JCH
JOHN C. HOM & ASSOCIATES, INC.
1618 Second Street
San Rafael, CA 94901
(415) 258-9027

January 18, 1990

Job Number 650.1

Scott Seerly
Alameda County Health Services
Department of Environmental Health
Hazardous Material Program
80 Swan Way, Room 200
Oakland, California 94621

Dear Mr Seerly:

Ground Water Investigation
19051 Lake Chabot Road
Castro Valley, California

In response to the items in your letter of November 7, 1989, we are proposing the following. The work will follow the procedures outlined in "Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks", dated June 2, 1988, by North Coast, San Francisco Bay Area and Central Valley Regional Water Quality Control Boards, and "Guidelines for Addressing Fuel Leaks", September, 1985, California Regional Water Quality Control Board, San Francisco Bay Region. The enclosed Site Plan shows the proposed locations of the monitoring wells. Two new wells are being proposed at this time. One of the wells is located at the site of the removed gasoline tank. The other location is directly downstream of the tank. The downstream locations were determined by the direction of the original creek flow and site contours. The drilling will be done by ENSCO Environmental Services, Inc, at a date to be determined after approval has been received from your office. Drilling will be conducted with a hollow-stem auger with a representative from our office. The proposed drilling will extend approximately 20-feet below the existing grade. Samples will be taken at about 5-feet intervals with a modified California sampler. The samplers, including the brass liners, will be steam-cleaned. Samples will be retained with aluminum foil, capped with plastic, and stored in an ice chest for transportation. The samples will be transmitted for analysis to Net Pacific Laboratories where they will be tested for the following chemicals and in accordance with the following procedures:

Soil Samples

Total Hydrocarbons	EPA 5030
Purgeable Aromatics BTX and E	EPA 8020

Water Samples

Total Hydrocarbons	EPA 5030
Purgeable Aromatics BTX and E	EPA 602

A chain of custody will be maintained for all samples. The wells will be constructed at the completion of each test hole. The wells will consist of a 2-inch, slotted, perforated pvc pipe. The test hole will typically be filled with sand filter. The upper 6-feet of each well will be sealed with 2-feet of bentonite and 4-feet of grout. A schematic diagram from our previous well construction is attached.

We propose to sample water at the two new wells and the remaining previous well at least every three months. The wells will be initially measured for the ground water table and surveyed to a bench mark. The water will be sampled by a clear acrylic bailer. Holes will be purged by baling or pumping prior to sampling. After the discharged water has been stabilized, the water will be sampled by using a bailer. Water samples will be preserved in an ice chest and a chain of custody will be maintained for all water samples. Again, the sample will be tested by NET Pacific Laboratories in accordance with the above prescribed test methods.

We trust this provides the information you require at this time. If you have any questions, please call.

Yours very truly,

JOHN C HOM & ASSOCIATES, INC

John C Hom
Civil Engineer - 28877
Geotechnical Engineer - 412
Certificates Expire 3/31/91

JCH\jbc

3 copies submitted

Attachments: Site Plan
Safety Plan

cc: Fredric C Divine
704 Mission Avenue
San Rafael, CA 94901

ensco
environmental
services, inc.

PROJECT SAFETY PLAN

Ground Water Investigation
19051 Lake Chabot Road
Castro Valley, California

Project No. _____
1989

CONTENTS

PROJECT SAFETY PLAN

Ground Water Investigation
19051 Lake Chabot Road
Castro Valley, California

1.0 INTRODUCTION

This Project Safety Plan delineates the basic safety requirements for the ground water investiation for the former gas / tank facility located at 19051 Lake Chabot Road, Castro Valley.

The provisions set forth in this plan will apply to the employees of Ensco Environmental Services, Inc. (EES) and their subcontractors working on this phase of the project. The subcontractors may elect to modify these provisions, but only to upgrade or increase the safety requirements, and only with the concurrence of EES as designated and accepted in writing.

This Project Safety Plan will address the expected potential hazards that may be encountered for this project. Field activities are planned to begin on a date to be determined with the duration estimated at approximately 1 day after the start date. If changes in site or working conditions occur as the activities progress, amendments to this plan will be provided by EES.

2.0 PROJECT SAFETY AUTHORITY

Personnel responsible for the project safety are the Corporate Safety Officer and the Project Manager.

