989

JCH&A Job Number 650.1

Job Prepared for Frederick C Divine Associates 1214 Lincoln Avenue San Rafael, California 94901

No. 412

John C Hom

Civil Engineer - 28877

Civil Engineer - 412

OF CALIFORNITIES Expire 3/31/91

John C Hom & Associates, Inc 1618 Second Street San Rafael, California 94901 415/258-9027

October 27, 1989

#### INTRODUCTION

This report presents the results of the engineering services we performed and proposed new scope for the property at 19051 Lake Chabot Road in Castro Valley, California. The scope of our services was to provide recommendations for gasoline clean-up and to observe the contractor's clean-up work. It is our understanding that a 550-gallon, underground storage tank was used to provide gasoline for a privately owned business that formerly occupied the site. Leakage from that tank was suspected by inventory logs.

The purpose of our work was to investigate the subsurface conditions in the vicinity of the tank and to verify, if any, the extent and magnitude of soil and ground water contamination; to provide remedial measures for clean-up; and to provide construction observation services.

#### SITE INVESTIGATION

On August 26, and September 26, 1988, we explored the subsurface conditions in the vicinity of the former tank location to the extent of three test borings and constructed three ground water monitoring wells. The wells are at the tank location, and downstream of the tank. The test borings and wells ranged from 20- to approximately 21-1/2-feet below the existing ground surface. A Mobile B-53 drill rig equipped with an 8-inch diameter, hollow-stem auger was used to conduct the test borings. The locations of the test borings and wells are shown on the attached Test Boring and Ground Water Monitoring Well Location Plan. Plate 1. Well construction details are presented on Plate Our Field Engineer was on site to locate the test borings, to observe the drilling and construction of the wells, to log the conditions encountered, and to obtain soil samples for visual examination, classification, and chemical testing. ials encountered are shown on the logs of the borings, Plates 3 The soils are described in accordance with the Unithrough 5. fied Soil Classification System, as explained on Plate 6. bedrock is described in accordance with the Geologic Terms For Rock, Plate 7.

Relatively undisturbed samples were obtained by driving a 3-inch outside diameter, 2.43-inch inside diameter, splitbarrel sampler with a 140-pound hammer falling about 30-inches. The samples were retained in previously cleaned, brass lined containers and sealed with plastic caps over aluminum foil. The samples were stored in a cooler with dry ice until transported to the chemical laboratory. The driving resistance was recorded for every 6-inches. These resistances were then converted to standard penetration resistance (ASTM D-1586,) which are shown on the logs of the borings. The sampler and brass tubes were steam cleaned prior to taking each sample. The augers were also steam cleaned.

The samples were transported to National Environmental Testing, Inc. Selected samples were analyzed to determine their levels of purgative aromatics (benzene, ethylbenzene, toluene, xylene) and total petroleum hydrocarbons. Subsequently, ground water samples were taken and tested for the same constituents as the soil samples. Water samples were analyzed with requirements specified in Method "I" and "II" of "Guidelines for Addressing Fuel Leaks", Regional Water Quality Control Board, San Francisco Bay Region, revised 1986. Results of the chemical testing, reporting limits and units are presented on Plates 8 and 9.

### SITE CONDITIONS AND HISTORY

The site is located on the west side of Lake Chabot Road, approximately 500-feet south of its intersection with Keith Avenue, in Castro Valley, California. The eastern portion of the site is nearly level, with grades of less than 10-percent for a distance of approximately 200-feet west of Lake Chabot Beyond that distance, the site gradually steepens to Road. inclinations of approximately 3-horizontal to 1-vertical (3:1) to the western property boundary. Prior to our work, the site was previously graded to provide for single-family dwellings and two commercial buildings. Only one known domestic well occupies the site, approximately as located on Plate 1. The former tank location was located south and west of a warehouse. provided to us by Mr Henry Hertlein indicated that a 550-gallon steel tank, used to store leaded gasoline, was installed in the Its initial location is outlined on Plate 1. quently, in 1960, a storm drain construction project by the County of Alameda, Flood Control, required removal of the tank from its initial location. The tank was moved by the County's Contractor approximately 20-feet west, and the bottom situated approximately 10-feet below the existing ground surface.

