3/75 191

Alameda County Health Care Services Agency
Department of Environmental Health
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, CA 94621
(415) 271-4320

BEFORE THE CALIFORNIA STATE

WATER RESOURCES CONTROL BOARD

Title 23, Section 2050 (a)(10), Record Re: 1432 Harrison Street including connecting Alice Street garage, Oakland, California 94612	)))))	No. A-728

1. I, Paul Smith, am a hazardous materials specialist for the County of Alameda, Hazardous Materials Program.

2. I am the specialist assigned to oversee site remediation at 1432 Harrison Street including the connecting Alice Street garage, Oakland, California 94612.

3. I have reviewed the Alameda County Hazardous Materials files for this site and prepared a complete copy of that record as it pertains to Mr. Bacharach and Ms. Borsuk's petition current through the date of this declaration.

4. I have organized the record chronologically:

A. Application for Permit to Operate Underground Storage Tank - Received May 27, 1987.

B. Application for Permit to Operate Underground Storage Tank - Received May 27, 1987.

C. Interim Tank Permit.

D. 07/27/90 Hazardous Materials Inspection Form.

E. 07/31/90 Notice of Violation.

F. 08/22/90 letter from Fitzgerald, Abbott and Beardsley with leak report enclosure and Subsurface Consultant's Inc. report dated 08/18/90.

G. 08/27/90 HazMat letter to Bacharach/Borsuk.

H. 08/30/90 Closure plan submitted by Verl's Construction on behalf of Bacharach/Borsuk with September 17, 1990 follow-up.

I. 09/05/90 letter from S.C.S. re: timetable for proposed tank removal and investigation.

J. 09/24/90 HazMat letter to Bacharach/Borsuk.

K. 10/12/90 S.C.S. letter to Smith.

L. 10/25/90 letter from Fitzgerald, Abbott and Beardsley with Subsurface Consultants, Inc. report dated 10/19/90.

M. 11/27/90 letter from Heller, Ehrman, White and McAuliffe requesting substitution of Douglas for Bacharach/Borsuk.

N. 12/13/90 letter from Heller, Ehrman, White and McAuliffe answering D.D.A. Thomson's questions.

O. 01/25/91 HazMat letter to S.C.S. detailing what is required in site Characterization/Assessment Proposal.

P. 01/30/91 Heller, Ehrman, White and McAuliffe letter to HazMat regarding site Characterization/Assessment Proposal.

Q. 02/15/91 S.C.S. site Characterization/Assessment Proposal and Statement of Qualifications.

R. 02/21/91 HazMat letter to S.C.S. re: deficiencies in 02/15/91 proposal.

S. 03/04/91 S.C.S. Addendum to Site Characterization/Assessment Proposal.

T. 03/06/91 HazMat letter to S.C.S. re: deficiencies in Addendum.

U. 03/12/91 S.C.S. Revision to Addendum re: Site Characterization/Assessment Proposal.

V. 03/14/91 HazMat letter to S.C.S. re: deficiency in Revision to Addendum re: Site Characterization/Assessment Proposal.

W. 03/18/91 S.C.S. Response to 03/14/91 Deficiency letter.

X. 03/22/91 HazMat letter to S.C.S. approving site Characterization/Assessment Proposal.

Respectfully Submitted,

Dated: 3/25/91

Paul M. Smith

Paul Smith
Alameda Co. Health Care Services, Agency
Hazardous Materials Program

STATE ID NUMBER 00000012212001

APPLICATION FOR PERMIT TO OPERATE UNDERGROUND STORAGE TANK

( ) 01 NEW PERMIT ( ) 05 RENEWED PERMIT ( ) 07 TANK CLOSED ( ) 09 DELETE FROM FILE (NO FEE)
( ) 02 CONDITIONAL PERMIT ( ) 06 AMENDED PERMIT ( ) 08 MINOR CHANGE (NO SURCHARGE)

I OWNER

NAME(CORPORATION.INDIVIDUAL OR PUBLIC AGENCY)	PUBLIC AGENCY ONLY		
DOUGLAS PARKING CO.	( ) 01 FED ( ) 02 STATE ( ) 03 LOCAL		
STREET ADDRESS: 1721 WEBSTER ST.	CITY: OAKLAND	STATE: CA	ZIP: 94612

II FACILITY

FACILITY NAME: HARRISON ST. GARAGE	DEALER/FOREMAN/SUPERVISOR: ~~MAXIMO VASQUEZ~~ EARL GLENN		
STREET ADDRESS: 1432 HARRISON ST.	NEAREST CROSS STREET: 14TH ST.		
CITY: OAKLAND	COUNTY: ALAMEDA	ZIP: 94612	
MAILING ADDRESS: 1721 WEBSTER ST.	CITY: OAKLAND	STATE: CA	ZIP: 94612
PHONE W/AREA CODE: 415-452-2440	TYPE OF BUSINESS: (X) 01 GASOLINE STATION ( ) 02 OTHER PARKING GARAGE		
NUMBER OF CONTAINERS: 2 1	RURAL AREAS ONLY :	TOWNSHIP	RANGE / SECTION

III 24 HOUR EMERGENCY CONTACT PERSON

DAYS: NAME(LAST NAME FIRST) AND PHONE W/AREA CODE	NIGHTS: NAME(LAST NAME FIRST) AND PHONE W/AREA CODE
VASQUEZ, MAX 415-452-2440	~~VASQUEZ, MAX 415-522-4428~~

COMPLETE THE FOLLOWING ON A SEPARATE FORM FOR EACH CONTAINER

IV DESCRIPTION

A. (X) 01 TANK ( ) 04 OTHER:	CONTAINER NUMBER 005
B. MANUFACTURER (IF APPROPRIATE): UNK YEAR MFG:	C. YEAR INSTALLED 1981 ( ) UNKNOWN
D. CONTAINER CAPACITY: 1000 GALLONS ( ) UNKNOWN	E. DOES THE CONTAINER STORE: ( ) 01 WASTE (X) 02 PRODUCT

F. DOES THE CONTAINER STORE MOTOR VEHICLE FUEL OR WASTE OIL ? (X) 01 YES ( ) 02 NO IF YES CHECK APPROPRIATE BOX(ES):
(X) 01 UNLEADED ( ) 02 REGULAR ( ) 03 PREMIUM ( ) 04 DIESEL ( ) 05 WASTE OIL ( ) 06 OTHER

V CONTAINER CONSTRUCTION

Record 1

A. THICKNESS OF PRIMARY CONTAINMENT: ( ) GAUGE ( ) INCHES ( ) CM (X) UNKNOWN

B. ( ) 01 VAULTED (LOCATED IN AN UNDERGROUND VAULT) ( ) 02 NON-VAULTED (X) 03 UNKNOWN [1 Abandoned]

C. ( ) 01 DOUBLE WALLED ( ) 02 SINGLE WALLED ( ) 03 LINED

D. ( ) 01 CARBON STEEL ( ) 02 STAINLESS STEEL ( ) 03 FIBERGLASS ( ) 04 POLYVINYL CHLORIDE ( ) 05 CONCRETE
( ) 06 ALUMINUM ( ) 07 STEEL CLAD ( ) 08 BRONZE ( ) 09 COMPOSITE ( ) 10 NON-METALLIC
( ) 12 UNKNOWN ( ) 13 OTHER:

CONTAINER CONSTRUCTION

E. ( ) 01 RUBBER LINED ( ) 02 ALKYD LINING ( ) 03 EPOXY LINING ( ) 04 PHENOLIC LINING ( ) 05 GLASS LINING
( ) 07 UNLINED (X) 08 UNKNOWN ( ) 09 OTHER:

F. ( ) 01 POLYETHLENE WRAP ( ) 02 VINYL WRAPPING ( ) 03 CATHODIC PROTECTION (X) 04 UNKNOWN ( ) 05 NONE
( ) 06 TAR OR ASPHALT ( ) 09 OTHER:

VI PIPING

A. ABOVEGROUND PIPING: ( ) 01 DOUBLE-WALLED PIPE ( ) 02 CONCRETE-LINED TRENCH ( ) 03 GRAVITY
(CHECK APPROPRIATE BOX(ES) ( ) 04 PRESSURE ( ) 05 SUCTION ( ) 06 UNKNOWN ( ) 07 NONE

B. UNDERGROUND PIPING: ( ) 01 DOUBLE-WALLED PIPE ( ) 02 CONCRETE-LINED TRENCH ( ) 03 GRAVITY
(CHECK APPROPRIATE BOX(ES) ( ) 04 PRESSURE ( ) 05 SUCTION (X) 06 UNKNOWN ( ) 07 NONE

VII LEAK DETECTION

( ) 01 VISUAL (X) 02 STOCK INVENTORY ( ) 04 VAPOR SNIFF WELLS ( ) 05 SENSOR INSTRUMENT
( ) 06 GROUND WATER MONITORING WELLS ( ) 07 PRESSURE TEST ( ) 09 NONE ( ) 10 OTHER:

VIII CHEMICAL COMPOSITION OF MATERIALS STORED IN UNDERGROUND CONTAINERS

*IF YOU CHECKED YES TO IV-F YOU ARE NOT REQUIRED TO COMPLETE THIS SECTION

CURRENTLY STORED	PREVIOUSLY STORED	DELETE	CAS# (IF KNOWN)	CHEMICAL (DO NOT USE COMMERCIAL NAME)
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		

* CHECK STATE BOARD CHEMICAL CODE LISTING FOR POSSIBLE SYNONYMS

IS CONTAINER LOCATED ON AN AGRICULTURAL FARM? ( ) 01 YES (X) 02 NO

THIS FORM HAS BEEN COMPLETED UNDER THE PENALTY OF PERJURY AND, TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT.

PERSON FILING (SIGNATURE)	PHONE W/AREA CODE

FOR LOCAL AGENCY USE ONLY

ADMINISTRATING AGENCY	CITY CODE	COUNTY CODE

CONTACT PERSON	PHONE W/AREA CODE

DATE OF LAST INSPECTION	IN COMPLIANCE ( ) 01 YES ( ) 02 NO	PERMIT APPROVAL DATE	TRANSACTION DATE	LOCAL PERMIT ID #

STATE ID NUMBER 00000012212002

APPLICATION FOR PERMIT TO OPERATE UNDERGROUND STORAGE TANK

( ) 01 NEW PERMIT ( ) 05 RENEWED PERMIT ( ) 07 TANK CLOSED ( ) 09 DELETE FROM FILE (NO FEE)
( ) 02 CONDITIONAL PERMIT ( ) 06 AMENDED PERMIT ( ) 08 MINOR CHANGE (NO SURCHARGE)

I OWNER

NAME(CORPORATION,INDIVIDUAL OR PUBLIC AGENCY)	PUBLIC AGENCY ONLY		
DOUGLAS PARKING CO.	( ) 01 FED ( ) 02 STATE ( ) 03 LOCAL		
STREET ADDRESS	CITY	STATE	ZIP
1721 WEBSTER ST.	OAKLAND	CA	94612

II FACILITY

FACILITY NAME	DEALER/FOREMAN/SUPERVISOR		
HARRISON ST. GARAGE	MAXIMO VASQUEZ		
STREET ADDRESS	NEAREST CROSS STREET		
1432 HARRISON ST.	14TH ST.		
CITY	COUNTY	ZIP	
OAKLAND	ALAMEDA	94612	
MAILING ADDRESS	CITY	STATE	ZIP
1721 WEBSTER ST.	OAKLAND	CA	94612
PHONE W/AREA CODE	TYPE OF BUSINESS		
415-452-2440	(X) 01 GASOLINE STATION ( ) 02 OTHER		
NUMBER OF CONTAINERS	RURAL AREAS ONLY :	TOWNSHIP	RANGE	SECTION
2-1				

III 24 HOUR EMERGENCY CONTACT PERSON

DAYS: NAME(LAST NAME FIRST) AND PHONE W/AREA CODE	NIGHTS: NAME(LAST NAME FIRST) AND PHONE W/AREA CODE
VASQUEZ, MAX 415-452-2440	VASQUEZ, MAX 415-522-4428

COMPLETE THE FOLLOWING ON A SEPARATE FORM FOR EACH CONTAINER

IV DESCRIPTION

A. (X) 01 TANK ( ) 04 OTHER:	CONTAINER NUMBER 006
B. MANUFACTURER (IF APPROPRIATE): UNK YEAR MFG:	C. YEAR INSTALLED (X) UNKNOWN
D. CONTAINER CAPACITY: 1000 GALLONS ( ) UNKNOWN	E. DOES THE CONTAINER STORE: ( ) 01 WASTE (X) 02 PRODUCT
F. DOES THE CONTAINER STORE MOTOR VEHICLE FUEL OR WASTE OIL ? (X) 01 YES ( ) 02 NO IF YES CHECK APPROPRIATE BOX(ES): ( ) 01 UNLEADED ( ) 02 REGULAR (X) 03 PREMIUM ( ) 04 DIESEL ( ) 05 WASTE OIL ( ) 06 OTHER	

V CONTAINER CONSTRUCTION

A. THICKNESS OF PRIMARY CONTAINMENT: ( ) GAUGE ( ) INCHES ( ) CM (X) UNKNOWN
B. ( ) 01 VAULTED (LOCATED IN AN UNDERGROUND VAULT) ( ) 02 NON-VAULTED (X) 03 UNKNOWN
C. ( ) 01 DOUBLE WALLED ( ) 02 SINGLE WALLED ( ) 03 LINED
D. ( ) 01 CARBON STEEL ( ) 02 STAINLESS STEEL ( ) 03 FIBERGLASS ( ) 04 POLYVINYL CHLORIDE ( ) 05 CONCRETE ( ) 06 ALUMINUM ( ) 07 STEEL CLAD ( ) 08 BRONZE ( ) 09 COMPOSITE ( ) 10 NON-METALLIC (X) 12 UNKNOWN ( ) 13 OTHER:

CONTAINER CONSTRUCTION

E. ( ) 01 RUBBER LINED ( ) 02 ALKYD LINING ( ) 03 EPOXY LINING ( ) 04 PHENOLIC LINING ( ) 05 GLASS LINING
( ) 07 UNLINED (X) 08 UNKNOWN ( ) 09 OTHER:

F. ( ) 01 POLYETHLENE WRAP ( ) 02 VINYL WRAPPING ( ) 03 CATHODIC PROTECTION (X) 04 UNKNOWN ( ) 05 NONE
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(CHECK APPROPRIATE BOX(ES) ( ) 04 PRESSURE ( ) 05 SUCTION ( ) 06 UNKNOWN ( ) 07 NONE

B. UNDERGROUND PIPING: ( ) 01 DOUBLE-WALLED PIPE ( ) 02 CONCRETE-LINED TRENCH ( ) 03 GRAVITY
(CHECK APPROPRIATE BOX(ES) ( ) 04 PRESSURE ( ) 05 SUCTION (X) 06 UNKNOWN ( ) 07 NONE

VII LEAK DETECTION

( ) 01 VISUAL (X) 02 STOCK INVENTORY ( ) 04 VAPOR SNIFF WELLS ( ) 05 SENSOR INSTRUMENT
( ) 06 GROUND WATER MONITORING WELLS ( ) 07 PRESSURE TEST ( ) 09 NONE ( ) 10 OTHER:

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*IF YOU CHECKED YES TO IV-F YOU ARE NOT REQUIRED TO COMPLETE THIS SECTION

CURRENTLY STORED	PREVIOUSLY STORED	DELETE	CAS# (IF KNOWN)	CHEMICAL (DO NOT USE COMMERCIAL NAME)
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		

* CHECK STATE BOARD CHEMICAL CODE LISTING FOR POSSIBLE SYNONYMS

IS CONTAINER LOCATED ON AN AGRICULTURAL FARM? ( ) 01 YES (X) 02 NO

THIS FORM HAS BEEN COMPLETED UNDER THE PENALTY OF PERJURY AND, TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT.

PERSON FILING (SIGNATURE)	PHONE W/AREA CODE

FOR LOCAL AGENCY USE ONLY

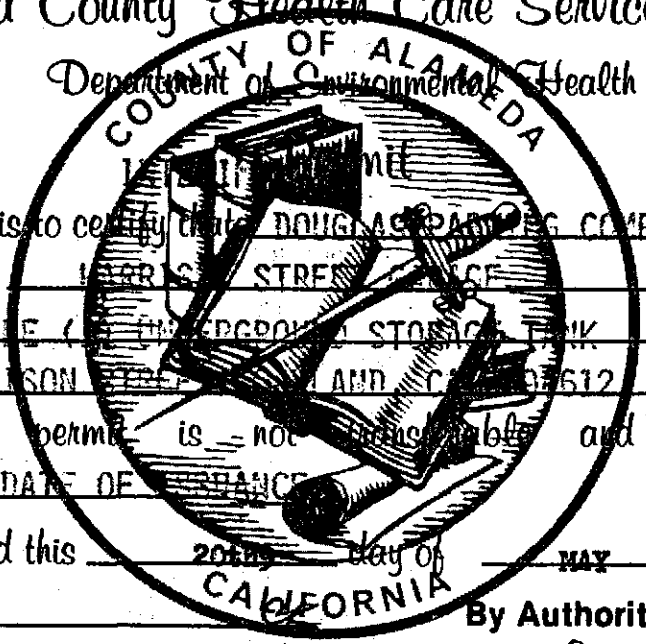
ADMINISTRATING AGENCY	CITY CODE	COUNTY CODE

CONTACT PERSON	PHONE W/AREA CODE

DATE OF LAST INSPECTION	IN COMPLIANCE ( ) 01 YES ( ) 02 NO	PERMIT APPROVAL DATE	TRANSACTION DATE	LOCAL PERMIT ID #

Alameda County Health Care Services Agency

Department of Environmental Health



This is to certify that DOUGLAS PAVING COMPANY,
doing business as HARRISON STREET YARD, is permitted
to operate a ONE (1) UNDERGROUND STORAGE TANK,
at 1432 HARRISON STREET, OAKLAND, CA 94612.
This permit is not transferable and is good until
6 MONTHS FROM DATE OF ISSUANCE.

Issued this 20th day of MAY, 19 88.