The Project Manager is responsible for the provisions and submittal of this plan to the Project Supervisor and for advising the Project Supervisor on health and safety matters. He or she has the authority to provide for the auditing of compliance with the provisions of this plan, suspend or modify work practices, and to administer

disciplinary actions for individuals whose conduct does not meet the requirements set forth herein.

The Project Manager is responsible for the dissemination of the information contained in this plan to Project Supervisor assigned to the project, and to the responsible representative of each subcontractor firm working under EES on the project. The Project Manager will ensure the following items are adequately addressed:

- Safety Supplies and Equipment Inventory
- Medical Surveillance Program/Physical Examinations
- Training Programs/Hazard Communication
- Accident/Incident Reporting Procedures
- Decontamination/Contamination Reduction Procedures

The Project Supervisor will act as the Site Safety Officer. As such, the Project Supervisor is responsible for ensuring the following items are adequately addressed:

- Ensure all personnel on-site adhere to site safety plan.
- Obtain acknowledgement from all on-site personnel on sign off page of site safety plan.
- Investigate all incidents and accidents and report in writing to Project Manager who will report to Corporate Safety Officer.
- Ensure proper personal decontamination points are available.

The Project Supervisor has the authority to suspend work anytime he or she determines that the provisions of the plan are inadequate to ensure worker safety. The Project Supervisor shall also inform the Project Manager of individuals whose conduct is not consistent with the requirements of the plan.

3.0 MEDICAL SURVEILLANCE

EES personnel and subcontractors engaged in project operations shall be participants in the Medical Surveillance Program, and must be cleared by the examining physician(s) to wear respiratory protection devices and protective clothing for working with hazardous materials. The applicable requirements under CAC Title 8, Section 5216 will be observed.

4.0 SAFETY/ORIENTATION TRAINING

Field personnel from EES and their subcontractors will attend a project-specific training program for safety issues and project work task review before beginning work. The meeting will also be attended by the Project Manager and the Project Supervisor. In addition, fit-testing of respiratory protective devices will be conducted as part of the safety/orientation training.

5.0 HAZARD ASSESSMENT

The possible major contaminants to be encountered on the project are _____ gasoline, Gasoline contact will be the potential exposure pathways of concern. Protective clothing, including coveralls, boots, and gloves, will be mandatory for all field operations personnel. In addition, respiratory protective devices shall be required to be on each person, or within easy reach, should irritating odors or irritation of respiratory tract become detectable.

6.0 GENERAL PROJECT SAFETY REQUIREMENTS

The project operations shall be conducted with the following minimum safety requirements employed:

- Eating, drinking, and smoking will be restricted to a designated area.
- Gross decontamination and removal of all personal protective equipment shall be performed prior to exiting the facility. Contaminated clothing will be removed and collected in a drum for disposal.

- Shaking or blowing of potentially contaminated clothing or equipment to remove dust or other materials is not permitted.

- The Project Supervisor will be responsible to take necessary steps to ensure that employees are protected from physical hazards, which could include;

  - Improper use of cables and chains
  - Falling objects such as tools or equipment
  - Falls from elevations
  - Tripping over hoses, pipes, tools, or equipment
  - Slipping on wet or oily surfaces
  - Insufficient or faulty protective equipment
  - Insufficient or faulty operations, equipment, or tools
  - Entry into confined spaces (excavations greater than 4 feet)
  - Unqualified equipment operators.

- All personnel shall be required to wash hands and face before eating, drinking, or smoking.

  - Field operations personnel shall be cautioned to inform each other of non-visual effects of the presence of toxins, such as:

    - Headaches
    - Dizziness
    - Nausea
    - Blurred vision
    - Cramps
    - Irritation of eyes, skin, or respiratory tract
    - Changes in complexion or skin discoloration
    - Changes in apparent motor coordination
    - Changes in personality or demeanor
    - Excessive salivation or changes in pupillary response
    - Changes in speech ability or pattern

7.0 PROTECTIVE EQUIPMENT REQUIREMENTS

Field personnel and visitors are required to wear the following clothing and equipment, as a minimum, while on the 19051 Lake Chabot Road, Castro Valley, California site:

- Hard hat
- Safety glasses
- Long sleeved shirts

Field personnel engaged in work operations are required to wear the following additional equipment:

- Boots (steel-toed)
- Gloves
- Hearing protection

8.0 EMERGENCY RESPONSE PROCEDURES

In the event of an accident resulting in physical injury, first aid will be administered, and the injured worker will be transported to the Eden Hospital for emergency treatment. A physician's attention is required regardless of the severity of the injury.