Through the course of that year and after relocation of the tank, the owner noticed high amounts of gas consumption. Therefore, he suspected a leaking tank. He reported the leak to the County. The County, or their Contractor, excavated and removed the tank and found a large gap in the side of the tank which indicated severe leakage. The tank was probably damaged when it was initially removed for the storm drain project. The damaged tank was replaced. In 1986, the commercial business re-located and the second tank was removed. The soil around the tank was excavated and allowed to aerate for an unknown amount of time. Imported sand was placed back in the void left by the tank. It is unknown if the second tank had leaked. The Owner tested the soil for contamination during the tank removal.

The test borings encountered fill soils and alluvium over bedrock. The fills encountered varied in thickness and composition. Generally, they ranged from 1/2- up to 4-feet below the existing grade. The fills consisted of a random mixture of sands, clays and gravels, and existed in a medium dense or stiff state. Underlying the fill soils, the test borings encountered alluvial soils. The alluvial soils consisted primarily of clay material with significant amounts of sand and gravels. Bedrock was only encountered in Test Boring 1 at a depth of 16-feet.

In Test Borings 2 and 3, the alluvial soils extended up to 20feet below the existing ground surface.

Ground water was encountered in three of the test borings. The depths are indicated on the boring logs. The ground water probably varies with seasonal rainfall.

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#### CONCLUSIONS

Based upon the results of our work, we conclude that significant levels of contamination of soil and ground water have occurred and were present in the vicinity of monitoring well #1. Significant levels of B, T, X, E, and TPH were generally found at a depth of 8-feet below the existing grade and extended into the ground water. Ground water sampling indicated that free product is absent. Therefore, we conclude that a fire or safety hazard is remote.

Samples tested at monitoring wells 2 and 3 indicate no detectable contamination of the soil, and a trace of xylene and benzene were found in the ground water at Well #2. No detectable contamination was found in the ground water at Monitoring Well #3 and the existing domestic water well. These wells are situated down gradient of the former tank location. Based on this information, it is our opinion that the contamination is localized and confined to the area of the tanks. The cleanup consisted of excavating the contaminated soils and removing groundwater.

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# CONSTRUCTION OBSERVATIONS

We recommended and observed removal of contaminated soil and groundwater in the areas outlined on Plate 1. Soil in this area was removed and bedrock exposed at the bottom of the ex-The excavation was sloped back to about 2-horizontal cavation. to 1-vertical (2:1). Excavated soil below 3-feet was stockpiled on the site and allowed to aerate. The groundwater was at the bottom of the excavation and was pumped into the soil stockpile. Some amounts of water seeped into the excavation after the initial pumping. This excavation was then pumped dry. We sampled and tested the water and soil at the bottom of the excavation. The results of the tests are shown on Plate 10. The excavation was then filled with "clean" soil, not excavated material. was placed in lifts, moisture-conditioned to near optimum, and compacted to at least 90-percent relative compaction.

The material that was stockpiled and aerated was sampled, and was determined to contain non-detectible levels of gasoline. Plate 11 shows the results of the testing. This material was then used as fill within the development.