Sanitarian

By Authority of
County Health Officer

400-WA-2-3/87

white -env.health
yellow -facility
pink -files

ALAMEDA COUNTY, DEPARTMENT OF ENVIRONMENTAL HEALTH

80 Swan Way, #200
Oakland, CA 94621
(415) 271-4320

Hazardous Materials Inspection Form

II,III

John Redding - Attorney   Fitzgerald Abbot Beardsley 451-3300

Site ID # ____ Site Name ____ Today's Date 7/27/90

Site Address 1432-1438 Harrison

City ____ Zip 94 ____ Phone ____ Alice

____ MAX AMT stored > 500 lbs, 55 gal., 200 cft.?

Inspection Categories:

____ I. Haz. Mat/Waste GENERATOR/TRANSPORTER
____ II. Business Plans, Acute Hazardous Materials
____ III. Underground Tanks

* Calif. Administration Code (CAC) or the Health & Safety Code (HS&C)

II.A BUSINESS PLANS (Title 19)

___ 1. Immediate Reporting	2703
___ 2. Bus. Plan Stds.	25503(b)
___ 3. RR Cars > 30 days	25503.7
___ 4. Inventory Information	25504(a)
___ 5. Inventory Complete	2730
___ 6. Emergency Response	25504(b)
___ 7. Training	25504(c)
___ 8. Deficiency	25505(a)
___ 9. Modification	25505(b)

II.B ACUTELY HAZ. MAT'LS

___ 10. Registration Form Filed	25533(a)
___ 11. Form Complete	25533(b)
___ 12. RMPP Contents	25534(c)
___ 13. Implement Sch. Req'd? (Y/N)	___
___ 14. OffSite Conseq. Assess.	25524(c)
___ 15. Probable Risk Assessment	25534(d)
___ 16. Persons Responsible	25534(g)
___ 17. Certification	25534(f)
___ 18. Exemption Request? (Y/N)	25536(b)
___ 19. Trade Secret Requested?	25538

III. UNDERGROUND TANKS (Title 23)

General

___ 1. Permit Application	25284 (H&S)
___ 2. Pipeline Leak Detection	25292 (H&S)
___ 3. Records Maintenance	2712
___ 4. Release Report	2651
___ 5. Closure Plans	2670

Monitoring for Existing Tanks

___ 6. Method
1) Monthly Test
2) Daily Vadose
Semi-annual gndwater
One time soils
3) Daily Vadose
One time soils
Annual tank test
4) Monthly Gndwater
One time soils
5) Daily Inventory
Annual tank testing
Cont pipe leak det
Vadose/gndwater mon.
6) Daily Inventory
Annual tank testing
Cont pipe leak det
7) Weekly Tank Gauge
Annual tank tstng
8) Annual Tank Testing
Daily Inventory
9) Other ____

___ 7. Precis Tank Test Date: ____	2643
___ 8. Inventory Rec.	2644
___ 9. Soil Testing.	2646
___ 10. Ground Water.	2647

New Tanks

___ 11. Monitor Plan	2632
___ 12. Access. Secure	2634
___ 13. Plans Submit Date: ____	2711
___ 14. As Built Date: ____	2635

Rev 8/88

Comments:

- Steve Davis   Jonathan ~~John~~ Redding Attorney
1881 Drake Drive   1221 Broadway
Oakland, 94611   21st Floor
(415) 339-3717   Oakland 94612

Subsurface ~~Const.~~ Consultants

? Bacharach owner

2 UST's unleaded

3 fill covers

parking garage
273-8833

Attorney Robert Buchman King Schapiro Mittelman & Buchman
1999 Harrison St Oakland 94612
(Alvin Bacharach & Barbara Borsuk) & Mark Borsuk
383 Diablo Rd #100
Danville 94526
no phone   Alvin Bacharach Inc

II, III

Contact: ____
Title: ____   Inspector: ____
Signature: ____   Signature: ____

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

Certified Mailer #P 062 128 227

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415) 271-4320

July 31, 1990

Mr. Alvin Bacharach & Ms. Barbara Borsuk
383 Diablo Road #100
Danville, CA 94526

Notice of Violation

RE: Harrison Street Garage, 1432 Harrison St., Oakland, CA 94612

Dear Mr. Bacharach and Ms. Borsuk:

This is a follow-up letter to an inspection performed on Friday, July 27, 1990, with regard to an expired underground storage tank permit at the above facility.

Upon inspection, it appears that there are additional underground tanks on the property which are currently unpermitted. You are currently in violation of the Health and Safety Code, Section 25284.

The following concerns need to be addressed regarding this location:

An investigation of this site needs to be performed to find out the correct number of tanks which currently exist at the above location.

In accordance with the California Code of Regulations (CCR), Title 23, Chapter 3, Subchapter 16 Underground Tank Regulations, you must perform one of the following actions:

1. Submit a tank closure plan to this Department as required by Article 7, 2670, or

2. Apply for a permit as required by Article 10, 2710. (Permit applications are attached)

If the single walled tanks are to be permitted, they must be precision tested annually, piping must have leak detection devices (if delivery lines are pressurized), fuel inventory must be monitored daily and quarterly monitoring reports must be sent to this office.

Our files show no past records of any tank tightness tests, line leak detection tests, or records of quarterly reports. You are currently in violation of Title 23 of the CA Code of Regulations, Sections 2712, 2651, 2643, 2644 & 2632.

It is our understanding that an investigation is currently underway to determine if there is contamination from the underground tanks at the site. You are required to submit copies of all laboratory analyses of borings, chain of custody, and associated reports. If a leak has occurred, you are required by law, to submit within 5 days, a full written report (including an unauthorized release form). In addition, you will be required to assess the extent of hydrocarbon contamination to soil and groundwater.

According to Section 25299 of the Health and Safety Code (H&SC), any operator of an underground tank system who fails to report an unauthorized release, or fails to permit an inspection of the facility, or to perform any monitoring, testing, or reporting required, shall be liable for a civil penalty of not less than five hundred dollars or more than five thousand dollars for each underground storage tank per day.

You are requested to notify this office in writing within 10 days of the receipt of this letter of your intent with regard to the disposition of the underground tanks at the above location and to inform this office of any contamination problems associated with this site.

Should you have any questions, please contact me at (415) 271-4320.

Sincerely,

Paul M. Smith

Paul M. Smith,
Hazardous Materials Specialist

PMS:mnc

cc: Gil Jensen, Alameda County District Attorney, Consumer and Environmental Protection Agency
Lester Feldman, SFBRWQCB
Robert Buchman, King, Schipiro, Mittleman & Buchman
Steve Davis, Leasee
Jonathan Redding, Fitzgerald, Abbot & Beardley
Files

JAMES C. SOPER, INC.
PHILIP M. JELLEY, INC.
JOHN L. McDONNELL, JR.
GERALD C. SMITH
LAWRENCE R. SHEPP
[illegible]WELLYN E. THOMPSON II
[illegible]HARD T. WHITE
[illegible]CHAEL P. WALSH
J. BRITTAIN HABEGGER
VIRGINIA PALMER
STEPHEN M. JUDSON
STEPHEN M. WILLIAMS
BETTY J. ORVELL
JONATHAN W. REDDING
TIMOTHY W. MOPPIN
KRISTIN PACE
MICHAEL M. K. SEBREE
ANTONIA L. BROADDUS

FITZGERALD, ABBOTT & BEARDSLEY
ATTORNEYS AT LAW
A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS
1221 BROADWAY, 21ST FLOOR
OAKLAND, CALIFORNIA 94612-1837
TELEPHONE: (415) 451-3300

R. M. FITZGERALD 1858-1934
CARL H. ABBOTT 1867-1933
CHARLES A. BEARDSLEY 1882-1963

STACY H. DOBRZENSKY
OF COUNSEL

TELECOPIER: (415) 451-1527

August 22, 1990

Paul Smith
Hazardous Materials Specialist
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, California 94621

Re: Harrison Street Garage,
1432 Harrison Street, Oakland, CA 94612

Dear Mr. Smith:

This letter is in follow-up to our conversation of July 30, 1990 and your letter of July 31, 1990 concerning violations of the Health and Safety Code at the above-referenced facility.

As promised, I am enclosing a copy of the preliminary subsurface investigation of the gasoline tank area in front of the structure at 1432 Harrison Street. The laboratory analysis of soil samples taken confirms substantial leaks of petroleum product from the underground facilities, which have impacted groundwater. A copy of the consultant report is enclosed with this letter. Also enclosed is the regional board's unauthorized release form.

We have already made the consultant report available to the owner, through his attorney, and understand that the owner intends to remove the tanks. We are not certain, however, as to when this removal would occur, especially given the lack of a full subsurface investigation and the access problems created by the presence of these tanks in the entrance to the garage.

Very truly yours,

FITZGERALD, ABBOTT & BEARDSLEY

By Jonathan W. Redding
Jonathan W. Redding

JWR:kal
Enclosures
cc: Steve Davis
Jack Provine, Esq.
Robert A. Buchman, Esq.

8/22/90 (DAVIS)

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT

EMERGENCY: [ ] YES [X] NO

HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED? [ ] YES [X] NO

FOR LOCAL AGENCY USE ONLY
I HEREBY CERTIFY THAT I AM A DESIGNATED GOVERNMENT EMPLOYEE AND THAT I HAVE REPORTED THIS INFORMATION TO LOCAL OFFICIALS PURSUANT TO SECTION 25180.7 OF THE HEALTH AND SAFETY CODE.

SIGNED: Paul M. Smith (signature) DATE:

REPORT DATE: 0 8 2 1 9 0 (M M D D Y Y)
CASE #:

REPORTED BY

NAME OF INDIVIDUAL FILING REPORT: Jonathan W. Redding, Esq.
PHONE: (415) 451-3300
SIGNATURE: Jonathan W. Redding (signature)

REPRESENTING: [ ] OWNER/OPERATOR [ ] REGIONAL BOARD [ ] LOCAL AGENCY [X] OTHER Lessee (not operator)

COMPANY OR AGENCY NAME: Fitzgerald, Abbott & Beardsley

ADDRESS: 1221 Broadway, 21st Floor (STREET) Oakland (CITY) California (STATE) 94612 (ZIP)

RESPONSIBLE PARTY

NAME: Mr. Alvin Bacharach and Ms. Borsuk [ ] UNKNOWN
CONTACT PERSON: Robert Buchman, Esq.
PHONE: (415) 273-8833

ADDRESS: 383 Diablo Road, #100 (STREET) Danville (CITY) California (STATE) 94526 (ZIP)

SITE LOCATION

FACILITY NAME (IF APPLICABLE): Harrison Street Garage
OPERATOR: Tanks abandoned by owner years ago
PHONE: ( )

ADDRESS: 1432 Harrison Street (STREET) Oakland (CITY) Alameda (COUNTY) 94607 (ZIP)

CROSS STREET: 14th Street

TYPE OF AREA: [X] COMMERCIAL [ ] INDUSTRIAL [ ] RURAL [ ] RESIDENTIAL [ ] OTHER

TYPE OF BUSINESS: [X] RETAIL FUEL STATION [ ] FARM [ ] OTHER ~~parking~~

IMPLEMENTING AGENCIES

LOCAL AGENCY — AGENCY NAME: Alameda County Health Care Services
CONTACT PERSON: Mr. Dennis Byrnes
PHONE: (415) 271-4320

REGIONAL BOARD: San Francisco Bay
Mr. Lester Feldman
PHONE: (415) 464-1255

SUBSTANCES INVOLVED

	NAME	QUANTITY LOST (GALLONS)
(1)	Gasoline	[X] UNKNOWN
(2)		[ ] UNKNOWN

DISCOVERY/ABATEMENT

DATE DISCOVERED: 0 8 1 8 9 0 (M M D D Y Y)

HOW DISCOVERED: [ ] INVENTORY CONTROL [ ] SUBSURFACE MONITORING [ ] NUISANCE CONDITIONS [ ] TANK TEST [ ] TANK REMOVAL [XX] OTHER Subsurface Investigation

DATE DISCHARGE BEGAN: M M D D Y Y [X] UNKNOWN

METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY): [ ] REMOVE CONTENTS [ ] REPLACE TANK [ ] CLOSE TANK [ ] REPAIR TANK [ ] REPAIR PIPING [ ] CHANGE PROCEDURE [ ] OTHER

HAS DISCHARGE BEEN STOPPED? [ ] YES [X] NO IF YES, DATE M M D D Y Y

SOURCE/CAUSE

SOURCE OF DISCHARGE: [X] TANK LEAK [ ] UNKNOWN [X] PIPING LEAK [ ] OTHER

TANKS ONLY/CAPACITY: ______ GAL. AGE ______ YRS [X] UNKNOWN

MATERIAL: [ ] FIBERGLASS [X] STEEL [ ] OTHER

CAUSE(S): [ ] OVERFILL [ ] RUPTURE/FAILURE [ ] CORROSION [X] UNKNOWN [ ] SPILL [ ] OTHER

CASE TYPE

CHECK ONE ONLY: [ ] UNDETERMINED [ ] SOIL ONLY [X] GROUNDWATER [ ] DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)

CURRENT STATUS

CHECK ONE ONLY: [ ] SITE INVESTIGATION IN PROGRESS (DEFINING EXTENT OF PROBLEM) [ ] CLEANUP IN PROGRESS [ ] SIGNED OFF (CLEANUP COMPLETED OR UNNECESSARY) [X] NO ACTION TAKEN [ ] POST CLEANUP MONITORING IN PROGRESS [ ] NO FUNDS AVAILABLE TO PROCEED [ ] EVALUATING CLEANUP ALTERNATIVES

REMEDIAL ACTION

CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS):
[ ] CAP SITE (CD) [ ] EXCAVATE & DISPOSE (ED) [ ] REMOVE FREE PRODUCT (FP) [ ] ENHANCED BIO DEGRADATION (IT)
[ ] CONTAINMENT BARRIER (CB) [ ] EXCAVATE & TREAT (ET) [ ] PUMP & TREAT GROUNDWATER (GT) [ ] REPLACE SUPPLY (RS)
[ ] TREATMENT AT HOOKUP (HU) [ ] NO ACTION REQUIRED (NA) [ ] OTHER (OT) Study not yet started

COMMENTS

The Harrison Street Garage is currently the subject of litigation in Alameda County Superior Court. The current lessee, Steve Davis, has never operated or utilized the gas pumps or tanks at the garage. The tanks were abandoned by the owner several years ago.

James P. Bowers, PE
R. William Rudolph, Jr., PE

August 18, 1990
SCI 447.019

Mr. Jonathan Redding
Fitzgerald, Abbott & Beardsley
1221 Broadway, 21st Floor
Oakland, California 94612

Preliminary Subsurface Investigation
of Gasoline Tank Area
1432 Harrison Street
Oakland, California

Dear Mr. Redding:

This letter records our services to date regarding underground fuel storage tanks located at the referenced address. At least two (2) gasoline storage tanks are situated below the sidewalk along Harrison Street in front of the existing building, approximately as shown on Plate 1. Our services to date have consisted of drilling two test borings near the tanks on July 25, 1990, obtaining soil samples from the borings, and performing analytical tests on selected samples.

Investigation

In general, the test borings were drilled to depths of about 25 feet using solid flight auger drilling equipment. Our field engineer observed drilling operations, prepared detailed logs of the materials encountered, and obtained undisturbed samples. Upon conclusion of drilling, the test borings were backfilled with neat cement grout. Cuttings generated during drilling were placed in steel barrels and left on-site.

Soil samples were retained in brass sample liners. The ends of the liners were covered with Teflon sheeting, capped and sealed with duct tape. Samples were refrigerated on-site in ice chests, and remained so until delivery to the analytical laboratory for testing. Chain-of-custody records accompanied the samples to the analytical laboratory. Copies of the test boring logs and the Chain-of-Custody documents are attached.

Two soil samples were selected for chemical analysis. The soil samples were analyzed for total petroleum hydrocarbons (TPH), as

gasoline, in accordance with approved EPA test methods. Analytical services were provided by Curtis & Tompkins, Ltd. A summary of the data is presented below. Analytical test reports are attached.

Sample Designation	TPH as gasoline (ppm)[1]	Benzene (ppb)[2]	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)
1 @ 20'	6,300	99,000	490,000	110,000	610,000
2 @ 18.5'	9,300	98,000	900,000	190,000	1,100,000

[1] ppm = parts per million = mg/kg
[2] ppb = parts per billion = ug/kg

Soil and Groundwater Conditions

Our test borings indicate that the tank area is underlain by medium dense and dense sands containing minor amounts of silt and clay. These sands extend to the depths explored, approximately 25 feet below existing grades. Groundwater was encountered at a depth of about 20 feet during drilling. This level likely does not reflect stabilized groundwater conditions.

Conclusions

The results of our preliminary study indicate that gasoline exists in the soil below the tanks. We judge that the source of contamination is/are the existing or previous fuel tanks, or their piping systems, that exist in the area. The soil samples analyzed contain concentrations of gasoline as high as 9300 ppm, as well as elevated concentrations of BTXE. These concentrations are considered relatively high and suggestive of a significant fuel release. The gasoline concentrations exceed current remediation regulatory guidelines, as promulgated by the Alameda County Health Care Services Agency. Consequently, we conclude that soil remediation will be required.

The gasoline contamination appears to extend to groundwater. Based on the high gasoline concentrations and our experience

with other similar problems, we judge that (1) free gasoline product may exist on the groundwater surface, and (2) groundwater quality has likely been degraded. The severity of the groundwater problem is unknown at this time. However, we suspect that further study will indicate that groundwater remediation will be appropriate.

If you have any questions regarding our services to date, please call.

Yours very truly,

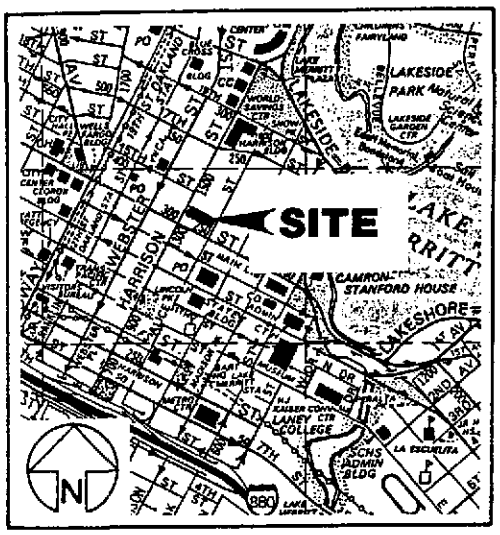
Subsurface Consultants, Inc.