In the event of fire, explosion, or property damage, Mr. Henry Hertlein of the ~~facility~~ at 19051 Lake Chabot Rd, Castro Valley, California will be immediately notified. If necessary, local fire or response agencies will be called.

Emergency Telephone Numbers:

Fire and Police 911

Eden Hospital .....(___) ___-____

20103 Lake Chabot Road

Castro Valley, California.

Direction to Hospital: ~~*Marina Boulevard East to San Leandro Boulevard. Turn right to East 14th Street. Hospital on corner of San Leandro Boulevard and East 14th Street.*~~ Lake Chabot Road to Castro Valley Boulevard. Hospital on corner of Castro Valley Boulevard and Lake Chabot Road.

Additional Contingency Telephone Numbers:

Mr. John C Hom of John C Hom & Associates, Inc .....(415) 258-9027
San Rafael, California, California

Mr. Eric Kieselbach .....(415) 659-0404
Ensco Environmental Services, Inc., Fremont, California

Occupational Health and Safety Group .....(408) 253-6300

Company
Project No. _____

Date
Page 7

SIGN OFF PAGE

I have read the Project Safety Plan and fully understand the hazards associated with the tank removal project at the former gas tank facility located at 19051 Lake Chabot Road in Castro Valley, California.

I will comply with the minimum safety requirements set forth in the Project Safety Plan. I agree to notify the responsible employee of EES should any unsafe acts be witnessed by me while I am on this site.

Print Name	Signature	Date

JCH.
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

JCH&A Job Number 650.1

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

by

John C Hom
Civil Engineer - 28877
Geotechnical Engineer - 412
Certificates 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 2. 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. The materials encountered are shown on the logs of the borings, Plates 3 through 5. The soils are described in accordance with the Unified Soil Classification System, as explained on Plate 6. The 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, split-barrel 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 Road. Beyond that distance, the site gradually steepens to 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. Information provided to us by Mr Henry Hertlein indicated that a 550-gallon steel tank, used to store leaded gasoline, was installed in the 1950's. Its initial location is outlined on Plate 1. Subsequently, 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 20-feet 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.

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.

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 excavation. The excavation was sloped back to about 2-horizontal 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. Fill was placed in lifts, moisture-conditioned to near optimum, and compacted to at least 90-percent relative compaction.