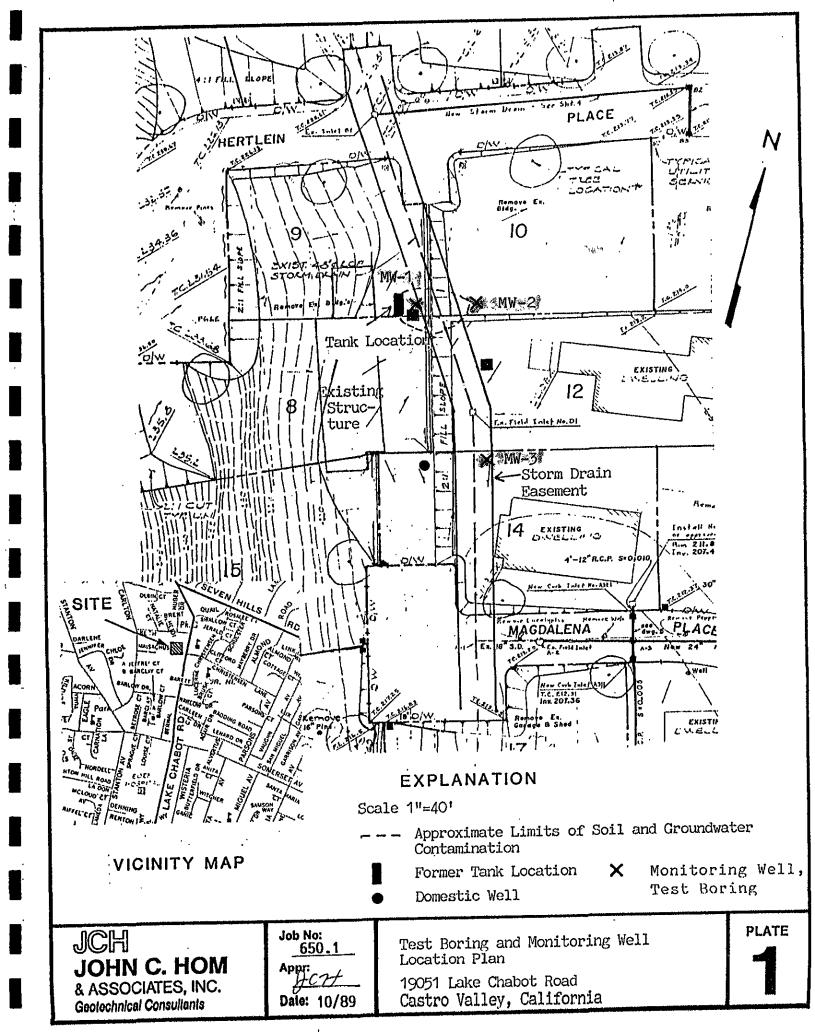
It is our opinion that the cleanup work has substantially improved the site soil and groundwater contamination.

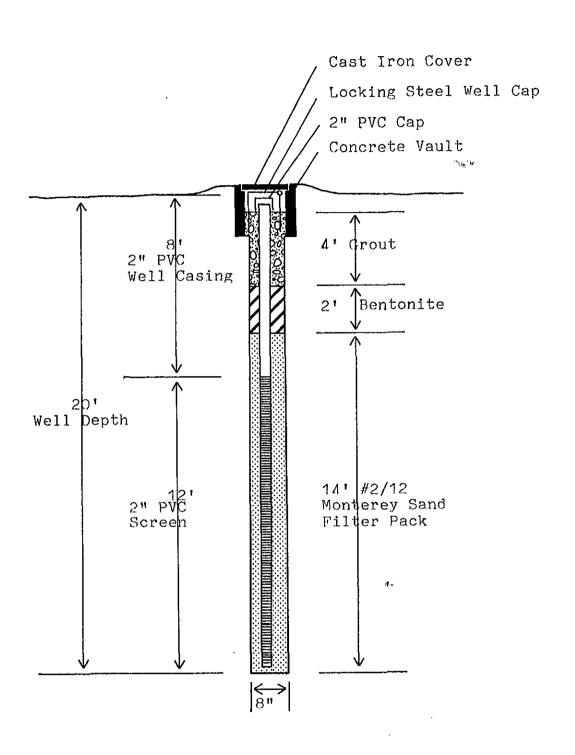
A proposal, which is attached, has been submitted to further monitor cleanup work.

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#### PLATES

Plate 1	Test 1	Boring & Monitoring	Well Location Plan
Plate 2	Schem	atic Well Constructi	ion Diagram
Plates 3 -	5 Logs	of Test Borings	
Plate 6		Classification Chart o Test Data	and
Plate 7	Geolo	gic Terms For Rock	
Plates 8 -	10 Chemi	cal Testing	