James P. Bowers
Geotechnical Engineer 157 (expires 3/31/91)

CRF:JPB:nf

Attachments: Site Plan, Plate 1
Logs of Test Borings 1 and 2
Unified Soil Classification System
Laboratory Test Reports
Chain-of-Custody Documents

ALICE STREET



VICINITY MAP

TEST BORING

1432 HARRISON

APPROXIMATE LOCATION OF FUEL TANKS

2 1

HARRISON STREET

N

APPROXIMATE SCALE (feet)

0 40 80

SITE PLAN

Subsurface Consultants

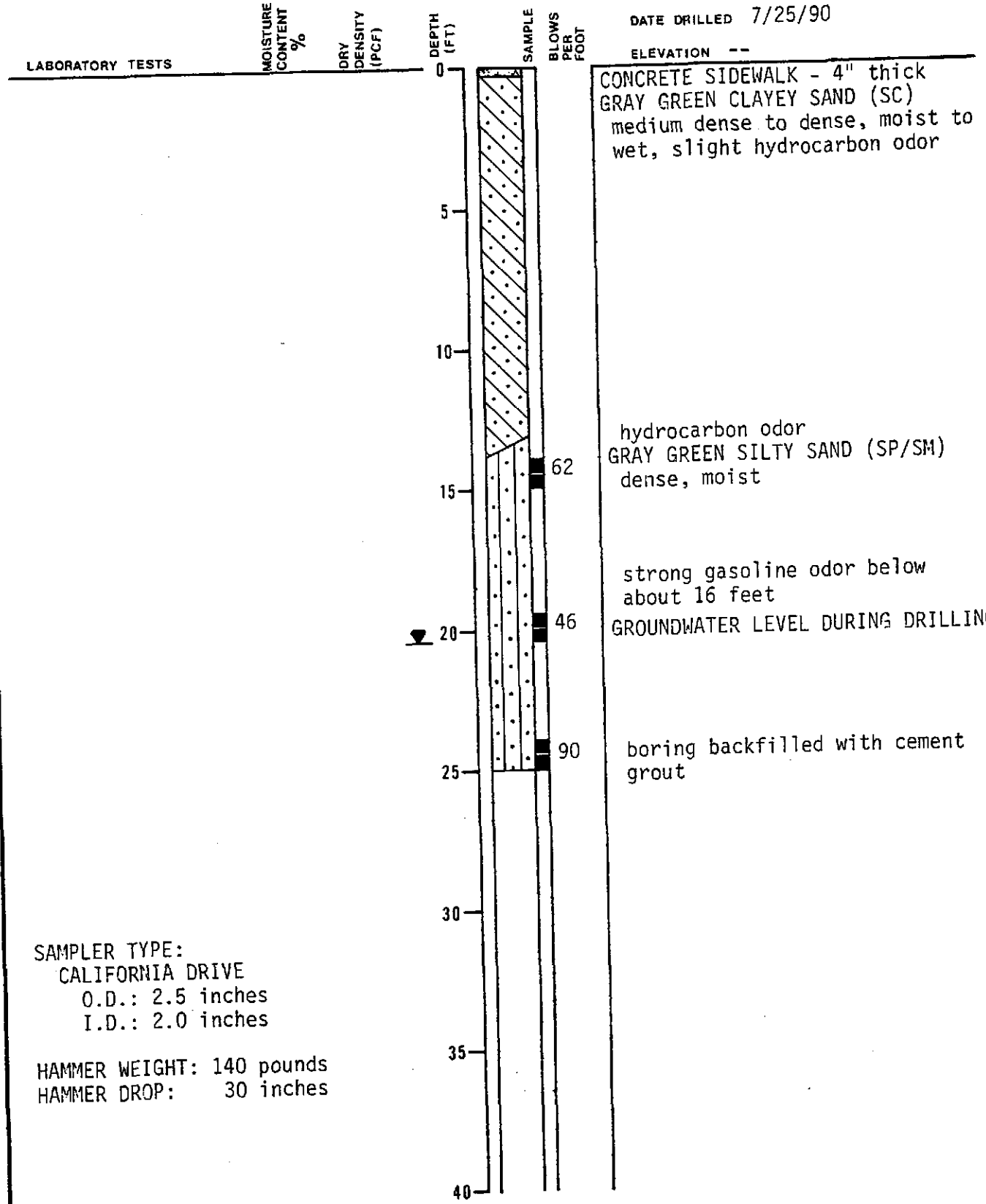
HARRISON STREET GARAGE – OAKLAND, CA

JOB NUMBER	DATE	APPROVED
447.019	8/16/90	

PLATE 1

LOG OF TEST BORING 1

EQUIPMENT 6" Solid Flight Auger
DATE DRILLED 7/25/90
ELEVATION --



SAMPLER TYPE:
CALIFORNIA DRIVE
O.D.: 2.5 inches
I.D.: 2.0 inches

HAMMER WEIGHT: 140 pounds
HAMMER DROP: 30 inches

Subsurface Consultants

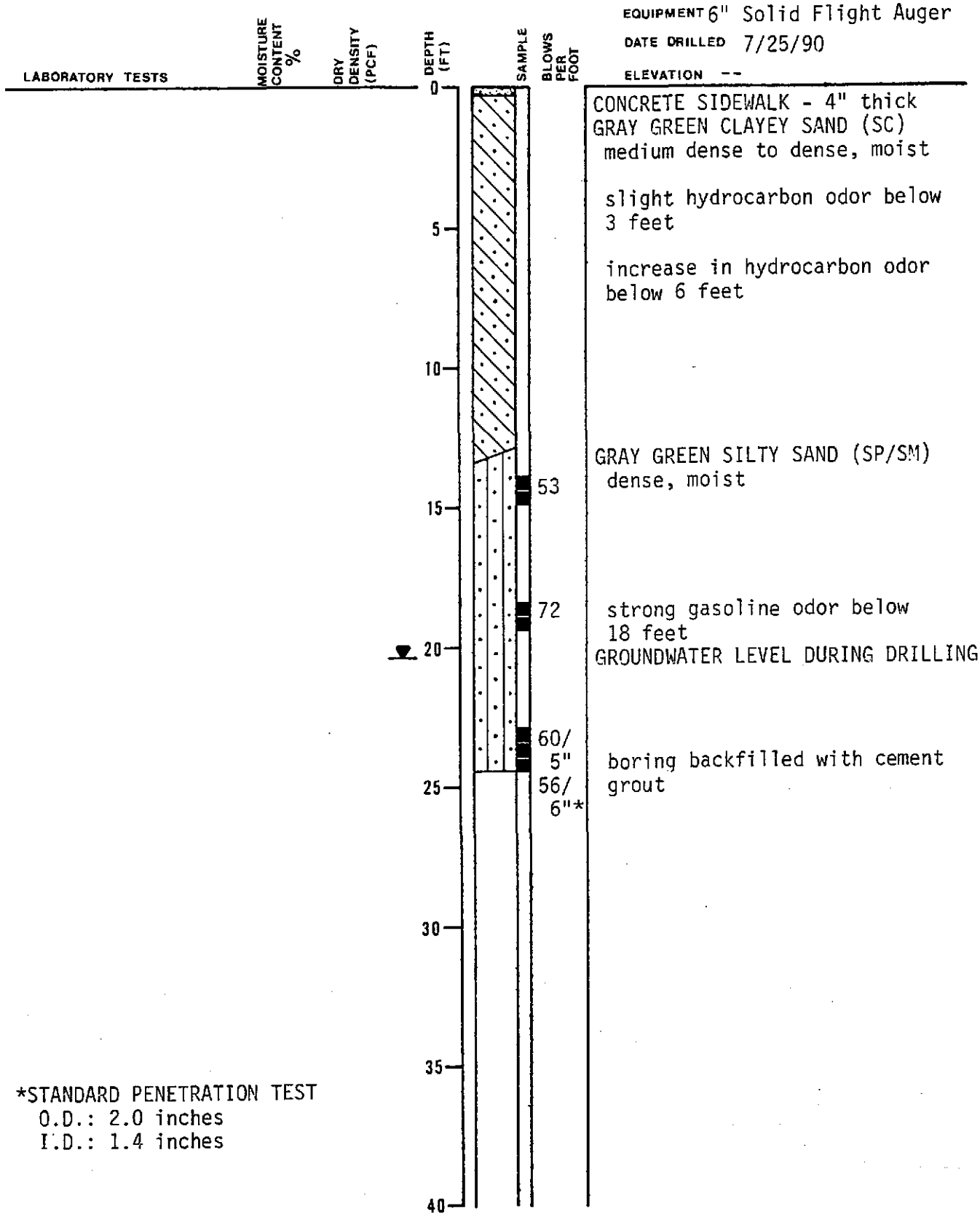
HARRISON STREET GARAGE - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
447.019	8/17/90	

PLATE 2

LOG OF TEST BORING 2

EQUIPMENT 6" Solid Flight Auger
DATE DRILLED 7/25/90
ELEVATION --



*STANDARD PENETRATION TEST
O.D.: 2.0 inches
I.D.: 1.4 inches

Subsurface Consultants

HARRISON STREET GARAGE - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
447.019	8/17/90	

PLATE 3

GENERAL SOIL CATEGORIES			SYMBOLS	TYPICAL SOIL TYPES
COARSE GRAINED SOILS (More than half is larger than No. 200 sieve)	GRAVEL (More than half coarse fraction is larger than No. 4 sieve size)	Clean Gravel with little or no fines	GW	Well Graded Gravel, Gravel-Sand Mixtures
			GP	Poorly Graded Gravel, Gravel-Sand Mixtures
		Gravel with more than 12% fines	GM	Silty Gravel, Poorly Graded Gravel-Sand-Silt Mixtures
			GC	Clayey Gravel, Poorly Graded Gravel-Sand-Clay Mixtures
	SAND (More than half coarse fraction is smaller than No. 4 sieve size)	Clean sand with little or no fines	SW	Well Graded Sand, Gravelly Sand
			SP	Poorly Graded Sand, Gravelly Sand
		Sand with more than 12% fines	SM	Silty Sand, Poorly Graded Sand-Silt Mixtures
			SC	Clayey Sand, Poorly Graded Sand-Clay Mixtures
FINE GRAINED SOILS (More than half is smaller than No. 200 sieve)	SILT AND CLAY (Liquid Limit Less than 50%)		ML	Inorganic Silt and Very Fine Sand, Rock Flour, Silty or Clayey Fine Sand, or Clayey Silt with Slight Plasticity
			CL	Inorganic Clay of Low to Medium Plasticity, Gravelly Clay, Sandy Clay, Silty Clay, Lean Clay
			OL	Organic Clay and Organic Silty Clay of Low Plasticity
	SILT AND CLAY (Liquid Limit Greater than 50%)		MH	Inorganic Silt, Micaceous or Diatomaceous Fine Sandy or Silty Soils, Elastic Silt
			CH	Inorganic Clay of High Plasticity, Fat Clay
			OH	Organic Clay of Medium to High Plasticity, Organic Silt
HIGHLY ORGANIC SOILS			PT	Peat and Other Highly Organic Soils

UNIFIED SOIL CLASSIFICATION SYSTEM

Subsurface Consultants

HARRISON STREET GARAGE - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
447.019	8/17/90	

PLATE 4

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 07/27/90
DATE REPORTED: 08/14/90

LAB NUMBER: 101213

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 2 SOIL SAMPLES

PROJECT #: 447.019
LOCATION: HARRISON GARAGE

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101213
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 447.019
JOB LOCATION: HARRISON GARAGE

DATE RECEIVED: 07/27/90
DATE ANALYZED: 08/14/90
DATE REPORTED: 08/14/90

Total Volatile Hydrocarbons with BTXE in Soils & Wastes
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
101213-1	1 @ 20.0	6,300	99,000	490,000	110,000	610,000
101213-2	2 @ 18.5	9,300	98,000	900,000	190,000	1,100,000

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	93

Subsurface Consultants 10213

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: HARRISON GARAGE

SCI Job Number: 447.019

Project Contact at SCI: JIM BOWERS

Sampled By: FERNANDO VELEZ

Analytical Laboratory: CURTIS & TOMPKINS

Analytical Turnaround: NORMAL

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
1 @ 20.0	S	T	7/25/90		TVH + BTXE	
2 @ 18.5	S	T	7/25/90		TVH + BTXE	

* * * * * *

Released by: _____ Date: _____

Released by Courier: _____ Date: _____

Received by Laboratory: _____ Date: 7/27/90

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 07/27/90
DATE REPORTED: 08/14/90

LAB NUMBER: 101213

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 2 SOIL SAMPLES

PROJECT #: 447.019
LOCATION: HARRISON GARAGE

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101213
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 447.019
JOB LOCATION: HARRISON GARAGE

DATE RECEIVED: 07/27/90
DATE ANALYZED: 08/14/90
DATE REPORTED: 08/14/90

Total Volatile Hydrocarbons with BTXE in Soils & Wastes
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
101213-1	1 @ 20.0	6,300	99,000	490,000	110,000	610,000
101213-2	2 @ 18.5	9,300	98,000	900,000	190,000	1,100,000

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	93

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

Certified Mailer P 062 127 745

Telephone Number: (415)

August 27, 1990

Mr. Alvin Bacharach & Ms. Barbara Borsuk
383 Diablo Road #100
Danville, CA 94526

RE: Harrison Street Garage, 1432 Harrison St., Oakland, CA 94612

Dear Mr. Bacharach and Ms. Borsuk:

I have received a letter from Fitzgerald, Abbott and Beardsley dated August 22, 1990 and a Preliminary Subsurface Investigation Report from Subsurface Consultants, Inc. dated August 18, 1990. The report identified substantial leaks of petroleum products from underground tanks and probable impact to groundwater.

A preliminary site assessment should be conducted immediately to ascertain the extent of contamination to the groundwater. According to Section 2652 of Title 23 of the CA Code of Regulations (CCR):

> Within 24 hours after the release has been detected, or should have been detected, using required monitoring, the operator shall notify the local agency and the State Office of Emergency services or the regional board.
>
> Within 5 working days of detecting the release, the operator or permittee shall submit to the local agency a full written report to include all of the following information which is known at the time of filing the report:
>
> 1) List the type, quantity, and concentration of hazardous materials released.
>
> 2) The results of all investigations completed at that time to determine the extent of soil or groundwater or surface water contamination due to the release.
>
> 3) Method of cleanup implemented to date, proposed cleanup actions, and approximate cost of actions taken to date.
>
> 4) Method and location of disposal of the released hazardous substance and any contaminated soils or groundwater or surface water (indicate whether a hazardous waste manifest[s] is utilized).
>
> 5) Facility operators name and phone number.

Until cleanup is complete, the operator or permittee shall submit reports to the local agency and the regional board every 3 months or at a more frequent interval specified by a responsible agency, The reports shall include the information requested in 2, 3, and 4 above.

The reporting requirements of this section are in addition to any reporting requirements specified by Section 13271 of Division 7 of the Water Code and other laws and regulations.

You are requested to conduct an assessment (within 5 days of the receipt of this letter) of the extent of the contamination which has occurred at the above site. You are also requested to set a schedule within 10 days for the completion of the various phases of the remediation; including the identification of the number of tanks on the property and a schedule for tank removal or permitting.

Cases are prioritized by our department based upon the potential threat to human health and the environment to which they pose. This case is given a high priority for investigation/remediation due to the potential for the presence of free petroleum product and the contamination to groundwater.

Should you have any questions, please contact me at (415) 271-4320.

Sincerely,

Paul M. Smith

Paul M. Smith,
Hazardous Materials Specialist

PMS:mnc

cc: Gil Jensen, Alameda County District Attorney, Consumer and Environmental Protection Agency
Lester Feldman, SFBRWQCB
Robert Buchman, King, Schipiro, Mittleman & Buchman
Steve Davis, Leasee
Jonathan Redding, Fitzgerald, Abbot & Beardley
Files

ACCEPTED

DEPARTMENT OF ENVIRONMENTAL HEALTH
470 - 27th Street, Third Floor
Oakland, CA 94612
Telephone: (415) [illegible]

These plans have been reviewed and found to be acceptable and essentially meet the requirements of State and local health laws. Changes to your plans indicated by this Department are to assure compliance with State and local laws. The project proposed herein is ... ance of any required building permits ...

One copy of these accepted plans must be on the job and available to all contractors and craftsmen involved with the removal.

Any change or alterations of these plans and specifications must be submitted to this Department and to the Fire and Building Inspection Department to determine if such changes meet the requirements of State and local laws. Notify this Department at least 48 hours prior to the following required inspections:

P. Smith Removal of Tank and Piping

________ Sampling

________ Final Inspection

Issuance of a permit to operate is dependent on compliance with accepted plans and all applicable regulations.

THERE IS A FINANCIAL PENALTY FOR NOT OBTAINING THESE INSPECTIONS

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY
DEPARTMENT OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS DIVISION
80 SWAN WAY, ROOM 200
OAKLAND, CA 94621
PHONE NO. 415/271-4320

Project #: U577022

Fee Paid: $558.00

Date: 8-30-90

UNDERGROUND TANK CLOSURE/MODIFICATION PLANS

1. Business Name: HARRISON ST. GARAGE

   Business Owner: STEVEN M. DAVIS

2. Site Address: 1432 HARRISON ST

   City: OAKLAND Zip: ____ Phone: ____

3. Mailing Address: 1432 HARRISON ST.

   City: OAKLAND Zip: ____ Phone: ____

4. Land Owner: ALVIN H. BACHRACH, BARBARA J. BORSUK

   Address: 383 DIABLO RD, STE 100 City, State: DANVILLE, CA. Zip: 94526

5. EPA I.D. No.: CAC 000510512

6. Contractor: VERL'S CONSTRUCTION, INC.

   Address: 753 PERALTA AVE

   City: SAN LEANDRO, CA. Phone: 415-562-1234

   License Type: A.B. & HAZ. ID#: 94-2988449

7. Consultant: SCS ENGINEERS

   Address: 6761 SIERRA COURT SUIT D.

   City: DUBLIN, CA. Phone: 415-829-0661

8. Contact Person for Investigation

Name KENT MADENWALD Title PROJECT MANAGER

Phone 415 - 829 - 0661

9. Total No. of Tanks at facility 2

10. Have permit applications for all tanks been submitted to this office? Yes [/] No [ ]

11. State Registered Hazardous Waste Transporters/Facilities

a) Product/Waste Tranporter

Name ERICKSON EPA I.D. No. CAD009466592

Address 255 PARR BLVD.

City RICHMOND State CA. Zip 94801

b) Rinsate Transporter

Name ERICKSON EPA I.D. No. SAME

Address SAME

City SAME State — Zip —

c) Tank Transporter

Name ERICKSON EPA I.D. No. SAME

Address SAME

City — State — Zip —

d) Tank Disposal Site

Name ERICKSON EPA I.D. No. SAME.

Address SAME

City SAME. State — Zip —

e) Contaminated Soil Transporter

Name — EPA I.D. No. —

Address —

City — State — Zip —

12. Sample Collector

Name KENT MADENWALD

Company SCS ENGINEERS

Address 6761 SIERRA CT., SUITE D.

City DUBLIN State CA. Zip 94568 Phone 415. 829-0901

13. Sampling Information for each tank or area

Tank or Area		Material sampled	Location & Depth
Capacity	Historic Contents (past 5 years)		
1,000 GALLON	GASOLINE		2 FEET BELOW TANK
550 GALLON	GASOLINE		

14. Have tanks or pipes leaked in the past? Yes [ ] No [ ]

If yes, describe. UNKNOWN

15. NFPA methods used for rendering tank inert? Yes [ ] No [ ]

If yes, describe. STEAM RINSE AND DRY ICE 500 LBS.

An explosion proof combustible gas meter shall be used to verify tank inertness.

16. Laboratories

Name SCS ANALYTICAL LAB

Address 2860 WALNUT AVE

City LONG BEACH State CA Zip 90806

State Certification No. 205

17. Chemical Methods to be used for Analyzing Samples

Contaminant Sought	EPA, DHS, or Other Sample Preparation Method Number	EPA, DHS, or Other Analysis Number
GASOLINE	EPA 5030	LUFT MANUAL GUIDELINES MODIFIED 8015
BTX & E		8020 OR 8240

18. Submit Site Safety Plan

19. Workman's Compensation: Yes [X] No [ ]

Copy of Certificate enclosed? Yes [X] No [ ]

Name of Insurer STATE FUND INSURANCE

20. Plot Plan submitted? Yes [X] No [ ]

21. Deposit enclosed? Yes [ ] No [ ]

22. Please forward to this office the following information within 60 days after receipt of sample results.

a) Chain of Custody Sheets

b) Original Signed Laboratory Reports

c) TSD to Generator copies of wastes shipped and received

d) Attachment A summarizing laboratory results

I declare that to the best of my knowledge and belief the statements and information provided above are correct and true. I understand that information in addition to that provided above may be needed in order to obtain an approval from the Department of Environmental Health and that no work is to begin on this project until this plan is approved.