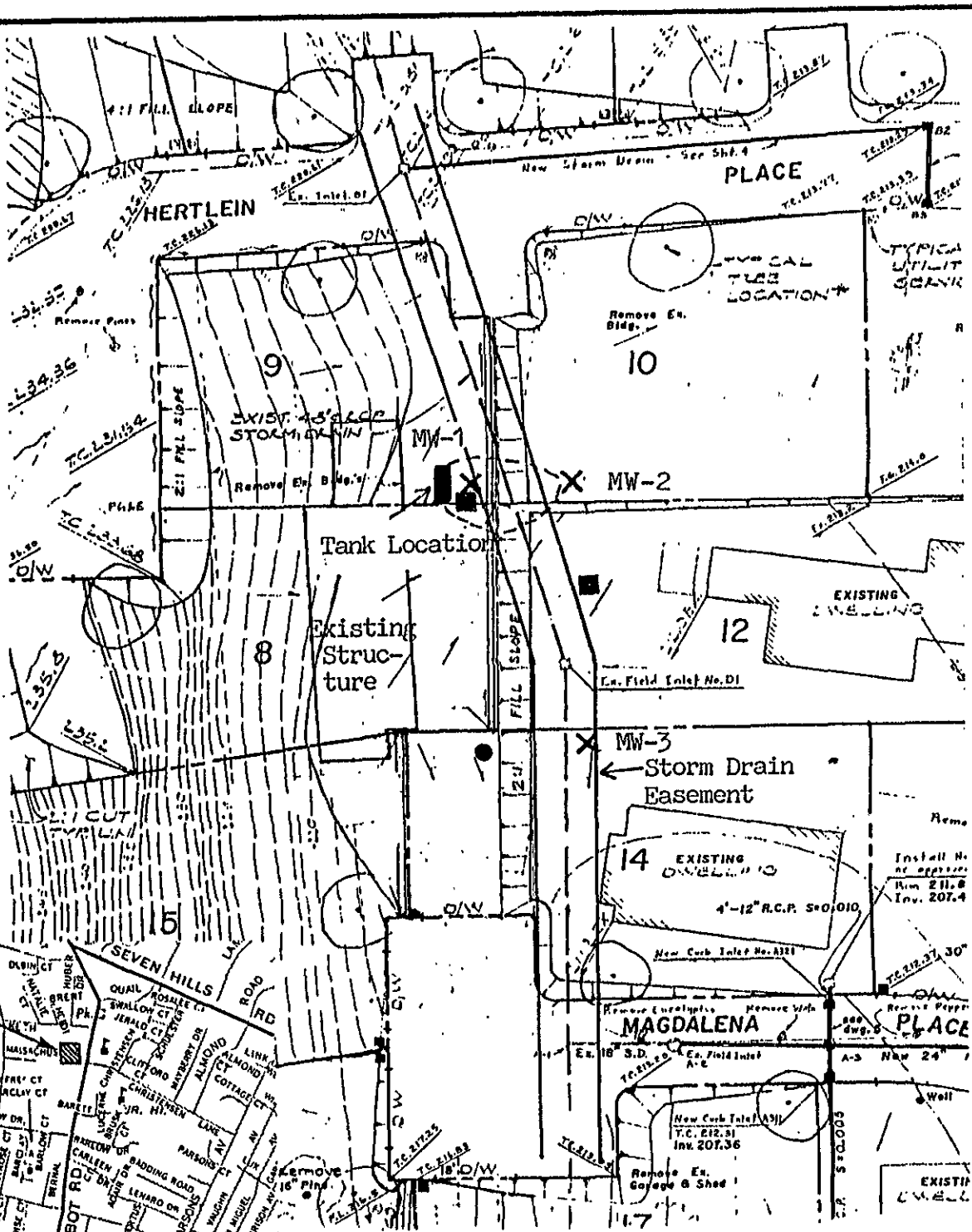
The material that was stockpiled and aerated was sampled, and was determined to contain non-detectible levels of gasoline. Plate 11 shows the results of the testing. This material was then used as fill within the development.

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.

PLATES

Plate 1	Test Boring & Monitoring Well Location Plan
Plate 2	Schematic Well Construction Diagram
Plates 3 - 5	Logs of Test Borings
Plate 6	Soil Classification Chart and Key To Test Data
Plate 7	Geologic Terms For Rock
Plates 8 - 10	Chemical Testing



VICINITY MAP

EXPLANATION

Scale 1"=40'