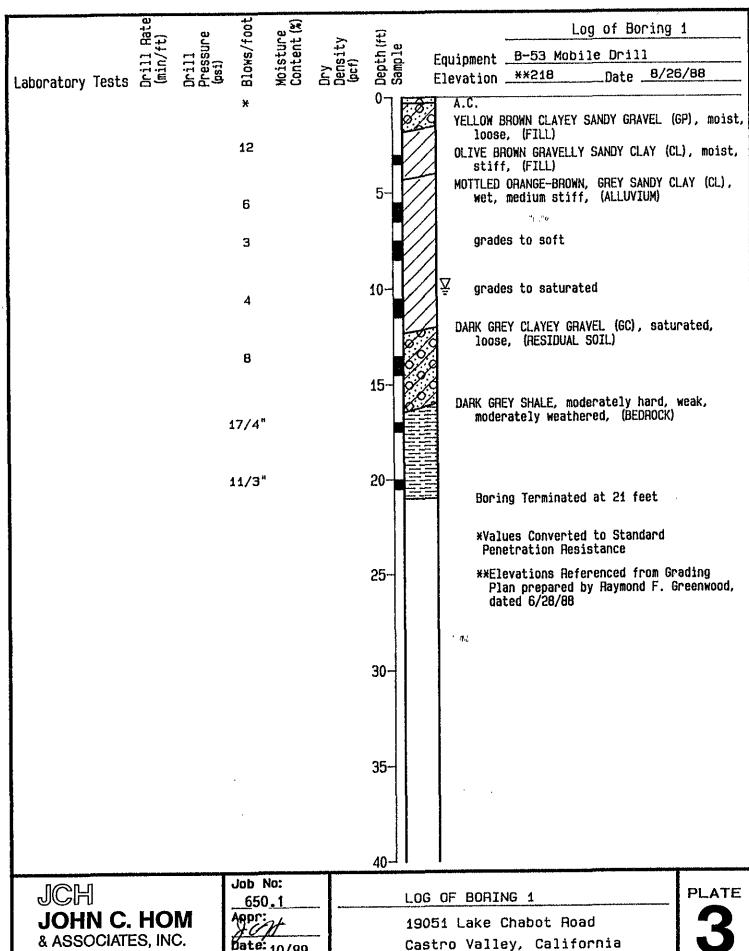
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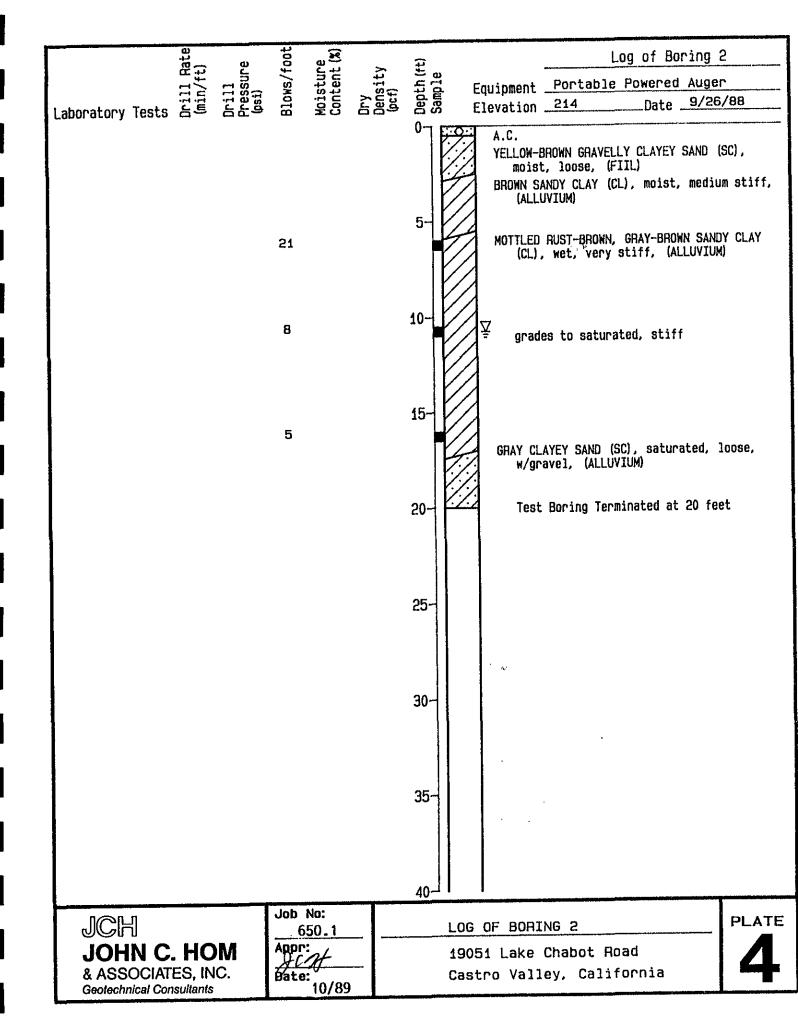