I understand that any changes in design, materials or equipment will void this plan if prior approval is not obtained.

I understand that all work performed during this project will be done in compliance with all applicable OSHA (Occupational Saftey and Health Administration) requirements concerning personnel and safety.

I will notify the Department of Environmental Health at least two (2) working days (48 hours) after approval of this closure plan in advance to schedule any required inspections. I understand that site and worker safety are solely the responsibility of the property owner or his agent and that this responsibility is not shared nor assumed by the County of Alameda.

Signature of Contractor

Name (please type) CATHERINE MAYER DBA VERL'S CONSTRUCTION, INC

Signature Catherine R. Mayer

Date 8-16-90

Signature of Site Owner or Operator

Name (please type) X ALVIN H. BACHARACH

Signature X Alvin H. Bacharach

Date X 8-28-90

NOTES:

1. Any changes in this document must be approved by this Department.

2. Any leaks discovered must be submitted to this office on an underground storage tank unauthorized leak/contamination site report form within 5 days of its discovery.

3. Three (3) copies of this plan must be submitted to this Department. One copy must be at the construction site at all times.

4. After approval of plan, notification of at least two (2) working days (48 hours) must be given to this Department prior to removal of tank(s).

5. A copy of your approved plan must be sent to the landowner.

6. Triple rinse means that:

   a) Final rinse must contain less than 100 ppm of Gasoline (EPA method 8020 for soil, or EPA method 602 for water) or Diesel (EPA method 418.1). Other methods for halogenated volatile organics (EPA method 8010 for soil, EPA method 601 for water) may be required. The composition of the final rinse must be demonstrated by an original or facsimile report from a laboratory certified for the above analyses.

   b) Tank interior is shown to be free from deposits or residues upon a visual examination of tank interior.

   c) Tank should be labelled as "tripled rinsed; laboratory certified analysis available upon request" with the name and address of the contractor.

If all the above requirements cannot be met, the tank must be transported as a hazardous waste.

7. Any cutting into tanks requires local fire department approval.

UNDERGROUND TANK CLOSURE/MODIFICATION PLANS

ATTACHMENT A

SAMPLING RESULTS

Tank or Area	Contaminant	Location & Depth	Results (specify units)

INSTRUCTIONS

2. SITE ADDRESS
Address at which closure or modification is taking place.

5. EPA I.D. NO.
This number may be obtained from the State Department of Health Services, 916/324-1781.

6. CONTRACTOR
Prime contractor for the project.

7. OTHER
List professional consultants here.

12. SAMPLE COLLECTOR
Persons who are collecting samples.

13. SAMPLING INFORMATION
Historic contents - the principal product(s) used in the last 5 years.

Material sampled - i.e., water, oil, sludge, soil, etc.

16. LABORATORIES
Laboratories used for chemical and geotechnical analyses.

17. CHEMICAL METHODS:
All sample collection methods and analyses should conform to EPA or DHS methods.

Contaminant - Specify the chemical to be analyzed.

Sample Preparation Method Number - The means used to prepare the sample prior to analyses - i.e., digestion techniques, solvent extraction, etc. Specify number of method and reference if not an EPA or DHS method.

Analysis Method Number - The means used to analyze the sample - i.e., GC, GC-MS, AA, etc. Specify number of method and reference if not a DHS or EPA method.

NOTE:
Method Numbers are available from certified laboratories.

18. SITE SAFETY PLAN
A plan outlining protective equipment and additional specialized personnel in the event that significant amount of hazardous materials are found. The plan should consider the availability of respirators, respirator cartridges, self-contained breathing apparatus (SCBA) and industrial hygienists.

19. ATTACH COPY OF WORKMAN'S COMPENSATION

20. PLOT PLAN

The plan should consists of a scaled view of the facility at which the tank(s) are located and should include the following information:

a) Scale

b) North Arrow

c) Property Line

d) Location of all Structures

e) Location of all relevant existing equipment including tanks and piping to be removed

f) Streets

g) Underground conduits, sewers, water lines, utilities

h) Existing wells (drinking, monitoring, etc.)

i) Depth to ground water

j) All existing tanks in addition to the ones being pulled

rev. 9/88
mam

VERL'S CONSTRUCTION, INC.
CA LIC. #487537

753 PERALTA AVENUE
SAN LEANDRO, CA 94577
(415) 568-1234

September 17, 1990

Alameda County Health Department Hazardous Materials
80 Swan Way, Room 200
Oakland, CA. 94621
Att: Paul Smith

RE: Site Safety Plan

Dear Mr. Smith:

In response to your inquiries, we have submitted our Safety Procedures and Plan to you. To answer your questions about what we do to ensure job-site safety, we have found it necessary to entirely enclose pit with a 7 foot metal fence. When excavating commences, excavated dirt is immediatly placed on 6 mill. visquine and dirt piles are also covered to reduce aeriation of dirt piles.
We then cover excavated areas with trench plating, when we see that this is necessary. If there are any further questions, please call me at 568-1234.

Sincerely Yours;

Merlin N. Bowen
Health and Safety Plan Officer

cc * Respiratory Protection will be available on site for each employee Also a copy of the site safety plan will be available onsite.

SITE HEALTH AND SAFETY PLAN

Introduction

This health and safety plan prescribes the work-place procedures which will be followed during the soil and groundwater assessment of the site located at OAKLAND, California. The provisions of this plan are mandatory for all VET personnel and subcontractors assigned to this project. All authorized visitors to the site will be required to abide by the procedures. The requirements in this plan may change due to changes in the work conditions, however, no changes will be made without prior written approval of the Health and Safety Consultant and the Project Manager.

VERLIN CONSTRUCTION, INCORPORATED, is committed to providing a safe and healthful working environmental for all its employees and subcontractors.

ASSIGNMENT OF RESPONSIBILITY

Project Manager

VET's Project Manager will be BOB WARD, who will be responsible for oversight and management of the project. MERLIN BOWEN will be responsible for the implementation and management of the Health and Safety Plan.

Health and Safety Consultant

Mr. BOWEN or his designee will visit the site periodically and during critical phases of the project. The Health and Safety Consultant is responsible for preparation of this plan.

VCI Site Representative/Safety and Health Officer

During most of this project there will be an VCI representative on site. That representative will be responsible for day to day implementation of the health and safety plan and overall direction of subcontractor personnel. The VCI representative is empowered to stop all site work in the case of violation of the requirements of the health and safety plan.

Other Project Personnel/Subcontractor

All project and subcontractor personnel will be responsible for understanding and complying with the project health and safety requirements.

HAZARD CHARACTERIZATION AND RISK ANALYSIS

Petroleum Contaminated Water and Soils

Gasoline and its constituents pose health hazards in two major classifications: explosivity and toxicity. The extreme flammability of gasoline is commonly known. The lower explosion limit (LEL) of gasoline vapor is 1.3 percent in air. If the concentration

of gasoline vapor in air exceeds 1.3 percent (13,000 parts per million) and sufficient quantities of oxygen are present, then the introduction of sufficient heat, spark, or flame will result in an explosion.

Prior to conducting any subsurface excavation in the vicinity of a fuel tank, the tank should be emptied of all liquid product and receive sufficient quantities of dry ice (frozen carbon dioxide) so that available oxygen is displaced from the tank atmosphere.

A lesser known health hazard resulting from exposure to gasoline is toxicity. Over exposure to petroleum hydrocarbon vapor can cause depression of the central nervous system. Inhalation of high concentrations of gasoline can cause chemical pneumonia and/or pulmonary edema. Repeated or prolonged skin exposure to gasoline or gasoline contaminated materials can cause dermatitis or even blistering of the skin. Several common constituents of gasoline have been linked to various health problems. The constituents of gasoline that have been shown to cause serious health problems resulting from relatively minor exposures include benzene, toluene, meta, para, and ortho xylenes, ethyl benzene and tetraethyl lead.

Typical percentages (by weight) of these constituents in gasoline are: benzene - 0.12-3.50%, toluene - 2.73-21.80%, meta xylene - 1.77-3.87%, para xylene - 0.77-1.58%, ortho xylene - 0.68-2.66%, and ethyl benzene - 0.36-2.86%. Typical percentage of tetraethyl lead is not available.

Units used to describe occupational exposures to hazardous substances include: exposure limit, also known as the "threshold limit value" (TLV), ceiling limit, and the concentration level that is "immediately dangerous to life and health" (IDLH). The exposure limit defines the maximum concentration of a substance to which one can be exposed during an 8 hour period without suffering significant health effects. The ceiling limit is the concentration level that cannot be exceeded at any time; i.e., a suitable respirator must be worn if concentration values reach the ceiling limit. The IDLH level represents a maximum concentration from which one could escape within 30 minutes of respirator failure without experiencing escape-impairment or irreversible health damage. IDLH values are not listed for substances that are potential human carcinogens.

EXPOSURE TABLE

Substance	Exposure Limit	Ceiling Limit	IDLH
Benzene	0.1 ppm (8 hrs)	1 ppm (15 min)	Carcinogen
Toluene	100 ppm (10 hrs)	200 ppm (10 min)	2000 ppm
Xylene	100 ppm (8 hrs)	200 ppm (10 min)	1000 ppm
Ethyl Benzene	100 ppm (8 hrs)	N/A	2000 ppm
Tetraethyl Lead	0.0067 ppm	N/A	3.6 ppm

Prolonged exposures to concentrations above the limits noted may affect the central nervous system, cardiovascular system, respiratory system, eyes, skin, kidneys, bones and bone marrow. Research has shown that benzene is a carcinogen.

Immediate symptoms of over-exposure include: eye irritation, nose irritation, throat irritation, headache, nausea, dizziness, drowsiness, weakness, confusion, euphoria, excitement, staggered gait, abdominal pain, respiratory difficulties, muscle fatigue, and coma.

In order to protect against over-exposure to these compounds, the ambient air will be monitored with a "lower explosion limit/oxygen content" meter and/or a handheld photo ionizing detector (PID). As soon as vapor concentrations approach 75% of the exposure limit value, work will cease until all on-site personnel have donned protective clothing and suitable respiratory devices.

Due to the inherent physical danger of working in the vicinity of moving heavy machinery, all personnel will weak hardhats and steeltoed footwear at all times.

Personnel exposures to excessive job-related hazards are expected to be minimal using these safeguards.

It should be noted that summertime heat may initiate weather stress-related problems and decrease productivity on the job site.

Based upon VEI's experience with investigations of potentially gasoline contaminated soils and water, overexposure of personnel to gasoline vapor is unlikely. Personnel

however may be exposed to short term vapor concentrations approaching 100 ppm. Respiratory protection plans will be directed to protecting personnel from the transient exposures.

Drilling Activities

Various hazards are present during excavating procedures.

- electrical hazards due to overhead and underground utility lines
- excessive noise
- confined space
- moving portions of the drilling
- falling of heavy overhead objects
- fall hazards due to working at heights

SITE CONTROL

A site map has been attached to this plan. The areas where work will occur, will be on the site, and may be barricaded to prevent unauthorized access. Only authorized personnel shall be allowed in the work areas and any unauthorized visitors must remain outside any barricaded area.

The site is small enough that normal voice communication can be used. In the vicinity of the excavation, common hand signals will be used.

TRAINING

VCI Personnel

All VCI project personnel shall have completed 40 hours of off-site health and safety training, related to hazardous waste operations. In general, the VCI personnel will have completed a combination of paid training courses which meet the requirements of both the interim and final Occupational Safety and Health Administration (OSHA) rule for Hazardous Waste and Emergency Response Operations (29 CFR 1910.120). All VCI supervisory personnel on site will have completed an additional 8 hours of relevant health and safety training.

VCI personnel who may visit the site occasionally, and are unlikely to be exposed to chemical hazards will have completed at least 24 hours of relevant health and safety training.

Any VCI or contractor personnel operating specialized industrial equipment such as forklifts, heavy equipment, drilling equipment, etc. shall be able to demonstrate their competency in the safe operation of such items.

Subcontractor Personnel

All subcontractor personnel who are likely to be exposed to hazardous materials either by inhalation or dermal contact shall have completed 40 hours of off-site health and safety training, in accordance with the OSHA interim and final Hazardous Waste and Emergency Operations rule. Subcontractor personnel who are required to work on the site for short periods of time (1-day or less), and who will not be required to wear any protective equipment, shall have completed at least 24 hours of off-site health and safety training.

All Site Personnel

Prior to starting off the project, a kick-off safety meeting will be held on the site. During this meeting all personnel will be briefed on the requirements contained within the health and safety plan, and will be told the site safety rules. The kick-off safety meeting will be conducted jointly by the project manager and the HSO.

At the beginning of each work shift, or whenever new personnel arrive on the site, a tailgate safety meeting will be held. The purpose of such meetings is to highlight health and safety concerns and to ensure that employees are fully briefed on the site work procedures to be followed during the shift. The tailgate safety meetings will be conducted by the first line supervisors. The project manager will review records all tailgate safety meetings.

MEDICAL SURVEILLANCE

All VCI subcontractor personnel shall provide proof of having successfully completed a preplacement or annual update physical examination. This examination shall have been designed to comply with regulatory requirements for hazardous waste operations and shall include the following:

- medical and occupational history form
- physical examination
- blood analysis
- urinalysis
- chest x-ray
- pulmonary function test
- audiogram
- electrocardiogram (if indicated during the physical exam)
- alcohol and illegal drug screening

GOVERNMENT AND VCI STANDARDS

Currently the health and safety of workers performing hazardous waste activities regulated by OSHA (29 CFR 1910.120).

The OSHA PEL for gasoline vapor is 300 ppm averaged over an eight-hour period. The 15-minute short term exposure limit is 500 ppm. To ensure that no project workers

are over-exposed to hydrocarbon vapor. VCI has instituted a project standard of 50 ppm for gasoline vapor. Respiratory equipment is required above this level.

PROTECTIVE MEASURES

Personnel Protection

All project personnel shall wear safety glasses, safety boots or shoes, long-sleeved shirts and pants. When in the immediate vicinity of drilling operations, personnel shall also wear hearing protection. Personnel will wear nitrile gloves, neoprene boots and polytyvek coveralls when handling potentially gasoline contaminated soils and liquids.

Utilities

During drilling or boring activities, the drill rig shall be at least ten feet from overhead power lines. All underground utilities shall be located as near as possible before boring and drilling activities commence. When in areas known to certain underground utilties, all such utility lines will be exposed by hand digging and probing.

AIR MONITORING

Site air monitoring will be carried out to ensure that VCI personnel are not over-exposed to hydrocarbon vapor. The airborne hydrocarbon vapor levels will be

monitored several times each day using either a photoionization detector (PID) or colorimetric indicator tubes.

If the PID or colorimetric indicator tube samples indicate that hydrocarbon vapor levels are 50 ppm or greater, then daily air samples will be collected from representative project personnel using charcoal tube sampling methods (OSHA Method 1M1S1340). Personnel will be notified in writing of the results of any personal air samples and their significance. A copy of this report will be maintained in the employee's medical surveillance file.

ACCESS AND DECONTAMINATION

Access

Access to the project work area zones shall be regulated and limited to authorized persons. A daily log shall be kept of all persons entering such areas. The work area itself shall be cordoned off using barrier tape or other suitable barriers.

Decontamination

Due to the low toxicity of the material involved (gasoline), the anticipated low levels of contamination, and the minimal hazard posed by spread of contaminated soil, formal decontamination procedures will not be required. The following site requirements will be enforced:

- Eating, drinking and smoking within the work area are prohibited.
- Project personnel may eat, drink or smoke outside the work area, only if they have washed their hands and face.
- An emergency eye wash station shall be located on the job site adjacent to the work area.

Any potentially contaminated equipment will either be disposed of, or washed off with soap and water.

Any equipment used in the contaminated zone should be washed with soap and water before it is removed from the site.

EMERGENCY RESPONSE

In the event of an emergency such as a sickness, injury or fire, the following procedures will be followed:

- Emergency procedures will be initiated by the first person recognizing the emergency situation. This person shall immediately notify the VCI site representative.

- The designated VCI First Aid/CPR provider and a project member shall provide assistance to any injured or sick employee. In the case of suspected release of toxic material, these personnel shall first don protective suits and self-contained breathing apparatus. The injured employee will first be moved to a safe location, before any attempt at treatment is made.

- A project member will be designated to call the emergency services number (911) to obtain paramedic or fire department assistance if it is needed. Any injured employees will be taken to:

  PROVIDENCE HOSPITAL
  3100 SUMMIT ST.
  OAKLAND, CA. 94609

- In the event of a fire on the project site, VCI personnel will immediately notify the Fire Department at:

  STATION 1
  1603 MARTIN LUTHER KING
  OAKLAND, CA. 94612

- While waiting for assistance from the fire department, project personnel will use available fire extinguishers (if safe to do so) to extinguish the fire.

Any injuries or incidents which have the potential to result in an injury will be recorded by the VCI site representative on the supervisor's employee injury report form. This form, when completed by the site representative, shall be forwarded to the VCI project manager, and the VCI Corporate Health and Safety Department.

Consumer Affairs

State of California
Department of Consumer Affairs
CONTRACTORS STATE LICENSE BOARD

License Number: 487537

Entity: C O R P

Name/Namestyle: VERI'S CONSTRUCTION INC.

Classification(s): A B HAZ

Expiration Date: 02/29/92

STATE COMPENSATION INSURANCE FUND

P.O. BOX 807, SAN FRANCISCO, CA 94101-0807

CERTIFICATE OF WORKERS' COMPENSATION INSURANCE

JULY 24, 1990

POLICY NUMBER: 758432-90
CERTIFICATE EXPIRES: 7/8/91

CITY OF OAKLAND
DEVELOPMENT SERVICES
1330 BROADWAY, 2ND FLOOR
OAKLAND, CA 94612

This is to certify that we have issued a valid Workers' Compensation insurance policy in a form approved by the California Insurance Commissioner to the employer named below for the policy period indicated.

This policy is not subject to cancellation by the Fund except upon ten days' advance written notice to the employer.

We will also give you TEN days' advance notice should this policy be cancelled prior to its normal expiration.