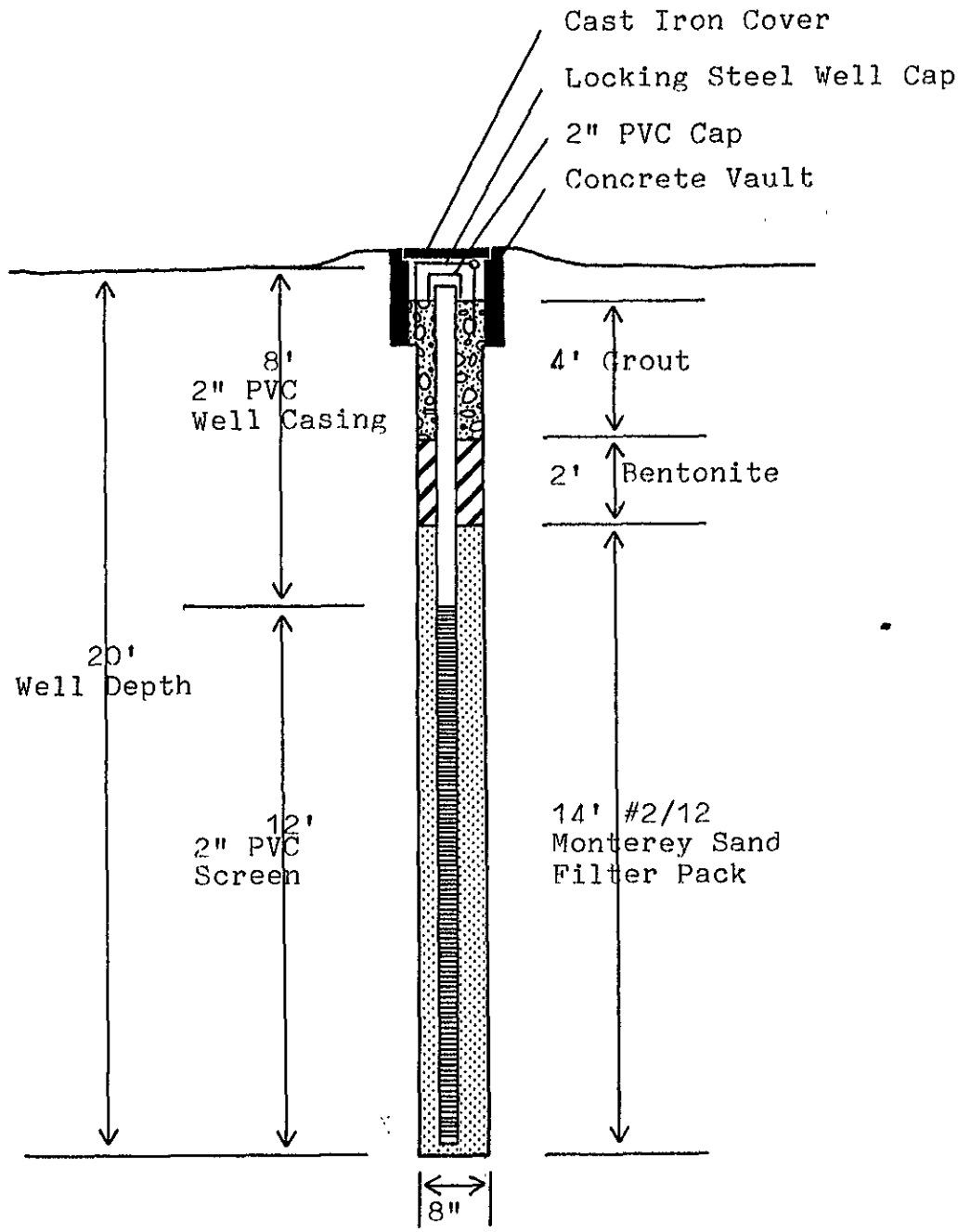
- - - Approximate Limits of Soil and Groundwater Contamination

▮ Former Tank Location

● Domestic Well

✕ Monitoring Well, Test Boring

JCH **JOHN C. HOM** & ASSOCIATES, INC. *Geotechnical Consultants*	Job No: 650.1 Appr: JCH Date: 10/89	Test Boring and Monitoring Well Location Plan 19051 Lake Chabot Road Castro Valley, California	PLATE **1**



JCH **JOHN C. HOM** & ASSOCIATES, INC. *Geotechnical Consultants*	Job No: 650.1 Appr: Date: 10/89	Schematic Well Construction Diagram 19051 Lake Chabot Road Castro Valley, California	PLATE **2**

Log of Boring 1

Equipment B-53 Mobile Drill

Elevation **218 Date 8/26/88

Laboratory Tests	Drill Rate (min/ft)	Drill Pressure (psi)	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Depth (ft)	Sample	
			*			0		A.C.
			12					YELLOW BROWN CLAYEY SANDY GRAVEL (GP), moist, loose, (FILL)
								OLIVE BROWN GRAVELLY SANDY CLAY (CL), moist, stiff, (FILL)
			6			5		MOTTLED ORANGE-BROWN, GREY SANDY CLAY (CL), wet, medium stiff, (ALLUVIUM)
			3					grades to soft
			4			10		▽ grades to saturated
			8					DARK GREY CLAYEY GRAVEL (GC), saturated, loose, (RESIDUAL SOIL)
			17/4"			15		DARK GREY SHALE, moderately hard, weak, moderately weathered, (BEDROCK)
			11/3"			20		Boring Terminated at 21 feet
						25		*Values Converted to Standard Penetration Resistance
								**Elevations Referenced from Grading Plan prepared by Raymond F. Greenwood, dated 6/28/88
						30		
						35		
						40		

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Geotechnical Consultants

Job No: 650.1
Appr:
Date: 10/89

LOG OF BORING 1
19051 Lake Chabot Road
Castro Valley, California

PLATE **3**

Log of Boring 2

Equipment Portable Powered Auger

Elevation 214 Date 9/26/88

Laboratory Tests	Drill Rate (min/ft)	Drill Pressure (psi)	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Depth (ft)	Sample	
						0		A.C.
								YELLOW-BROWN GRAVELLY CLAYEY SAND (SC), moist, loose, (FIIL)
								BROWN SANDY CLAY (CL), moist, medium stiff, (ALLUVIUM)
			21			5		MOTTLED RUST-BROWN, GRAY-BROWN SANDY CLAY (CL), wet, very stiff, (ALLUVIUM)
			8			10	▽	grades to saturated, stiff
			5			15		GRAY CLAYEY SAND (SC), saturated, loose, w/gravel, (ALLUVIUM)
						20		Test Boring Terminated at 20 feet
						25		
						30		
						35		
						40		