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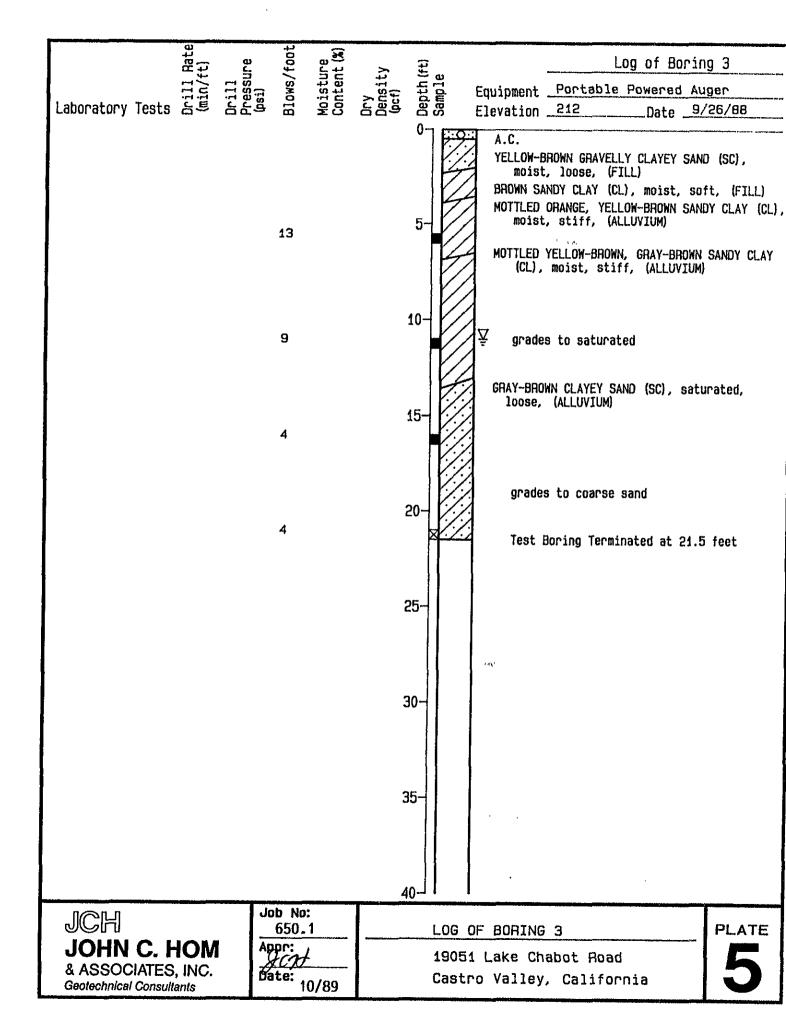
Date: 10/89