This certificate of insurance is not an insurance policy and does not amend, extend or alter the coverage afforded by the policies listed herein. Notwithstanding any requirement, term, or condition of any contract or other document with respect to which this certificate of insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

FAX #273-[illegible]

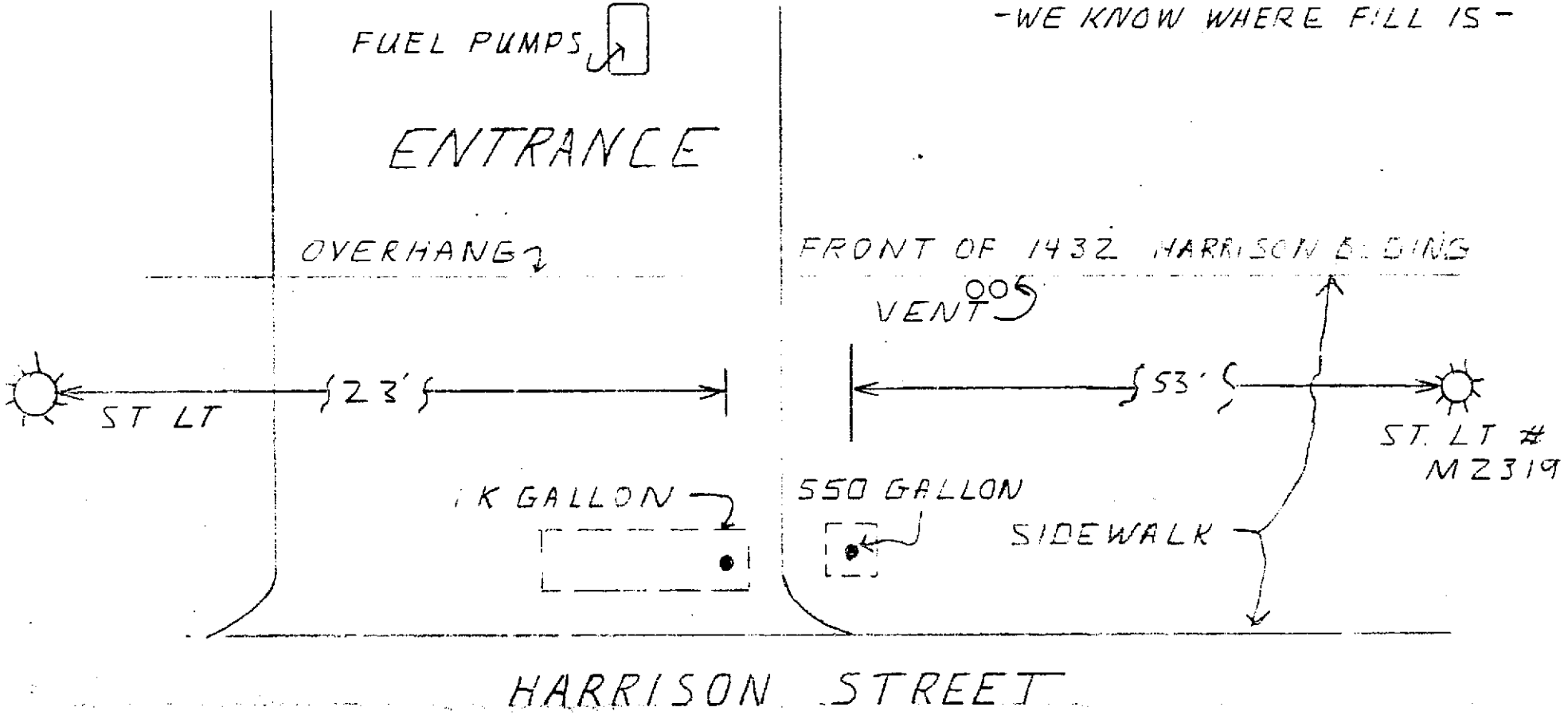
PRESIDENT

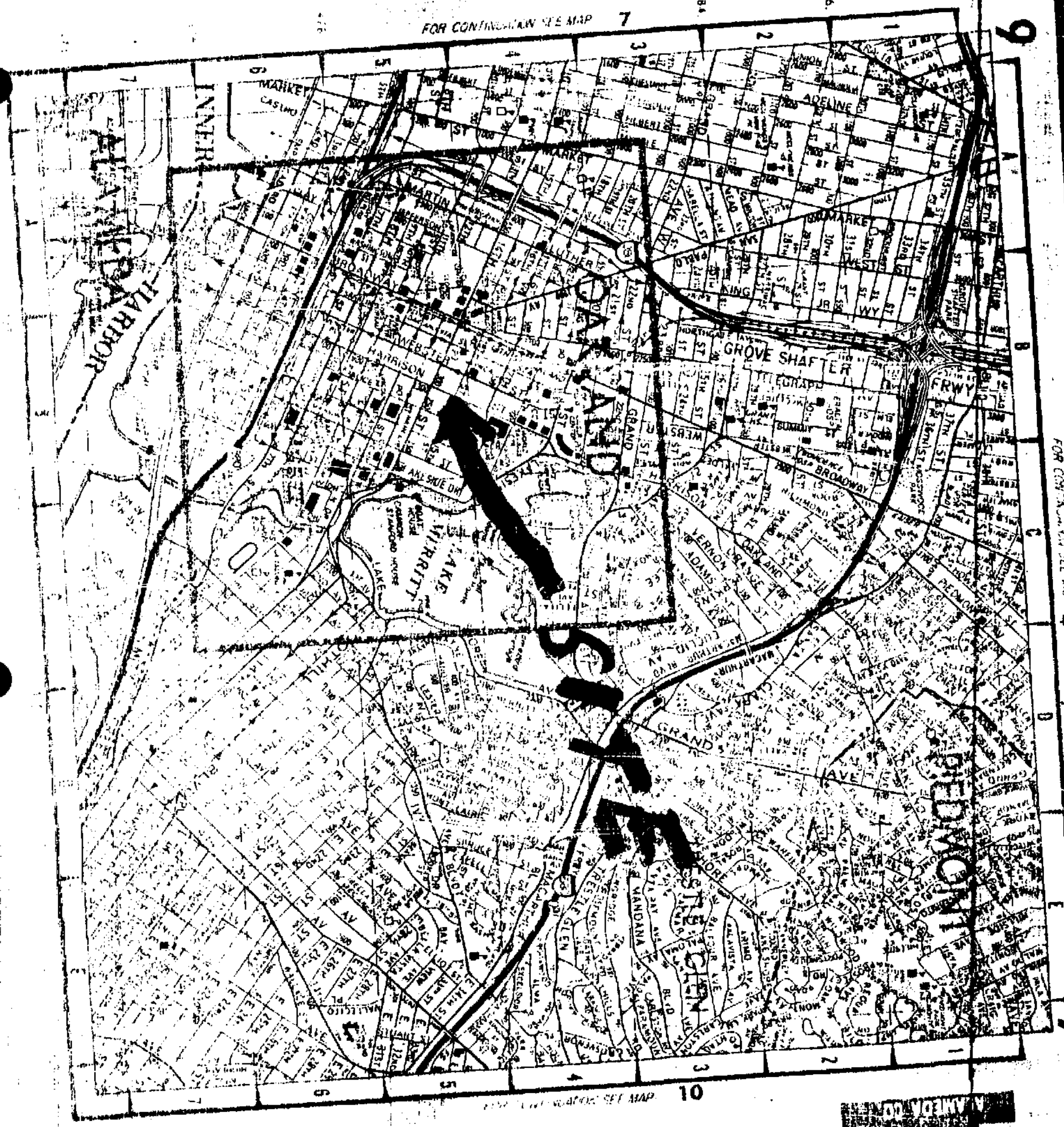
EMPLOYER

VERL'S CONSTRUCTION, INC.
[illegible] PERALTA AVENUE
SAN LEANDRO, CA 94577

HARRISON ST GARAGE

NOTE: EXACT LOCATION OF TANKS UNKNOWN. -WE KNOW WHERE FILL IS -





EMPLOYEE SAFETY

We would like to extend to you a cordial Welcome! We hope your stay with the Company will be long, Safe, and propsperous.

As an employee of this corporation, you are expected to observe all rules and regulations set forth by Management, in particular the Safety Rules and Regulations.

A study of most companies show that 9 out of 10 accidents could have been prevented if a few common-sense practices had been followed. This outlines many of those safe practices and you are encouraged to become familiar with each one so that you will not be injured or cause an injury to one of your fellow employees. Each accident causes suffering and usually financial loss to you as well as your family.

Your life is largely in your own hands. So that you will not be injured or killed it is necessary that you work safety into everything you do and every thaought you have, each and every day. Only then, will it be possible for you to eliminate the accident that could result in an end to your happiness and your enjoyment of life.

Your cooperation is necessary for the overall success of the Safety Program; it require conscientious assistance.

So, for you protection and that of your fellow workers, we ask that you **THINK, TALK,** and **ACT SAFELY** in the performance of every task you undertake.

SAFETY INSPECTION CHECK LIST

GENERAL

1. Are all the workers wearing hard hats? (Including workmen and visitors.) Keep a supply of extra hard hats for visitors and new men. Necessary on some jobs if you are not sure ask foreman.
2. Water trucks, pickups and car requirement:
   A. License must be current and valid. Combination license where required.
   B. Regular drivers given physicals.
   C. All employees past driving record checked with licensing authority.
   D. No one to drive except those designated by supervision.
3. Has an accident report been made on any accident which has happened? Accident reports are to be phoned into main office immediately, and accident forms are to be mailed or delivered to main office so they can be forwarded on to the insurace company.
4. Is work area clear of unnecessary articles which could be stumbled over or stepped on, thus causing an accident?
5. Is there a first aid kit on the job?
6. All buildings must have a fire extinguisher with-in 75 feet of any worker.
7. Are all air hoses and fittings sound and in good condition?

8. Are any wire rope lines kinked or do they have broken strains?
9. Are all welders wearing protective glasses?
10. All equipment left unattended at night, adjacent to a highway in normal use, or adjacent to construction areas where work is in progress, shall have appropriate lights or reflectors, to identify the location of the equipment.
11. All accident reports shall contain corrective procedures which will help reduce the potential for a reoccurence.

REPORTING INJURIES - FIRST AID

A. If you are injured, report it to your foreman immediately, and he will see that you get proper first aid or medical attention. Evan the slightest scratch should be treated promptly to avoid the possibility of infection and lock-jaw which is usuall fatal.
B. Repot all accidents and/or injuries immediately for proper first aid or medical treatment.
C. Do not attempt to treat injuries yourself or allow anyone else to do so. Only qualified persons designated by Management are to perform such services.
D. In case of serious injury, do not attempt to move the injured employee until qualified assistance arrives.
E. In case of "Stoppage of Breathing" caused by electric shock, drowning, or asphyxiation, start artifical respiration immediately.
F. Provide a written report. Include description of what happened and list names of all witnesses.

IN CASE OF EMERGENCY

A. Check the emergency number chart for adequate assistance.
B. State your name and the company name.
C. Give brief description of the accident.
D. Give exact location of accident.
E. WAIT - Be sure you have given all important information, let the person you called hang up first.

EYE PROTECTION: Suitable goggles, hoods or face shield will be provided and must be worn When:

A. Chipping concrete, steel, etc.
B. Using grinders (all types), table saws, chain saws, jack hammers, chipping guns, stud guns, masonry saw, welding or cutting torches (under welding hood in arch welding).
C. Cleaning a weld or when the wind is such that it is blowing dust, sand, rust or other particles about.
D. Handling material in a powder form such as cement or when mixing or cleaning brick with muriatic acid.
E. There is danger of concrete or mortar splashing in the eye.
F. Filing or buffing any material.
G. Working near persons whose work requires them to wear goggles.

H. Changing teeth on augers or buckets.
J. Avoid looking at the arc of an electric welder without proper eye protection, the rays of the arc may cause serious injury to unprotected eyes.

SAFETY MEETINGS: So employees will attend regularly scheduled safety meetings on your job. You'll get the latest information on what the company is doing with safety and what you can do to keep from getting hurt. A safety meeting will be held at that begining of every new job and on fridays thereafter.

HORSEPLAY: So that you will not be injured, refrain from indulging in horsplay, practical jokes, and wrestling on the job.

LADDERS

A. Make sure the bottom of your shoes are clean so you will not slip when going up or down a ladder.
B. Always keep hands free and face the ladder when going up or down.
C. Do not use the top half of an extension ladder alone. There are no feet and it will fall over easily.
D. Before using ladder, make sure no rungs are broken or loose.
E. Always use a line to hoist or lower objects. Never attempt to climb a ladder, stairs, etc. while carrying materials, tools, or other items.
F. Never leave hand tools on steps of ladders and keep all hoses, light heads, welding cables and other debris clear of ladder rungs, stairways, and approaches.
G. Tie of the top of all extension ladders.
H. Position a ladder so that the base spread is 1/4 the working length of a ladder.
I. Destroy all non-repairable ladders.

PROTECTION OF THE PUBLIC: Anytime you see children or sightseers in the work area, ask them to leave so they will not be hurt. If there is danger of pedestrians, automobiles, etc., being struck by falling materials which you are working with, tell you foreman so he can arrange the necessary protection.

CLEARING OR GRADING EQUIPMENT: Always operate a dozer, loader, scraper, grader, etc. at a safe speed. Only the operator should be on the grading equipment.

WORKING CONDITIONS: No worker is required to work in an unsafe place unless the work is being done to correct the hazard and proper precautions have been taken.

GLOVES: Gloves should be worn when scraping or when handling jagged, sharp, or splinted materials, when welding or acting as a welder's helper, or when wrecking our forms. The

employee is expected to porvide his own work gloves; however, if you are doing a special job that requires rubber gloves, check them out at the job office.

SHOES: The wearing of **SAFETY SHOES** is encouraged. Heavy duty work shoes are required. Canvas, loafer-type shoes, or high-heeled, pointed-toed boots shall not be worn.

NAILS: Remove or bend down all nails which are hazardous; in boards, in heads of nail kegs, barrels, etc. Do not bend nails by stepping on them, use a hammer.

ALCOHOL: No drinking of a alcohol beverage shall be allowed on any job at anytime. Anyone known to be under the influence of intoxicating liquor shall not be allowed on the job while in that condition.

SUGGESTIONS: Any unsafe working conditions that you see, or anyway that you can help in keeping our company at a no accident company, will be very much appreciated and help everyone. Any suggestions to this safety and health program will help fellow employees which inturn will benefit all of us. **SAFETY IS EVERYONE'S RESPONSIBILITY** and we take it very seriously.

OPERATIONAL SAFETY PLAN FOR UNDERGROUND TANK REMOVAL

Underground alert phone number (800) 642-2444 shall be notified at least 48 hours before digging. Workmen have been trained on tank removal and they shall wear hard hats and work boots. Fire extinguishers are readily available.

We first expose the tank (s) to make sure there are no overlaying lines or obstructions to prevent the tank (s) from being easily removed.

Before the tanks are lifted the fumes are neutralized by inserting a small amount of water along with 22 pounds of dry ice per 1,000 gallons of tank. This is accomplished at least 2 hours before lifting. An explosion meter is used to determine if the tank is safe to move.

A machine is used that has the capacity of lifting the tank safely. We place the tank directly from the ground to a truck which is permitted to haul for disposal, provided the tank is externally clean and if not we scrape it before loading.

Sincerely,

Verl K. Rothlisberger
President

Environmental Consultants

6761 Sierra Court
Suite D
Dublin, CA 94568

415 829-0661
FAX 415 829-5493

SCS ENGINEERS

September 5, 1990
File No. 0390044.00

Alameda County Health Care Services
Division of Hazardous Materials
Department of Environmental Health (ACDEH)
80 Swan Way, Room 200
Oakland, California 94621

Attention: Mr. Paul M. Smith

Subject: Harrison Street Garage
1432 Harrison Street
Oakland, California

Dear Mr. Smith:

Pursuant to our conversation on September 4, 1990, SCS Engineers (SCS) as Environmental Consultants, to Mr. Robert Buchman our client, has proposed the following to Mr. Buchman as the expected schedule of events:

1 - Determine if any fluid is in the tanks and pump out all fluid if any is present.

2 - Remove the two (2) known gasoline tanks from the Harrison Street entrance.

3 - Remove the existing hydraulic lift system (s) and ancillary hydraulic reservoir.

4 - Remove the two (2) underground waste oil tanks from the basement on the Alice Street side of building.

5 - Initiate a program to determine the extent, if any, of the soil and water contamination under the existing building lower level.

6 - Based on the information gained from the soil, and groundwater investigation in conjunction with the tanks removal, SCS shall prepare a soil and/or groundwater remediation plan for ACDEH approval. (SCS believes, based on the September 4th conversation with you that, groundwater remediation is the foremost priority of any remedial effort).

This property is in litigation and it would be SCS recommendation to complete investigations inside the building as soon as practical.

If there are any questions please call me at (415) 829-0661

Regards,

John P. Cummings, Ph.D., R.E.A., R.E.P.
Office Director
SCS Engineers

JPC/sar

cc: B. Buchman
M. Borsuk

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

Certified Mailer P 062 128 176

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415)

September 24, 1990

Mr. Alvin Bacharach & Ms. Barbara Borsuk
383 Diablo Road #100
Danville, CA 94526

RE: Harrison Street Garage, 1432 Harrison St., Oakland, CA, 94612

Dear Mr. Bacharach and Ms. Borsuk:

We have received and approved the tank closure plan for the removal of two gasoline tanks located at the above site submitted by Verls Construction. Before the tank removals can be scheduled the following concerns need to be addressed:

There is some concern of subsurface contamination levels which may cause a human health problem during and after the tank removal. A preliminary subsurface investigation dated August 8, 1990 performed by Subsurface Consultants of the gasoline tanks at the above site identified contamination levels in soil which indicate that high levels of contamination of Total Petroleum hydrocarbon (TPH) and Benzene, Toluene, Ethylbenzene and Xylene BTEX) are present in the soil from an underground tank leak. Based on the levels of contamination reported it is likely that groundwater has also been impacted.

The levels of contamination present from the tank excavation and stockpiles could present hazards to human health. For example if levels of benzene are determined, via monitoring with Draeger tubes or Organic Vapor Analysis, to exceed the permissible exposure limit (PEL) the stockpiles cannot remain onsite. If the stockpile tailings (which must be covered with visqueen) or tank excavation emit contamination below the PEL the excavation pit can remain open until the chemical analysis results become available so that the characterized soil can be appropriately dealt with. There is some question as to where the stockpiles will be stored and what mitigative measures will be taken if any?

A preliminary site assessments would assist in the determination of the amount and extent of contamination at the above site.

It is our understanding that there are several hundred gallons of liquid currently is each tank. This liquid needs to be removed prior to the tank removal. You are requested to provide copies of waste recycling receipts or manifests of waste disposal to this office.

Chemical sampling beneath underground piping every 20 linear feet are required in order to examine for subsurface contamination. Arrangements for performing this sampling must be made.

Based upon the findings referred to in the above report you are legally obligated to report any unauthorized release to this department. Section 2652 of Title 23 of the CA Code of Regulations states that within 24 hours of the discovery of the release the release shall be reported to the local agency and the State Office of Emergency Services or the Regional Board. Title 23 further states that within 5 working days of detecting the release, the operator or permittee shall submit to the local agency a full report of the extent of contamination, the proposed method and location of disposal. You are requested to fill out an unauthorized release form (enclosed with this letter).

Please be advised that section 25299.37(a) of Division 20 Chapter 6.7 of the Health and Safety Code states that each owner, operator or other responsible party shall take corrective action in response to an unauthorized release in compliance with this section. Section 25299.37(c) states that the local agency may issue an order to the owner requiring compliance with this section. Section 25298(c)(4) states that no person shall close an underground tank unless he demonstrates to the appropriate agency that the site has been investigated to determine if contamination is present, or if there were past releases, and if so, that appropriate corrective or remedial actions have been taken. If appropriate remediation is not taken this could be considered improper closure of an underground tank making the responsible party liable for a civil penalty of not less tan $500.00 to more than $5000.00 per each day per violation.

You are requested to respond to the above concerns within 14 days of the receipt of this letter.