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Appr:
Date: 10/89

LOG OF BORING 2

19051 Lake Chabot Road
Castro Valley, California

PLATE
4

Log of Boring 3

Equipment: Portable Powered Auger

Elevation: 212 Date: 9/26/88

Laboratory Tests	Drill Rate (min/ft)	Drill Pressure (psi)	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Depth (ft)	Sample	
						0		A.C.
								YELLOW-BROWN GRAVELLY CLAYEY SAND (SC), moist, loose, (FILL)
								BROWN SANDY CLAY (CL), moist, soft, (FILL)
								MOTTLED ORANGE, YELLOW-BROWN SANDY CLAY (CL), moist, stiff, (ALLUVIUM)
			13			5		
								MOTTLED YELLOW-BROWN, GRAY-BROWN SANDY CLAY (CL), moist, stiff, (ALLUVIUM)
						10		
			9					grades to saturated
								GRAY-BROWN CLAYEY SAND (SC), saturated, loose, (ALLUVIUM)
						15		
			4					
								grades to coarse sand
						20		
			4					Test Boring Terminated at 21.5 feet
						25		
						30		
						35		
						40		

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Geotechnical Consultants

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Date: 10/89

LOG OF BORING 3

19051 Lake Chabot Road
Castro Valley, California

PLATE 5

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS (MORE THAN HALF IS LARGER THAN #200 SIEVE)	GRAVELS — MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL - SAND MIXTURES
			GP	POORLY GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH OVER 12 % FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL - SAND - SILT MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL - SAND - CLAY MIXTURES
	SANDS — MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12 % FINES	SM	SILTY SANDS, POORLY GRADED SAND - SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND - CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN HALF IS SMALLER THAN #200 SIEVE)	SILTS AND CLAYS — LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS — LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS

UNIFIED SOIL CLASSIFICATION SYSTEM

Shear Strength, psf

Confining Pressure, psf

Consol	- Consolidation	Tx	320 (2600)	Unconsolidated Undrained Triaxial
LL	- Liquid Limit (In %)	Tx CU	320 (2600)	Consolidated Undrained Triaxial
PL	- Plastic Limit (In %)	DS	2750 (2000)	Consolidated Drained Direct Shear
PI	- Plasticity Index	FVS	470	Field Vane Shear
G_s	- Specific Gravity	UC	2000	Unconfined Compression
SA	- Sieve Analysis	LVS	700	Laboratory Vane Shear
■	"Undisturbed" Sample	SS	- Shrink Swell	
⊠	Bulk or Disturbed Sample	EXP	- Expansion	
◪	Standard Penetration Test	P	- Permeability	
□	Sample Attempt with No Recovery			

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

KEY TO TEST DATA

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

Job No: 650.1
Appr: JCH
Date: 10/89

SOIL CLASSIFICATION CHART AND KEY TO TEST DATA
19051 Lake Chabot Road
Castro Valley, California

PLATE 6

ROCK TYPES

 CONGLOMERATE

 SHALE

 METAMORPHIC ROCKS
HYDROTHERMALLY-ALTERED ROCKS

 SANDSTONE

 SHEARED SHALE MELANGE

 IGNEOUS ROCKS

 META-SANDSTONE

 CHERT

BEDDING THICKNESS

MASSIVE	Greater than 6 feet
THICKLY BEDDED	2 to 6 feet
MEDIUM BEDDED	8 to 24 inches
THINLY BEDDED	2-1/2 to 8 inches
VERY THINLY BEDDED	3/4 to 2-1/2 inches
CLOSELY LAMINATED	1/4 to 3/4 inches
VERY CLOSELY LAMINATED	Less than 1/4 inch

JOINT, FRACTURE, OR SHEAR SPACING

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

HARDNESS

Soft - 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 knife 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 knife, 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 fracture 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.