Schematic Well Construction Diagram 19051 Lake Chabot Road Castro Valley, California



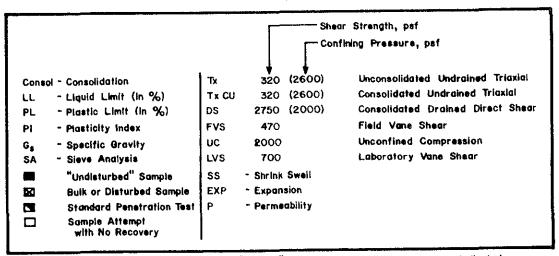
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MAJOR DIVISIONS				TYPICAL NAMES	
SOILS	•	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	Ô	WELL GRADED GRAVELS, GRAVEL SAND MIXTURES
	GRAVELS		GP	Ž.	POORLY GRADED GRAVELS, GRAVEL - SAND MIXTURES
	MORE THAN HALF COARSE FRACTION IS LARGER THAN	GRAVELS WITH OVER 12% FINES	вм		SILTY GRAVELS, POORLY GRADED GRAVEL - SAND - SILT MIXTURES
	NO. 4 SIEVE SIZE		вc		CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND- CLAY MIXTURES
GRAINED	1 T T T T T T T T T T T T T T T T T T T	CLEAN SANDS WITH LITTLE OR NO FINES	sw		WELL GRADED SANDS, GRAVELLY SANDS
SE ™™	SANDS		SP		POORLY GRADED SANDS, GRAVELLY SANDS
ĕ ĕ	MORE THAN HALF COARSE FRACTION IS SMALLER THAN NC 4 SIEVE SIZE	E FRACTION ALLER THAN ' CANDS WITH	SM		SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			sc		CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
ဟု ဋ			ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SLTS WITH SLIGHT PLASTICITY
10S	i	SILTS AND CLAYS			MORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
1 3 1			OL		ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
ا ت <sub>ة</sub> ج					INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		СН		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
FINE					ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
	HIGHLY ORGAN	IIC SOILS	Pt		PEAT AND OTHER HIGHLY ORGANIC SOILS

# UNIFIED SOIL CLASSIFICATION SYSTEM



Note: All strength tests on 2.8" or 2.4" diameter sample unless otherwise indicated.

## KEY TO TEST DATA



Job No: 650.1 Appr:

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#### CLASSIFICATION CHART SOIL AND KEY TO TEST DATA

19051 Lake Chabot Road Castro Valley, California **PLATE** 

#### **ROCK TYPES**



CONGLOMERATE



SHALE



METAMORPHIC ROCKS HYDROTHERMALLY-ALTERED ROCKS



SANDSTONE



SHEARED SHALE MELANGE



**IGNEOUS ROCKS** 



META-SANDSTONE



CHERT

#### **BEDDING THICKNESS**

MASSIVE
THICKLY BEDDED
MEDIUM BEDDED
THINLY BEDDED
VERY THINLY BEDDED
CLOSELY LAMINATED
VERY CLOSELY LAMINATED

Greater than 6 feet
2 to 6 feet
8 to 24 inches
2-1/2 to 8 inches
3/4 to 2-1/2 inches
1/4 to 3/4 inches
Less than 1/4 inch

JOINT, FRACTURE, OR SHEAR SPACING
WIDELY SPACED Greater tha

VERY WIDELY SPACED
WIDELY SPACED
MODERATELY WIDELY SPACED
CLOSELY SPACED
VERY CLOSELY SPACED
EXTREMELY CLOSELY SPACED
Greater than 6 feet
2 to 6 feet
8 to 24 inches
2-1/2 to 8 inches
3/4 to 2-1/2 inches
Less than 3/4 inch

#### HARDNESS

Soil - pliable; can be dug by hand

Slightly Hard - can be gouged deeply or carved with a pocket knife

Moderately Hard - can be readily scratched by a knile blade; scratch leaves heavy trace of dust and is readily visible after the powder has been blown away

Hard - can be scratched with difficulty; scratch produces little powder and is often faintly visible

Very Hard - cannot be scratched with pocket knile, leaves a metallic streak

#### STRENGTH

Plastic - capable of being molded by hand

Friable - crumbles by rubbing with fingers

Weak - an unfractured specimen of such material will crumble under light hammer blows

Moderately Strong - specimen will withstand a few heavy hammer blows before breaking

Strong - specimen will withstand a few heavy ringing hammer blows and usually yields large fragments

Very Strong - rock will resist heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments.

#### **DEGREE OF WEATHERING**

Highly Weathered - abundant fractures coated with oxides, carbonates, sulphates, mud, etd., through discoloration, rock disintegration, mineral decomposition

Moderately Weathered - some (racture coating, moderate or localized discoloration, little to no effect on cementation, slight mineral decomposition

Slightly Weathered - a few strained fractures, slight discoloration, little or no effect on cementation, no mineral decomposition

Fresh - unaffected by weathering agents, no appreciable change with depth.