Should you have any questions, please contact me at (415) 271-4320.

Sincerely,

Paul M. Smith

Paul M. Smith,
Hazardous Materials Specialist

PMS:

cc: Gil Jensen, Alameda County District Attorney, Consumer and Environmental Protection Agency
Lester Feldman, SFBRWQCB
Robert Buchman, King, Schipiro, Mittleman & Buchman
Steve Davis, Leasee
Jonathan Redding, Fitzgerald, Abbot & Beardley
Files

Environmental Consultants

6761 Sierra Court
Suite D
Dublin, CA 94568

415 829-0661
FAX 415 829-5493

SCS ENGINEERS

90 OCT 17 PM 12:31

October 12, 1990
File No. 0390044.00

Mr. Paul H. Smith
Hazardous Materials Specialist
Alameda County Health Care Services Agency
Department Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Reference: Harrison Street Garage
1432 Harrison Street
Oakland, California 94612

Dear Mr. Smith:

I am in receipt of your letter of September 24, 1990, to Mr. Bacharach and Ms. Borsuk, and was requested by them to arrange for the removal of any liquid currently in the underground storage tanks (UST) at the front of the property at 1432 Harrison Street, Oakland, California.

On October 3, 1990, SCS Engineers employed personnel to take a vacuum truck and remove whatever material remained in the two tanks (underground storage tanks) at the above noted facility. The present tenant refused to allow the removal of the material and rather than cause an altercation SCS personnel left the scene.

SCS Engineers plans to have the liquid removed, and the tanks removed as soon as a Court Order allows our client, the owner of the property, to go on the property for the removal of the tanks and the possible liquid in the tanks. This situation has ~~become~~ has become somewhat exacerbated by the fact that there is a law suit between the tenants and the owner. However, as you mentioned, it is possible that the liquid in the tanks could cause problems, and SCS would like to get into the site as soon as possible.

SCS is also aware that Section 25299.37(A) of Division 20 Chapter 6.7 of the Health and Safety Code, states that "each owner, operator or other responsible parties shall take corrective action in response to an unauthorized release and compliance with the section." While SCS is are not sure that there has been an unauthorized release, SCS

Engineers wishes to act as rapidly as possible, but does not want to get into an altercation with the present tenants. SCS is requesting that you keep this letter on file so that you are aware of what has happened.

Should you have any questions, please contact me at (415) 829-0661.

Sincerely,

John P. Cummings, Ph.D., R.E.A., R.E.P.
Office Director
SCS Engineers

JPC/egh

JAMES C. SOPER, INC.
PHILIP M. JELLEY, INC.
JOHN L. McDONNELL, JR.
GERALD C. SMITH
LAWRENCE R. SHEPP
LLEWELLYN E. THOMPSON II
RICHARD T. WHITE
MICHAEL P. WALSH
J. BRITTAIN HABEGGER
VIRGINIA PALMER
STEPHEN M. JUDSON
STEPHEN M. WILLIAMS
BETTY J. ORVELL
JONATHAN W. REDDING
TIMOTHY W. MOPPIN
KRISTIN PACE
MICHAEL M. K. SEBREE
ANTONIA L. BROADDUS

FITZGERALD, ABBOTT & BEARDSLEY
ATTORNEYS AT LAW
A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS
1221 BROADWAY, 21ST FLOOR
OAKLAND, CALIFORNIA 94612-1837
TELEPHONE: (415) 451-3300

R. M. FITZGERALD 1858-1934
CARL H. ABBOTT 1867-1933
CHARLES A. BEARDSLEY 1882-1963

STACY H. DOBRZENSKY
OF COUNSEL

TELECOPIER: (415) 451-1527

October 25, 1990

Mr. Paul Smith
Hazardous Materials Specialist
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, California 94621

Dear Mr. Smith:

As we discussed recently, enclosed is our consultant's report documenting soil and groundwater pollution at the Harrison Street garage. Also enclosed is a letter concerning the suspected presence of PCB's in the basement of the Alice Street structure and our consent to removal of all product.

Please contact me if you have any questions.

Very truly yours,

FITZGERALD, ABBOTT & BEARDSLEY

By Jonathan W. Redding
Jonathan W. Redding

JWR:lm
Enclosures
cc: Jack Provine, Esq.
Steve Davis

90 OCT 30 PM 1:19

James P. Bowen, PE
R. William Rudolph, Jr., PE

October 19, 1990
SCI 447.019

Mr. Jonathan Redding
Fitzgerald, Abbott & Beardsley
1221 Broadway, 21st Floor
Oakland, California 94612

Preliminary Subsurface Investigation
1432 Harrison Street
Oakland, California

Dear Mr. Redding:

This letter records our services to date regarding subsurface investigations and analytical testing performed at the referenced site. Results of a prior phase of investigation and analytical testing were transmitted to you in a previous letter dated August 18, 1990. A plan showing the location of the structure is presented on Plate 1.

Since the investigation recorded in our August 18th letter, our services have included (1) observing a geophysical survey performed by JR Associates within the building, (2) drilling six additional test borings within the structure, and (3) performing analytical tests on selected samples from the borings.

Geophysical Investigation

A ground-penetrating radar survey was performed in an effort to determine if additional underground storage tanks existed within the structure. Surveys were performed in areas suspected of containing underground storage tanks. During the survey, two waste oil tanks were discovered in the basement of the structure. In addition, an "anomalous" radar image was also revealed during the survey near the area identified on Plate 1 as the suspected former tank location. These areas were investigated further by drilling soil borings, as discussed in the following sections.

Subsurface Investigation

Six additional test borings (3 through 8) were drilled in areas of potential environmental concern. Their locations are indicated on Plate 1. Borings 1 and 2 were drilled previously near underground gasoline storage tanks beneath the Harrison Street sidewalk. Boring 3 was drilled adjacent to a wash area sump. Boring 4 was located next to an existing hydraulic automobile lift. Boring 5 was drilled near the anomalous area identified by the geophysical survey. These three borings extended to depths of approximately 25 feet below the ground surface.

Test Boring 6 was drilled adjacent to the waste oil tanks, discovered in the basement of the structure. This boring extended to a depth of about 10 feet below the basement floor, which was just above groundwater in the area. Borings 7 and 8 were drilled within the central portion of the structure, in an effort to determine if contamination associated with the gasoline tanks extended beneath the building. These borings extended about 25 feet below the floor of the garage.

Test Borings 3 through 8 were drilled using four-inch diameter, solid-flight auger drilling equipment. Our geologist observed drilling operations, prepared detailed logs of the materials encountered, and obtained undisturbed samples of the soils encountered. Upon conclusion of drilling, the test borings were backfilled with cement grout. Soil cuttings generated during drilling were placed in steel barrels and left on-site.

Soil samples were retained in brass sample liners. The ends of the liners were covered with Teflon sheeting, capped, and sealed with duct tape. Samples were refrigerated on-site in ice chests and remained so until delivery to the analytical laboratory. Chain-of-custody records accompanied the samples to the analytical laboratory. Copies of the test boring logs are presented on Plates 2 through 7; chain-of-custody documents are attached.

Soil and Groundwater Conditions

Our test borings indicate that the site is underlain by dense, fine-grained sands containing varying amounts of silt and clay. These soils extend to the depths explored, about 25 feet below sidewalk grades. According to a geologic map by Radbruch[1], these sediments are part of the Merritt Sand formation.

Groundwater was encountered at depths varying from about 23 to 25 feet below the Harrison Garage floor slab during drilling. This level does not likely represent stabilized groundwater conditions. Data regarding past and present groundwater flow directions is currently unavailable. However, regional topographic contours would suggest a groundwater flow direction to the east, toward Lake Merritt.

---

[1] Radbruch, D., Areal and Engineering Geology of the Oakland West Quadrangle, California, USGS Misc. Geologic Investigations, Map I-239, 1957.

Analytical Testing

Seven soil samples were selected for chemical analysis, based on visual/olfactory inspection and organic vapor meter (OVM) screening. The soil samples were analyzed by Curtis & Tompkins, Ltd., a laboratory certified by the California Department of Health Services for the tests performed. Selected samples were analyzed for total volatile hydrocarbons (TVH), benzene, toluene, xylene, and ethylbenzene (BTXE), total extractable hydrocarbons (TEH), total oil and grease (TOG), chlorinated hydrocarbons (EPA 8010), polychlorinated biphenyls (PCBs), and soluble lead. The results of the analytical testing are summarized on Plate 1 and in the following table:

Table 1. Contaminant Concentrations in Soil

Boring & Depth	TVH[1] (ppm)	B[2] (ppb)	T[3] (ppb)	X[4] (ppb)	E[5] (ppb)	TOG[6] (ppm)	TEH[7] (ppm) Keros./Diesel	OTHER 8010/Sol Pb/PCBs ---/(ppm)/(ppb)
B1 @ 20'	6,300	99,000	490,000	610,000	110,000	---	---/---	---/---/---
B2 @ 18.5'	9,300	98,000	900,000	1,100,000	190,000	---	---/---	---/0.21/---
B3	---[8]	---	---	---	---	---	---/---	---/---/---
B4 @ 10'	---	---	---	---	---	6,300	ND[9]/1,700	---/---/---
B5 @22.5'	110	24	210	1,300	69	---	---/---	---/---/---
B6 @ 9'	---	ND	ND	ND	ND	ND	98/ND	ND/0.06/9 (Arochlor 1260)
B6 @ 9.5'	---	---	---	---	---	ND	140/ND	---/---/---
B7 @ 13'	ND	ND	ND	ND	ND			
B7@ 20'	2,500	3,500	34,000	130,000	33,000	---	---/---	---/0.07/---
B8 @ 22.5'	1,200	2,300	38,000	89,000	18,000	---	---/---	---/---/---

---

1 Total Volatile Hydrocarbons, mg/kg = ppm
2 Benzene, ug/kg = ppb
3 Toluene
4 Xylene
5 Ethylbenzene
6 Total Oil & Grease
7 Total Extractable Hydrocarbons (as kerosene and diesel)
8 Not tested for
9 Not detected

Conclusions

Existing Gasoline Storage Tanks

The previous investigation performed by SCI revealed the presence of gasoline-contaminated soils beneath two gasoline tanks located under the sidewalk adjacent to Harrison Street. Based on the gasoline concentrations found in the soils, it appears probable that free product exists on the groundwater surface. Soil samples situated just above groundwater from Borings 7, 8 and 5 contain gasoline concentrations of 2500, 1200 and 110 mg/kg, respectively. Judging from the concentration, we conclude that free gasoline product likely exists in a relatively large area, extending eastward beyond Boring 8. It appears probable that gasoline tank related contamination has impacted soils more than 100 feet from the tanks. Gasoline concentrations in Borings 5, 7 and 8 exceed current remediation guidelines, as promulgated by the ACHCSA. Consequently, we conclude that remediation of the gasoline-contaminated soils will be required.

Because it appears probable that free product exists on the groundwater surface, it is likely that groundwater quality has been degraded. The severity of groundwater impacts remains unknown. Further investigation will be required to determine the extent and severity of the groundwater problem. However, based on experience in the area, we judge that groundwater remediation will be required.

Hydraulic Hoist Area

Analytical test results from samples obtained from Boring 4 indicate concentrations of oil and grease of 6300 ppm and TEH (as diesel) of 1700 ppm in soils situated at a depth of about 10 feet. The soil sample analyzed was obtained from near an hydraulic automobile lift. Based on our observations and experience, we judge that these hydrocarbons are most likely associated with hydraulic fluids used in the lift. The data indicates that soil contamination has occurred, most likely as a result of leakage from the hydraulic lift cylinder. The concentrations are sufficiently high that they exceed current hydrocarbon regulatory agency cleanup guidelines. Consequently, we conclude that soil remediation will likely be required in this location.

Waste Oil Tanks

A test boring drilled adjacent to the waste oil tanks located in the basement of the structure encountered soils possessing relatively strong hydrocarbon odors. Soil samples taken from depths of about nine feet below the basement floor, which was just above groundwater, indicated hydrocarbon (as kerosene) concentrations up to 140 mg/kg. In addition, a very low concentration of PCBs (9 ug/kg) as Arochlor 1260 was reported by the laboratory to be present in the soils. In our opinion, the hydrocarbon source is most likely the adjacent waste oil tank(s). It is possible that our test boring was situated on the upgradient side of the tanks and hence may have been positioned near the edge of the contaminated soil area. Further study is required to evaluate the extent of contamination and remediation.

If you have any questions regarding our services to date or conclusions, please call.

5 mg/kg ppm PCB : Nat.

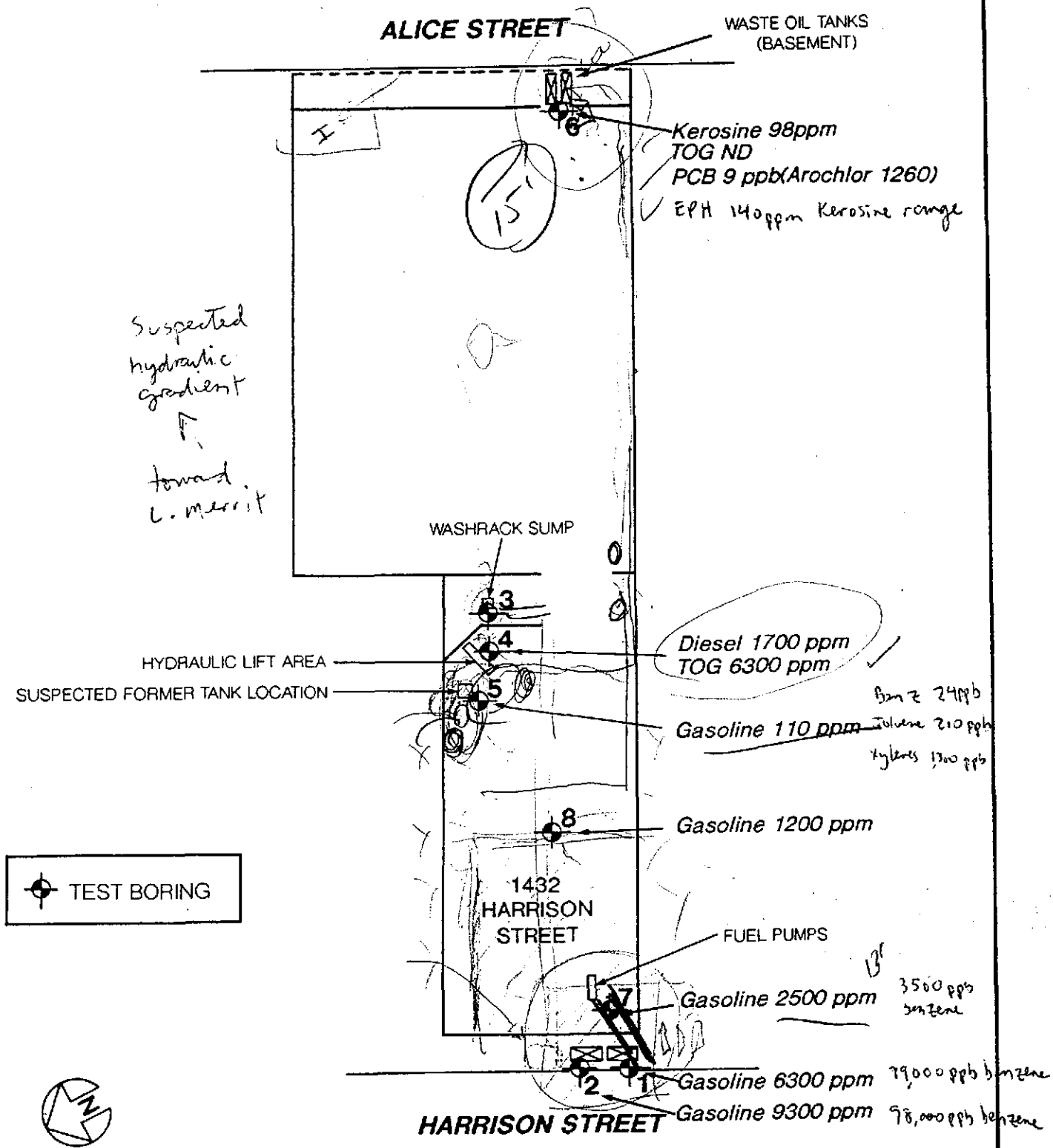
Yours very truly,

Subsurface Consultants, Inc.