JCH **JOHN C. HOM** & ASSOCIATES, INC. *Geotechnical Consultants*	Job No: 650.1 Appr: Date: 10/89	**GEOLOGIC TERMS FOR ROCK** 19051 Lake Chabot Road Castro Valley, California	PLATE **7**

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

Sample Description	Parameter	Reporting Limit	Results	Units
B-1/MW-1 9/2/88 14:00	Petroleum Hydrocarbons	0.05	52	ppm
	Benzene	0.5	420	ppb
	Toluene	0.5	440	ppb
	Xylenes	0.6	3,300	ppb
	Ethyl Benzene	0.6	610	ppb
B-8/MW-2 9/28/88 13:00	Petroleum Hydrocarbons	0.5	ND	ppm
	Benzene	0.5	1.1	ppb
	Toluene	0.5	ND	ppb
	Xylenes	1.5	1.9	ppb
	Ethyl Benzene	1.5	ND	ppb
B-9/MW-3 9/28/88 13:00	Petroleum Hydrocarbons	0.5	ND	ppm
	Benzene	0.5	ND	ppb
	Toluene	0.5	ND	ppb
	Xylenes	1.5	ND	ppb
	Ethyl Benzene	1.5	ND	ppb

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

Sample Description	Parameter	Reporting Limit	Results	Units
B-1/MW-1 @ 3-feet 8/26/88 16:40	Petroleum Hydrocarbons	10.0	ND	ppm
	Benzene	2.5	ND	ppb
	Toluene	2.5	13	ppb
	Xylenes	2.5	ND	ppb
	Ethyl Benzene	3.0	ND	ppb
B-1/MW-1 @ 6-feet 8/26/88 16:40	Petroleum Hydrocarbons	10.0	ND	ppm
	Benzene	2.5	ND	ppb
	Toluene	2.5	ND	ppb
	Xylenes	2.5	ND	ppb
	Ethyl Benzene	3.0	ND	ppb
B-1/MW-1 @ 8-feet 8/26/88 16:40	Petroleum Hydrocarbons	10.0	71,000	ppm
	Benzene	2.5	1,200	ppb
	Toluene	2.5	2,900	ppb
	Xylenes	2.5	7,200	ppb
	Ethyl Benzene	3.0	3,900	ppb
B-8/MW-2 @ 10.5-feet 8/26/88 8:11	Petroleum Hydrocarbons	10.0	ND	ppm
	Benzene	0.5	ND	ppb
	Toluene	0.5	ND	ppb
	Xylenes	0.6	ND	ppb
	Ethyl Benzene	0.6	ND	ppb
B-9/MW-3 @ 11-feet 8/26/88 8:11	Petroleum Hydrocarbons	10.0	ND	ppm
	Benzene	0.5	ND	ppb
	Toluene	0.5	ND	ppb
	Xylenes	0.6	ND	ppb
	Ethyl Benzene	0.6	ND	ppb

Water and Soil Sampling During Construction

Sample Description	Parameter	Reporting Limit	Results	Units
Water Sample at Bottom of Pit	Petroleum Hydrocarbons	0.05	52	ppm
	Benzene	0.5	750	ppb
	Ethylbenzene	0.6	ND	ppb
	Toluene	0.5	520	ppb
	Xylenes, total	0.6	31DO	ppb
Soil Samples at Bottom of Pit	Petroleum Hydrocarbons	10	84	ppm
	Benzene	2.5	ND	ppb
	Ethylbenzene	3.0	ND	ppb
	Toluene	2.5	ND	ppb
	Xylenes, total	3.0	8400	ppb
Soil Sample of Stockpile	Petroleum Hydrocarbons	10	ND	ppm
	Benzene	2.5	ND	ppb
	Ethylbenzene	3.0	ND	ppb
	Toluene	2.5	ND	ppb
	Xylenes, total	3.0	ND	ppb

JCH
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 deep. Drilling will be accomplished with flight auger equipment. 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. We 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. We would analyze the results of the field and laboratory work, and present our findings and recommendations in a written report including the following information:

1. A description of the soil, rock, and ground water conditions observed.

2. A description of the well installation.

3. A description of site history and use.

4. Results of monitoring and the chemical testing.

5. Recommendations for soil and water clean-up, 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	$108/Hr
Engineering Geologist	$ 80/Hr
Staff/Field Engineer	$ 72/Hr
Staff Geologist	$ 50/Hr
Laboratory Technician	$ 50/Hr
Clerical	$ 50/Hr
Portable Drill Rig	$ 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

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