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GEOLOGIC TERMS FOR ROCK

19051 Lake Chabot Road Castro Valley, California

# Water Sample Analysis, Gasoline, BTX & E (602, TPH Light)

Sample <u>Description</u>	-	porting <u>Limit</u>	<u>Results</u>	<u>Units</u>
B-1/MW-1 9/2/88 14:00	Petroleum Hydrocarbons Benzene Toluene Wylenes Ethyl Benzene	0.05 0.5 0.5 0.6 0.6	52 420 440 610	ppb ppb ppb ppb
B-8/MW-2 9/28/88 13:00	Petroleum Hydrocarbons Mehzene Toluene Xylenes Ethyl Benzene	0.5 0.5 0.5 1.5	ND ND 1.9 ND	ppm ppb ppb ppb
B-9/MW-3 9/28/88 13:00	Petroleum Hydrocarbons Benzene Toluene Xylenes Ethyl Benzene	0.5 0.5 0.5 1.5	ND ND ND ND ND	ppb ppb ppb ppb

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Job No: 650.1

Date: 10/89

CHEMICAL TESTING

19051 Lake Chabot Road Castro Valley, California

# Soil Sample Analysis, Gasoline, BTX & E (8020, TPH Light)

Sample		porting	70	TTm i to a
Description	<u>Parameter</u>	<u>Limit</u>	<u>Results</u>	<u>Units</u>
	Petroleum			
B-1/MW-1	Hydrocarbons	10.0	ND	ppm
@ 3-feet	Benzene	2.5	ND	ppb
8/26/88	Toluene	2.5	13	ppb
16:40	Xylenes	2.5	ND	ppb
20110	Ethyl Benzene	3.0	ND	ppb
	Petroleum			
D. 1 /MW1	Hydrocarbons	10.0	ND	ppm
B-1/MW-1 @ 6-feet	Benzene	2.5	ND	ppb
8/26/88	Toluene	2.5	ND	ppb
16:40	Xylenes	2.5	ND	ppb
10.40	Ethyl Benzene	3.0	ND	ppb
	Petroleum	40.0	71 000	mm
B-1/MW-1	Hydrocarbons	10.0	71,000	ppm
@ 8-feet	Benzene	2.5	1,200	dqq
8/26/88	Toluene	2.5	2,900	
16:40	Xylenes	2.5	7,200	ppb
	Ethyl Benzene	3.0	3,900	ppb
	Petroleum			
B-8/MW-2	Hydrocarbons	10.0	ND	ppm
@ 10.5-feet	Benzene	0.5	ND	ppb
8/26/88	Toluene	0.5	ИD	ppb
8:11	Xylenes	0.6	ND	ppb
	Ethyl Benzene	0.6	ND	ppb
	Petroleum			
B-9/MW-3	Hydrocarbons	10.0	ND	ppm
0 11-feet	Benzene	0.5	ND	ppb
8/26/88	Toluene	0.5	ND	ppb
8:11	Xylenes	0.6	ND	ppb
	Ethyl Benzene	0.6	ИD	ppb
	•			

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Job No: 650.1

CHEMICAL TESTING

19051 Lake Chabot Road Castro Valley, California **PLATE** 

# Water and Soil Sampling During Construction

Sample Description	Parameter	Reporting Limit	<u>Results</u>	<u>Units</u>
Water Sample	Petroleum	0.05	52	ppm
at Bottom of Pit	Hydrocarbons	0.5	750	ppb
	Benzene Ethylbenzene	0.6	ND	dqq
	Toluene	0.5	520	ppb
	Xylenes, total	0.6	31DO	dqq
Soil Samples	Petroleum Hydrocarbons	10	84	ppm
at Bottom of Pit	Benzene	2.5	ND	ppb
	Ethylbenzene	3.0	ND	dqq
	Toluene	2.5	ND	ppb
	Xylenes, total	3.0	8400	ppb
	_		ND	mqq
Soil Sample	Petroleum	10	ND	pp
of Stockpile	Hydrocarbons	2.5	ND	dqq
	Benzene	3.0	ИD	ppb
	Ethylbenzene	2.5	ND	ppb
	Toluene	3.0	ND	dqq
	Xylenes, total	J. 0	<u>-</u>	