James P. Bowers
Geotechnical Engineer 157 (expires 3/31/91)

CRF:JPB:gf

Attachments: Analytical Test Results, Plate 1
Plates 2 through 7, Boring Logs
Plate 8, Unified Soil Classification System
Analytical Test Reports
Chain-of-Custody Documents



ANALYTICAL TEST RESULTS

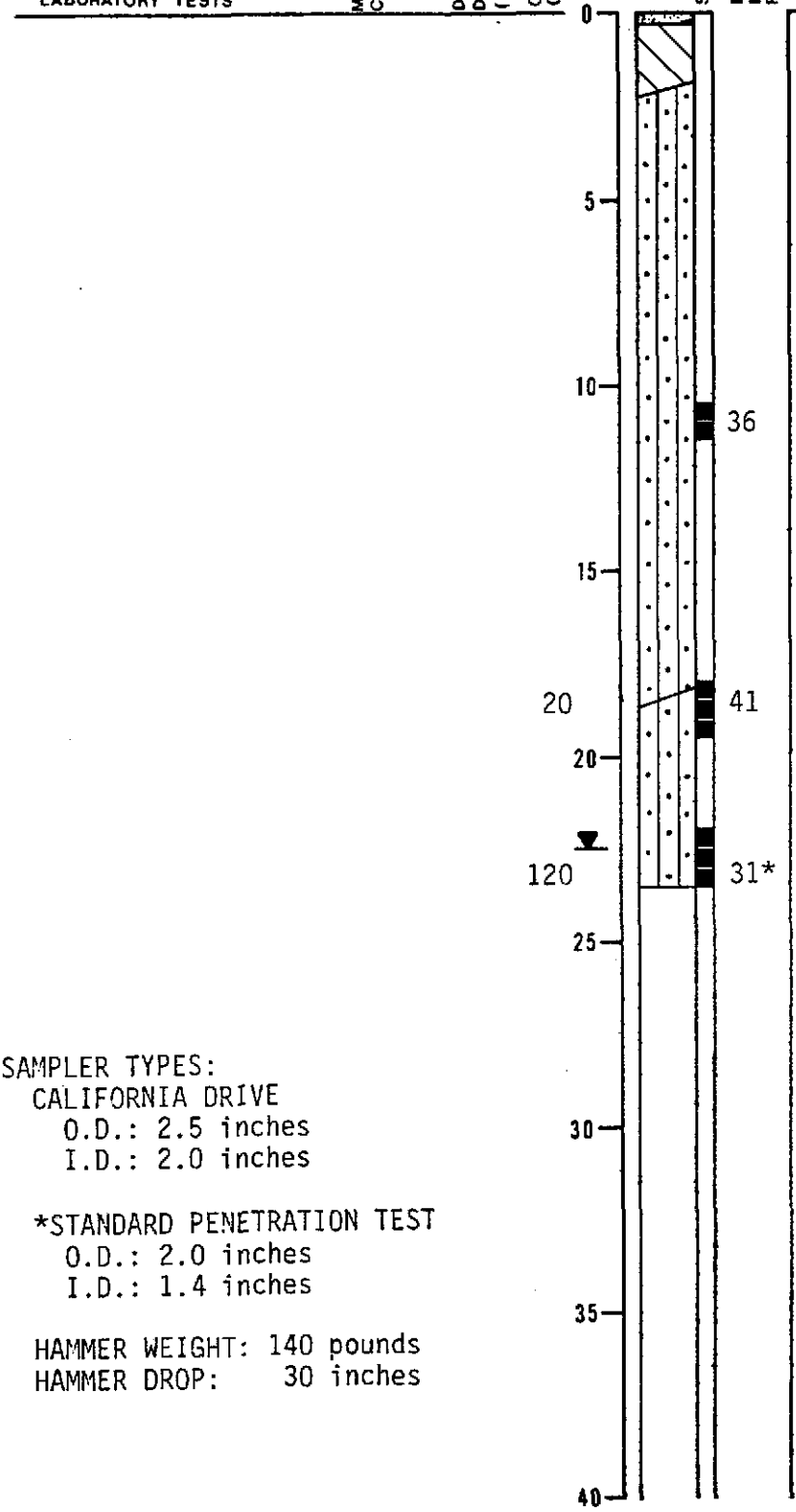
Subsurface Consultants

HARRISON STREET GARAGE – OAKLAND, CA

JOB NUMBER	DATE	APPROVED	PLATE
447.019	9/26/90		1

LOG OF TEST BORING 3

EQUIPMENT 4" Solid Stem Auger
DATE DRILLED 9/17/90
ELEVATION --



CONCRETE SLAB - 4" thick
DARK BROWN SANDY CLAY (CL)
medium stiff, moist
BROWN SILTY SAND (SM)
dense, moist

decrease in silty and clay content

GREEN GRAY SILTY SAND (SM/SP)
dense, moist

GROUNDWATER LEVEL DURING DRILLING
boring backfilled with neat cement grout

SAMPLER TYPES:
CALIFORNIA DRIVE
O.D.: 2.5 inches
I.D.: 2.0 inches

*STANDARD PENETRATION TEST
O.D.: 2.0 inches
I.D.: 1.4 inches

HAMMER WEIGHT: 140 pounds
HAMMER DROP: 30 inches

Subsurface Consultants

HARRISON STREET GARAGE - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
447.019	10/18/90	

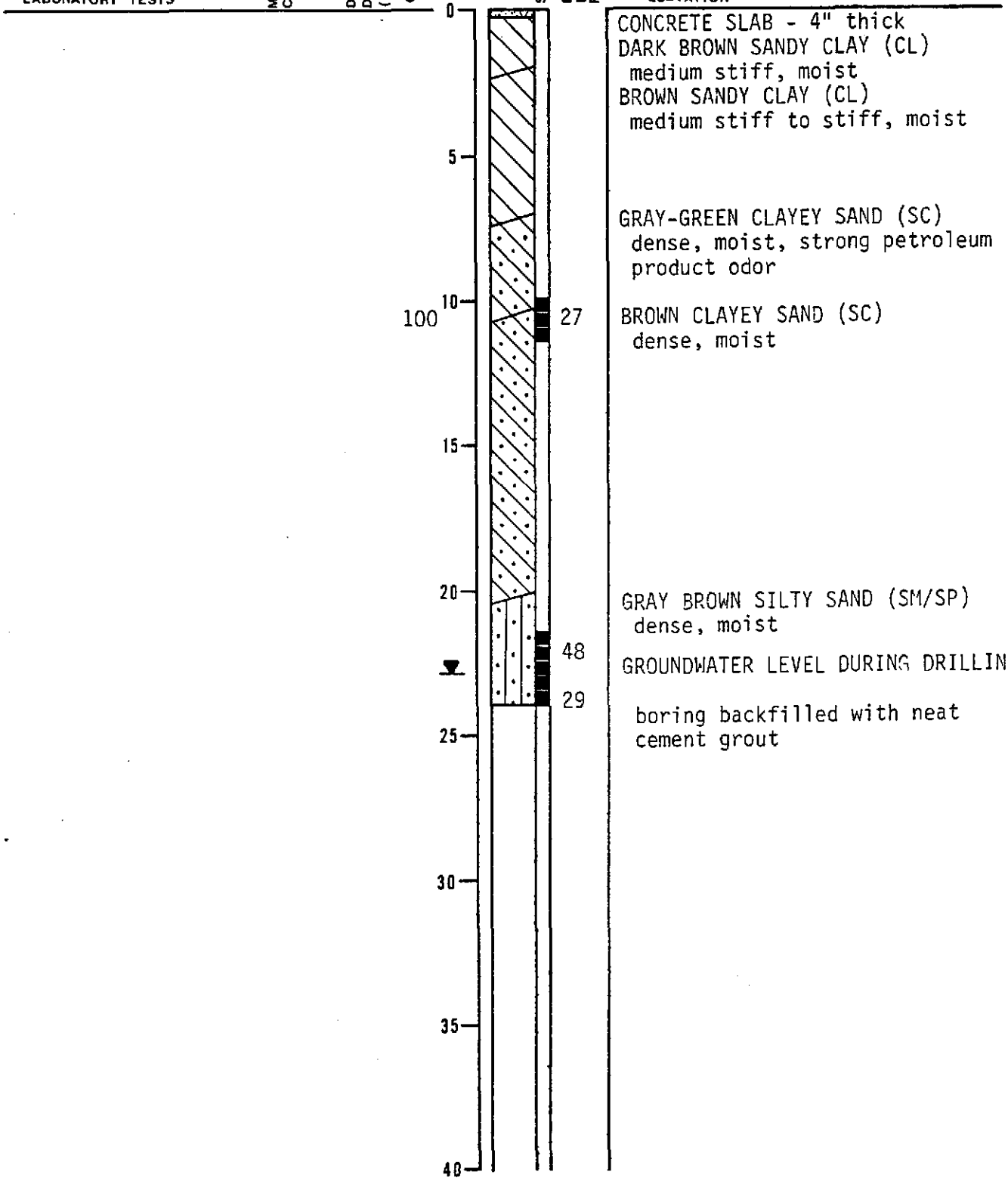
PLATE 2

LOG OF TEST BORING 4

EQUIPMENT 4" Solid Stem Auger

DATE DRILLED 9/17/90

ELEVATION --



Subsurface Consultants

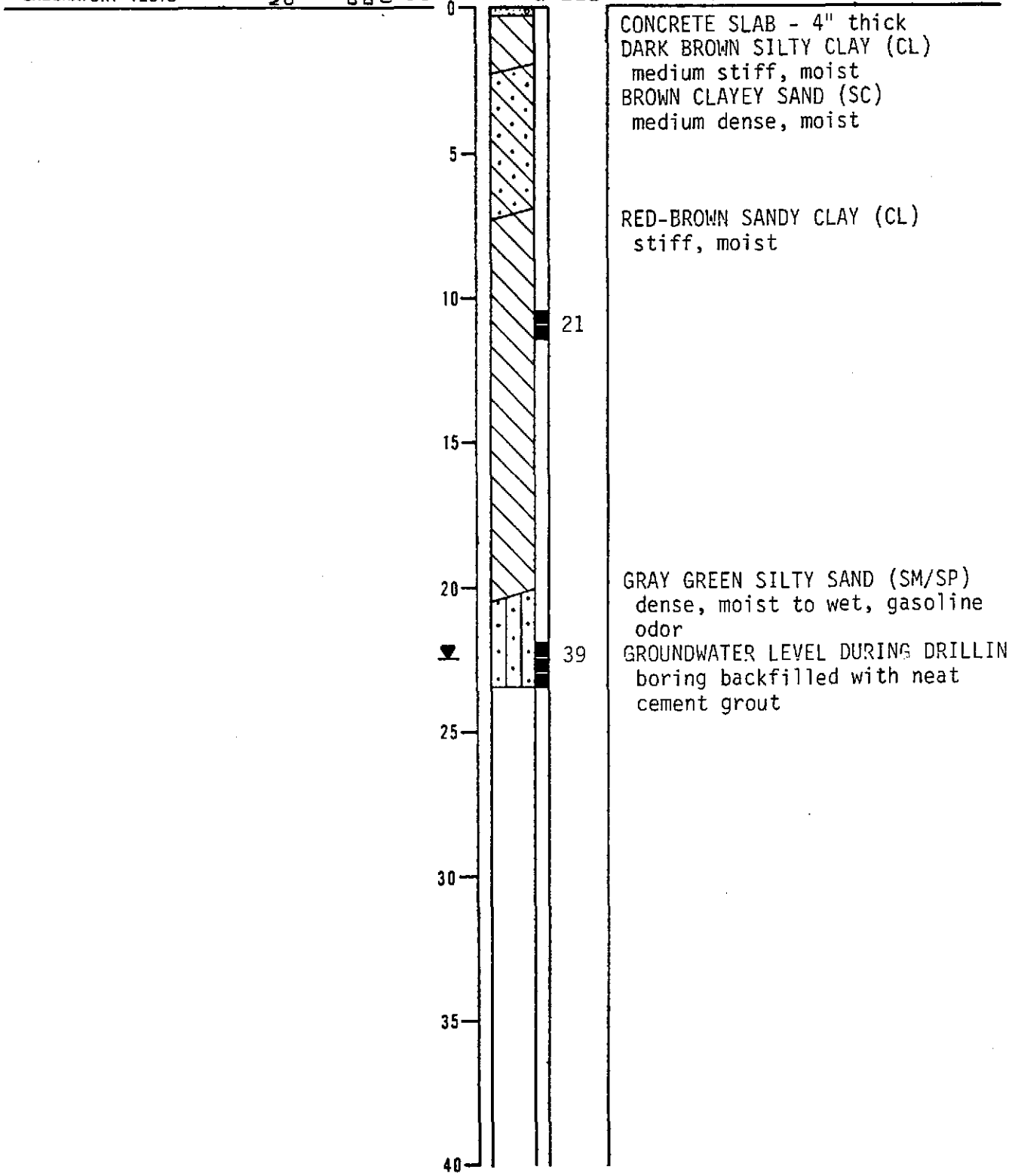
HARRISON STREET GARAGE - OAKLAND, CA

JOB NUMBER 447.019 | DATE 10/18/90 | APPROVED

PLATE 3

LOG OF TEST BORING 5

EQUIPMENT 4" Solid Flight Auger
DATE DRILLED 9/17/90
ELEVATION --



Subsurface Consultants

HARRISON STREET GARAGE - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
447.019	10/18/90	

PLATE 4

LOG OF TEST BORING 6

EQUIPMENT 3" Solid Flight Auger
DATE DRILLED 9/17/90
ELEVATION --

LABORATORY TESTS	MOISTURE CONTENT %	DRY DENSITY (PCF)	OVM (ppm)	DEPTH (FT)	SAMPLE	BLOWS PER FOOT	
				0			CONCRETE SLAB - 6" thick DARK BROWN SILTY SAND (SM) dense, moist
				5		50/6"	GRAY BROWN SILTY SAND (SM/SP) dense, moist, strong hydrocarbon odor
			5			50/6"	GROUNDWATER LEVEL DURING DRILLING boring backfilled with neat cement grout
			200+	10		50/6"	
				15			

HAMMER WEIGHT: 70 pounds
HAMMER DROP: 30 inches

Subsurface Consultants

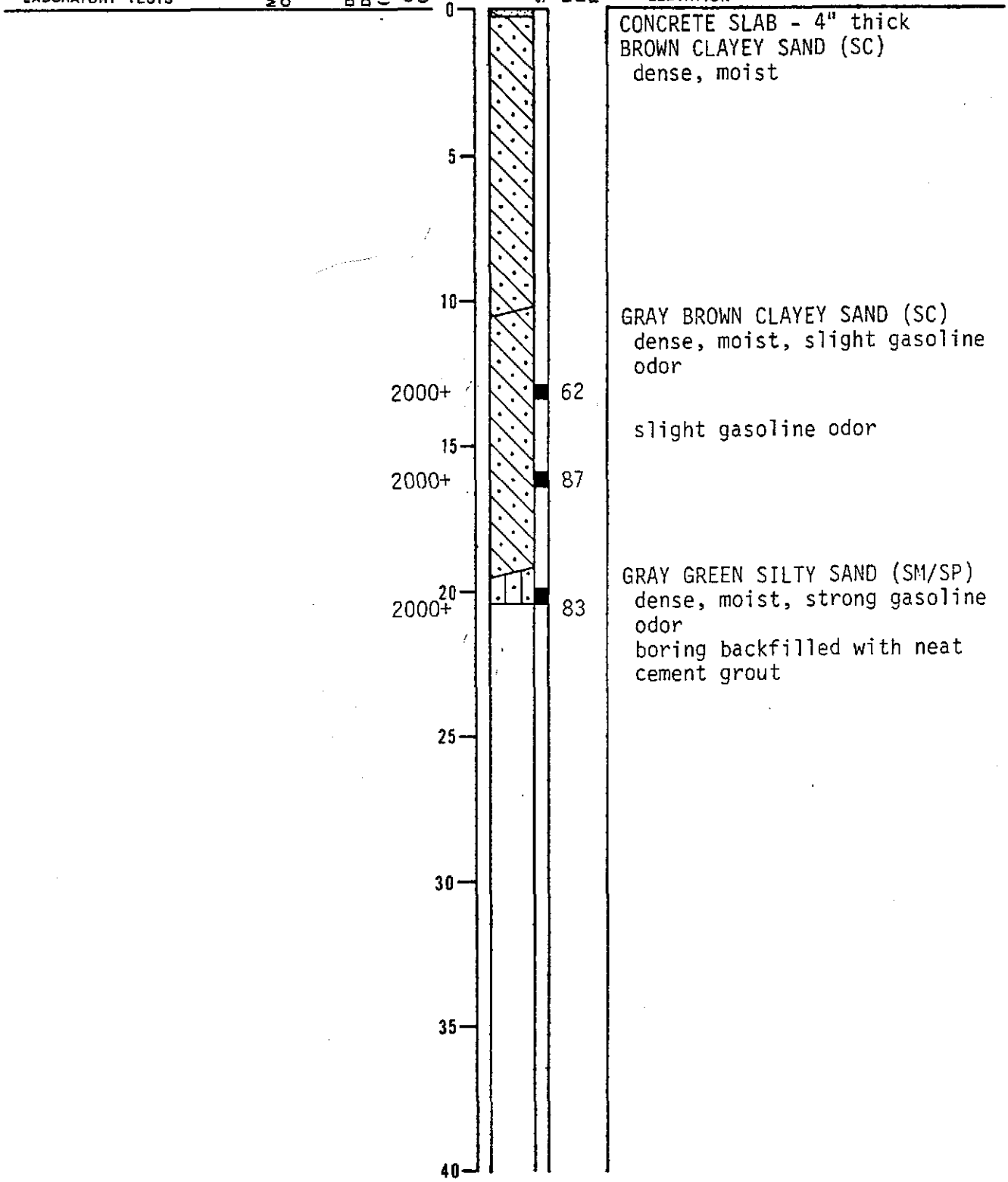
HARRISON STREET GARAGE - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
447.019	10/18/90	

PLATE 5

LOG OF TEST BORING 7

EQUIPMENT 3" Solid Flight Auger
DATE DRILLED 9/21/90
ELEVATION --



Subsurface Consultants

HARRISON STREET GARAGE - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
447.019	10/18/90	

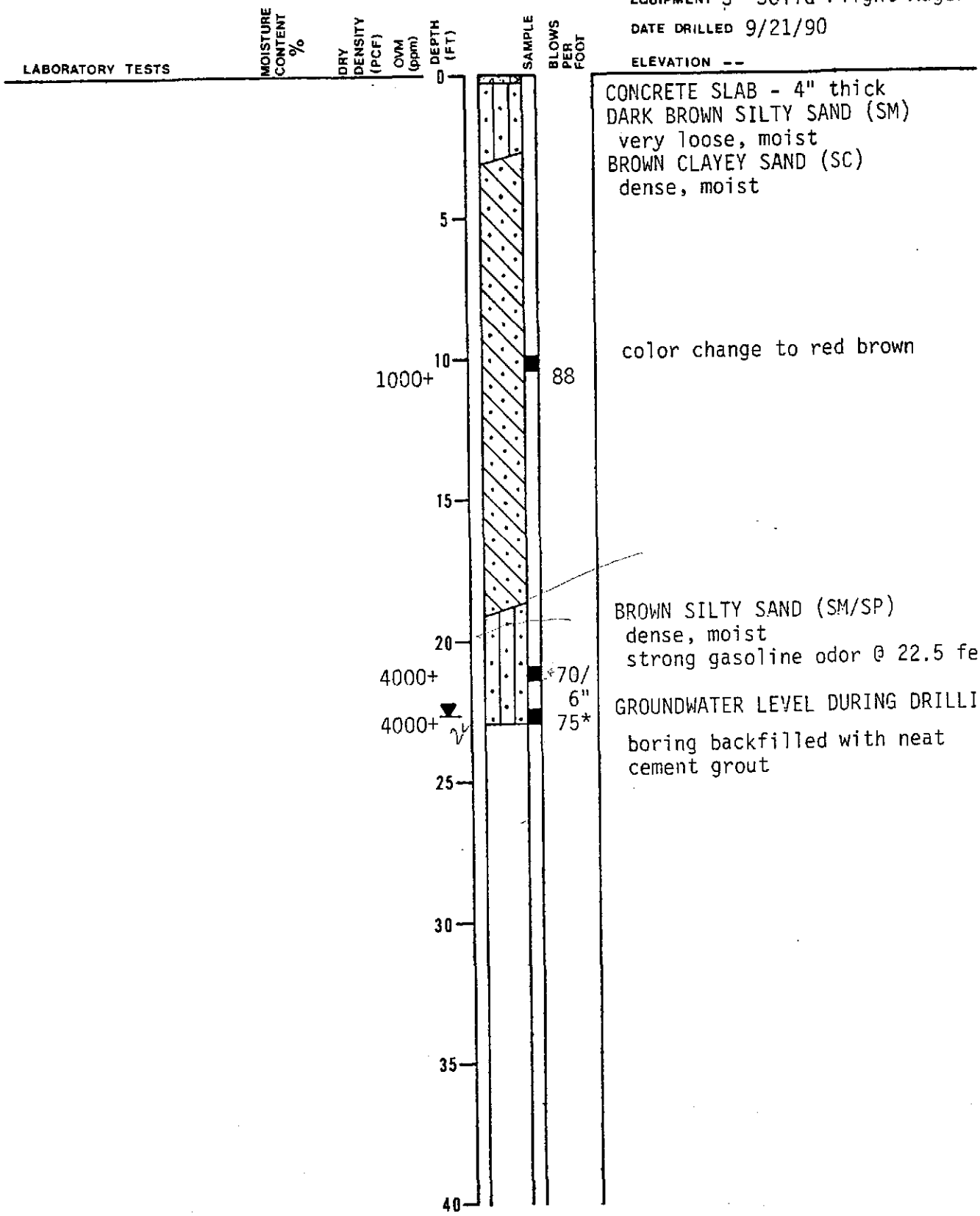
PLATE 6

LOG OF TEST BORING 8

EQUIPMENT 3" Solid Flight Auger

DATE DRILLED 9/21/90

ELEVATION --



Subsurface Consultants

HARRISON STREET GARAGE - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
447.019	10/18/90	