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Job No: 650.1

Date: 10/89

CHEMICAL TESTING

19051 Lake Chabot Road Castro Valley, California

## JOHN C. HOM & ASSOCIATES, INC.

1618 Second Street San Rafael, CA 94901 (415) 258-9027

July 10, 1989

Job Number 128.12

Henry Hertlein 2215 National Avenue P. O. Box 3548 Hayward, CA 94540-3548

Dear Mr Hertlein:

Proposal Geotechnical Investigation Monitoring Wells 19051 Lake Chabot Road Castro Valley, California

This presents our proposal to install monitoring wells at the subject property. Installation of the monitoring wells is the result of our meeting with the County of Alameda, Water Quality Board, and the Architect. We previously installed and monitored three wells. One of the wells is still in place, MW-3. The approximate locations are shown on the attached plate.

#### SCOPE

We propose to explore the subsurface conditions and install monitoring wells at two new locations, as shown on the attached plate. The test holes and wells will be about 20-feet Drilling will be accomplished with flight auger equip-The samplers drilling equipment would be steam-cleaned before, during, and after the drilling process. Our Field Engineer would locate the test borings; inspect the operations; log the conditions encountered; and, obtain bulk and undisturbed core samples for visual examination, classification and laboratory testing. Selected samples would be laboratory tested to determine their chemical content, including hydrocarbons, benzene, toluene, xylene, and ethelbenzene. would monitor the two new and one existing wells for a period of at least one year. During the monitoring process, water samples would be taken to test for the above chemicals. would analyze the results of the field and laboratory work, and present our findings and recommendations in a written report including the following information:

19051 Lake Chabot Road, continued July 10, 1989 - Job Number 128.12 Henry Hertlein Page 2

- 1. A description of the soil, rock, and ground water conditions observed.
- A description of the well installation.
- A description of site history and use.
- 4. Results of monitoring and the chemical testing.
- Recommendations for soil and water cleanup, if appropriate.
- 6. Determination of contamination limits.

#### FEE

We propose to perform our geotechnical investigation on a time and expense basis in accordance with the following Standard Schedule of Charges:

Principal Engineer Engineering Geologist Staff/Field Engineer	\$108/Hr \$ 80/Hr \$ 72/Hr
Staff Geologist Laboratory Technician	\$ 50/Hr \$ 50/Hr
Clerical Portable Drill Rig	\$ 50/Hr \$ 72/Hr
Outside Services	Cost + 15%

On this basis, we estimate that our fee would be for our time and about for outside services. We would not exceed these amounts without your prior authorization. Supplemental services such as plan review, consultations following report submittal, attendance at public meetings, and construction inspection are in addition to the above estimated fee. We would charge for these services in accordance with our Standard Schedule of Charges.

We bill monthly, and bills are due upon presentation and past due after thirty days. A one and one-half percent per month service charge and reasonable collection expenses, including



19051 Lake Chabot Road, continued July 10, 1989 - Job Number 128.12 Henry Hertlein Page 3

attorney's fees, if any, are added to past due accounts. If billings become past due, we reserve the right to cease work and/or to withdraw reports until payment is received.

Our work will be performed in accordance with generally accepted engineering practices. We offer no other guarantees or warranties, either expressed or implied.

We appreciate the opportunity to submit this proposal and look forward to working with you on this interesting project. If you have questions, or wish to discuss our proposed scope or fee, or to discuss alternate scopes or fees, please call. Return one signed copy of this proposal to confirm your authorization.

Yours very truly, John C Hom & Associates, Inc

John C Hom Civil Engineer - 28877 Geotechnical Engineer - 412

JCH/jbc 3 copies submitted

**AUTHORIZATION** 

DATE

cc: Frederick Divine 704 Mission Street San Rafael, CA 94901

> JOHN C. HOM & ASSOCIATES, INC. Geotechnical Consultants

#### DISTRIBUTION

## Three Copies Submitted

cc:

Henry Hertlein 19051 Lake Chabot Road

Castro Valley, California 94546

Alameda County Enviromental Health Dept

Division of Hazardous Material

Attention: Scott Seery 80 Swan Way, Room 200 Oakland, California 94621

attachment