PLATE 7

GENERAL SOIL CATEGORIES			SYMBOLS	TYPICAL SOIL TYPES
COARSE GRAINED SOILS (More than half is larger than No. 200 sieve)	GRAVEL (More than half coarse fraction is larger than No. 4 sieve size)	Clean Gravel with little or no fines	GW	Well Graded Gravel, Gravel-Sand Mixtures
			GP	Poorly Graded Gravel, Gravel-Sand Mixtures
		Gravel with more than 12% fines	GM	Silty Gravel, Poorly Graded Gravel-Sand-Silt Mixtures
			GC	Clayey Gravel, Poorly Graded Gravel-Sand-Clay Mixtures
	SAND (More than half coarse fraction is smaller than No. 4 sieve size)	Clean sand with little or no fines	SW	Well Graded Sand, Gravelly Sand
			SP	Poorly Graded Sand, Gravelly Sand
		Sand with more than 12% fines	SM	Silty Sand, Poorly Graded Sand-Silt Mixtures
			SC	Clayey Sand, Poorly Graded Sand-Clay Mixtures
FINE GRAINED SOILS (More than half is smaller than No. 200 sieve)	SILT AND CLAY (Liquid Limit Less than 50%)		ML	Inorganic Silt and Very Fine Sand, Rock Flour, Silty or Clayey Fine Sand, or Clayey Silt with Slight Plasticity
			CL	Inorganic Clay of Low to Medium Plasticity, Gravelly Clay, Sandy Clay, Silty Clay, Lean Clay
			OL	Organic Clay and Organic Silty Clay of Low Plasticity
	SILT AND CLAY (Liquid Limit Greater than 50%)		MH	Inorganic Silt, Micaceous or Diatomaceous Fine Sandy or Silty Soils, Elastic Silt
			CH	Inorganic Clay of High Plasticity, Fat Clay
			OH	Organic Clay of Medium to High Plasticity, Organic Silt
HIGHLY ORGANIC SOILS			PT	Peat and Other Highly Organic Soils

UNIFIED SOIL CLASSIFICATION SYSTEM

Subsurface Consultants

HARRISON STREET GARAGE - OAKLAND, CA

JOB NUMBER	DATE	APPROVED
447.019	10/18/90	

PLATE 8

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 09/19/90
DATE REPORTED: 09/28/90

LAB NUMBER: 101685

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 3 SOIL SAMPLES

PROJECT #: 447.019
LOCATION: 1432 HARRISON ST. GARAGE

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101685
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 447.019
LOCATION: 1432 HARRISON ST. GARAGE

DATE RECEIVED: 09/19/90
DATE EXTRACTED: 09/19/90
DATE ANALYZED: 09/21/90
DATE REPORTED: 09/28/90

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT (mg/Kg)
101685-1	B6 @ 9'	98	ND	10
101685-3	B4 @ 10'	ND	1,700	100

ND = Not Detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	87

Curtis & Tompkins, Ltd

LAB NUMBER: 101685
CLIENT: SUBSURFACE CONSULTANTS
PROJECT # : 447.019
LOCATION: 1432 HARRISON ST. GARAGE

DATE RECEIVED: 09/19/90
DATE ANALYZED: 09/27/90
DATE REPORTED: 09/28/90

ANALYSIS: HYDROCARBON OIL AND GREASE
METHOD: SMWW 17:5520 E&F

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
101685-1	B6 @ 9'	ND	mg/Kg	50
101685-3	B4 @ 10'	6,300	mg/Kg	50

ND = Not detected at or above reporting limit

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	90

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101685
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 447.019
JOB LOCATION: 1432 HARRISON ST. GARAGE

DATE RECEIVED: 09/19/90
DATE ANALYZED: 09/21/90
DATE REPORTED: 09/28/90

Total Volatile Hydrocarbons with BTXE in Soils & Wastes
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
101685-2	B5 @ 22 1/2'	110	24	210	69	1,300

QA/QC SUMMARY

RPD, %	3
RECOVERY, %	106

Curtis & Tompkins, Ltd.

LAB NUMBER: 101685
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 447.019
SAMPLE ID: B6 @ 9'

DATE RECEIVED: 09/19/90
DATE ANALYZED: 09/27/90
DATE REPORTED: 09/28/90

POLYCHLORINATED BIPHENYLS (PCBs)
ANALYSIS METHOD: EPA 8080
EXTRACTION METHOD: EPA 3550

AROCLOR TYPE	RESULT (ug/Kg)	REPORTING LIMIT (ug/Kg)
AROCLOR 1221	ND	17
AROCLOR 1232	ND	17
AROCLOR 1016	ND	17
AROCLOR 1242	ND	17
AROCLOR 1248	ND	17
AROCLOR 1254	ND	17
AROCLOR 1260	DETECTED(9.0)	17

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	80

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101685-1
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 447.019
SAMPLE ID: B6 @ 9'

DATE RECEIVED: 09/19/90
DATE ANALYZED: 09/21/90
DATE REPORTED: 09/28/90

EPA 8010: Volatile Halocarbons in Soil & Wastes
Extraction Method: EPA 5030 - Purge & Trap

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5.0
trichlorofluoromethane	ND	5.0
1,1-dichloroethene	ND	5.0
1,1-dichloroethane	ND	5.0
1,2-dichloroethene (total)	ND	5.0
chloroform	ND	5.0
freon 113	ND	5.0
1,2-dichloroethane	ND	5.0
1,1,1-trichloroethane	ND	5.0
carbon tetrachloride	ND	5.0
bromodichloromethane	ND	5.0
1,2-dichloropropane	ND	5.0
cis-1,3-dichloropropene	ND	5.0
trichloroethylene	ND	5.0
1,1,2-trichloroethane	ND	5.0
trans-1,3-dichloropropene	ND	5.0
dibromochloromethane	ND	5.0
2-chloroethylvinyl ether	ND	10
bromoform	ND	5.0
tetrachloroethylene	ND	5.0
1,1,2,2-tetrachloroethane	ND	5.0
chlorobenzene	ND	5.0
1,3-dichlorobenzene	ND	5.0
1,2-dichlorobenzene	ND	5.0
1,4-dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Duplicate: Relative % Difference	34
Spike: Average % Recovery	75

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101685-1
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 447.019
LOCATION: 1432 HARRISON ST. GARAGE
SAMPLE ID: B6 @ 9'

DATE RECEIVED: 09/19/90
DATE ANALYZED: 09/21/90
DATE REPORTED: 09/28/90

EPA 8020: Volatile Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 5030 - Purge & Trap

COMPOUND	Result ug/Kg	Reporting Limit ug/Kg
Benzene	ND	5.0
Toluene	ND	5.0
Ethyl Benzene	ND	5.0
Total Xylenes	ND	5.0
Chlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	11
RECOVERY, %	93

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 09/19/90
DATE REPORTED: 09/28/90

LAB NUMBER: 101743

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 1 SOIL SAMPLE

PROJECT #: 447.019
LOCATION: 1432 HARRISON ST. GARAGE

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

LABORATORY NUMBER: 101743
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 447.019
LOCATION: 1432 HARRISON ST. GARAGE

DATE RECEIVED: 09/19/90
DATE REQUESTED: 09/24/90
DATE ANALYZED: 09/27/90
DATE REPORTED: 09/28/90

ANALYSIS: SOLUBLE LEAD
ANALYSIS METHOD: EPA 7420
EXTRACTION BY WASTE EXTRACTION TEST: CCR TITLE 26 SECTION 22-66700

LAB ID	CLIENT ID	RESULT	UNITS	REPORTING LIMIT
101743-1	B6 @ 9'	0.06	mg/L	0.05

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	103

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 09/24/90
DATE REPORTED: 09/26/90

LAB NUMBER: 101735

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 1 SOIL SAMPLE

PROJECT #: 447.019
LOCATION: 1432 HARRISON STREET GARAGE

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101735
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 447.019
JOB LOCATION: 1432 HARRISON STREET GARAGE

DATE RECEIVED: 09/24/90
DATE ANALYZED: 09/25/90
DATE REPORTED: 09/26/90

Total Volatile Hydrocarbons with BTXE in Soils & Wastes
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES
		(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
101735-1	B8 @ 22.5'	1,200	2.3	38	18	89

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	100

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 10/02/90
DATE REPORTED: 10/04/90

LAB NUMBER: 101822

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 2 SOIL SAMPLES

PROJECT #: 447.019
LOCATION: 1432 HARRISON ST. GARAGE

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LAB NUMBER: 101822
CLIENT: SUBSURFACE CONSULTANTS
PROJECT # : 447.019
LOCATION: 1432 HARRISON ST. GARAGE

DATE RECEIVED: 10/02/90
DATE ANALYZED: 10/04/90
DATE REPORTED: 10/04/90

ANALYSIS: HYDROCARBON OIL AND GREASE
METHOD: SMWW 17:5520F (503E)

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
101822-1	B6 @ 9 1/2'	ND	mg/Kg	50

ND = Not detected at or above reporting limit

QA/QC SUMMARY

RPD, %	12
RECOVERY, %	77

LABORATORY NUMBER: 101822
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 447.019
JOB LOCATION: 1432 HARRISON ST. GARAGE

DATE RECEIVED: 10/02/90
DATE ANALYZED: 10/04/90
DATE REPORTED: 10/04/90

Total Volatile Hydrocarbons with BTXE in Soils & Wastes
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
101822-2	B7 @ 13'	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	7
RECOVERY, %	116

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 101822
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 447.019
LOCATION: 1432 HARRISON ST. GARAGE

DATE RECEIVED: 10/02/90
DATE EXTRACTED: 10/03/90
DATE ANALYZED: 10/03/90
DATE REPORTED: 10/04/90

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT (mg/Kg)
101822-1	B6 @ 9 1/2'	140	ND	10

ND = Not Detected at or above reporting limit.

Curtis & Tompkins, Ltd., Analytical Laboratories. Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

DATE RECEIVED: 07/27/90
DATE REPORTED: 09/28/90

LAB NUMBER: 101742

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 1 SOIL SAMPLE

PROJECT #: 447.019
LOCATION: 1432 HARRISON ST. GARAGE

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101742
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 447.019
LOCATION: 1432 HARRISON ST. GARAGE

DATE RECEIVED: 07/27/90
DATE REQUESTED: 09/24/90
DATE ANALYZED: 09/27/90
DATE REPORTED: 09/28/90

ANALYSIS: SOLUBLE LEAD
ANALYSIS METHOD: EPA 7420
EXTRACTION BY WASTE EXTRACTION TEST: CCR TITLE 26 SECTION 22-66700

LAB ID	CLIENT ID	RESULT	UNITS	REPORTING LIMIT
101742-1	2 @ 18.5	0.21	mg/L	0.05

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	103

Curtis & Tompkins, Ltd., Analytical Laboratories. Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

DATE RECEIVED: 07/27/90
DATE REPORTED: 08/14/90

LAB NUMBER: 101213

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 2 SOIL SAMPLES

PROJECT #: 447.019
LOCATION: HARRISON GARAGE

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

LABORATORY NUMBER: 101213
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 447.019
JOB LOCATION: HARRISON GARAGE

DATE RECEIVED: 07/27/90
DATE ANALYZED: 08/14/90
DATE REPORTED: 08/14/90

Total Volatile Hydrocarbons with BTXE in Soils & Wastes
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
101213-1	1 @ 20.0	6,300	99,000	490,000	110,000	610,000
101213-2	2 @ 18.5	9,300	98,000	900,000	190,000	1,100,000

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	93

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 09/24/90
DATE REPORTED: 10/02/90

LAB NUMBER: 101738

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 1 SOIL SAMPLE

PROJECT #: 447.019
LOCATION: 1432 HARRISON ST. GARAGE

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101738
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 447.019
LOCATION: 1432 HARRISON ST. GARAGE

DATE RECEIVED: 09/24/90
DATE ANALYZED: 09/27/90
DATE REPORTED: 10/02/90

ANALYSIS: SOLUBLE LEAD
ANALYSIS METHOD: EPA 7420
EXTRACTION BY WASTE EXTRACTION TEST: CCR TITLE 26 SECTION 22-66700

LAB ID	CLIENT ID	RESULT	UNITS	REPORTING LIMIT
101738-1	B7 @ 20'	0.07	mg/L	0.05

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	103

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 101738
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 447.019
JOB LOCATION: 1432 HARRISON ST. GARAGE

DATE RECEIVED: 09/24/90
DATE ANALYZED: 10/01/90
DATE REPORTED: 10/02/90

Total Volatile Hydrocarbons with BTXE in Soils & Wastes
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
101738-1	B7 @ 20'	2,500	3,500	34,000	33,000	130,000

QA/QC SUMMARY

RPD, %	6
RECOVERY, %	101

Subsurface Consultants

& ANALYTICAL TEST REQUEST

Project Name: 1432 HARRISON ST. GARAGE

SCI Job Number: 447.019

Project Contact at SCI: CRAIG FLETCHER

Sampled By: CRAIG FLETCHER

Analytical Laboratory: Curtis + Tamplkins

Analytical Turnaround: RAPID

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
B6 @ 9½'	S	BT	9/17/90		TEH	8015 Mod 3550
					TOG	SMWW 503E
B7 @ 13'	S	BT	9/21/90		TVH/BTXE	8015 Mod/8020

* * * * * *

Released by: _____ Date: 10-2-90

Released by Courier: _____ Date: _____

Received by Laboratory: _____ Date: 10/3/90

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Project Name: 1432 Harrison St. Garage

SCI Job Number: 447.019

Project Contact at SCI: Craig Fletcher / Jim Bowers

Sampled By: Craig Fletcher

Analytical Laboratory: Curtis & Tompkins, Ltd.

Analytical Turnaround: NORMAL

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
B7 @ 20'	S	T	9/21/90		TVH/BTXE	8015 mod./8020
"	"	"	"		soluble Lead	

* * * * * *

Released by: [signature] Date: Sep-24-90

Released by Courier: _____ Date: _____

Received by SCI: [signature] Date: 9/24/90

Received by Laboratory: _____ Date: _____

Relinquished by: _____ Date: _____

1 Sample Type: W=Water, S=Soil, O=Other (specify)
2 Container Type: V=VOA, P=Plastic, G=Glass, T=Brass Tube, O=Other (specify)

NOTES TO LABORATORY:
- Notify SCI if there are any anomalous peaks on GC or other scans
- Questions/clarifications - Contact SCI at (415) 268-0461

Subsurface Consultants

& ANALYTICAL TEST REQUEST

Project Name: 1432 Harrison St. Garage

SCI Job Number: 447.019

Project Contact at SCI: Craig Fletcher | Jim Bowles

Sampled By: Craig Fletcher

Analytical Laboratory: Cuenis & Tomkins, Ltd.

Analytical Turnaround: RAPID

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
B8 @ 22'L	S	Plastic Sealed	9/21/90		TVH/BTXE	8015 mod/8020

* * * * * *

Released by: [signature] Date: 9-24-90

Released by Courier: _____ Date: _____

Received by SCI: _____ Date: _____

Received by Laboratory: [signature] Date: 9/24/90

Relinquished by: _____ Date: _____

[1] Sample Type: W=Water, S=Soil, O=Other (specify)

[2] Container Type: V=VOA, P=Plastic, G=Glass, T=Brass Tube, O=Other (specify)

NOTES TO LABORATORY:

- Notify SCI if there are any anomalous peaks on GC or other scans
- Questions/clarifications - Contact SCI at (415) 268-0461

Subsurface Consultants

& ANALYTICAL TEST REQUEST

Project Name: HARRISON GARAGE

SCI Job Number: 447.019

Project Contact at SCI: JIM BOWERS

Sampled By: FERNANDO VELEZ

Analytical Laboratory: CURTIS & TOMPKINS

Analytical Turnaround: NORMAL

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
1 @ 20.0	S	T	7/25/90		TVH + BTXE	
2 @ 18.5	S	T	7/25/90		TVH + BTXE	
	"	"	"		SOLUBLE LEAD	(added 9/24/90)

* * * * * *

Released by: [signature] Date:

Released by Courier: Date:

Received by Laboratory: [signature] Date: 7/27/90

Relinquished by Laboratory: Date:

Received by: Date:

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN-OF CUSTODY-RECORD
& ANALYTICAL TEST REQUEST

Project Name: 1432 HARRISON ST. GARAGE

SCI Job Number: 447.019

Project Contact at SCI: JIM BOWERS | CRAIG FLETCHER

Sampled By: CRAIG FLETCHER

Analytical Laboratory: CURTIS & TOMPKINS

Analytical Turnaround: NORMAL

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
B6@9'	S	BT	9/17/90		TOG	503E
					TEH	8015 mod/3550
					Purgeable Halocarbons	8010
					PCB's	8080
					Purgeable Aromatics	8020
					Soluble Lead	(Added 9/24/90)
B5@22½'	S	BT	9/17/90		TVH/BTXE	8015 mod/8020
B4@10'	S	BT	9/17/90		TOG	503E
					TEH	8015 mod/3550

* * * * * *

Released by: [signature] Date: 9-19-90

Released by Courier: Date:

Received by SCI: Date:

Received by Laboratory: [signature] Date: 9/19/90 9:10 am

Relinquished by: Date:

[1] Sample Type: W=Water, S=Soil, O=Other (specify)
[2] Container Type: V=VOA, P=Plastic, G=Glass, T=Brass Tube, O=Other (specify)

NOTES TO LABORATORY:
- Notify SCI if there are any anomalous peaks on GC or other scans
- Questions/clarifications - Contact SCI at (415) 268-0461

HELLER, EHRMAN, WHITE & McAULIFFE
ATTORNEYS
A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS
333 BUSH STREET · SAN FRANCISCO, CALIFORNIA 94104-2878
CABLE HELPOW · TELEX 184-996 · FACSIMILE (415) 772-6268
TELEPHONE (415) 772-6000

525 UNIVERSITY AVENUE
PALO ALTO, CALIFORNIA 94301-1908
FACSIMILE (415) 324-0638
TELEPHONE (415) 326-7600

555 SOUTH FLOWER STREET
LOS ANGELES, CALIFORNIA 90071-2306
FACSIMILE (213) 614-1868
TELEPHONE (213) 689-0200

JONATHAN SEBASTIAN LEO
DIRECT DIAL (415) 772-6068

701 FIFTH AVENUE
SEATTLE, WASHINGTON 98104-7098
FACSIMILE (206) 447-0849
TELEPHONE (206) 447-0900

1300 S. W. FIFTH AVENUE
PORTLAND, OREGON 97201-5696
FACSIMILE (503) 241-0950
TELEPHONE (503) 227-7400

550 WEST 7TH AVENUE
ANCHORAGE, ALASKA 99501-3571
FACSIMILE (907) 277-1920
TELEPHONE (907) 277-1900

90 NOV 29 AM 8:53

November 27, 1990

BY HAND DELIVERY

Mr. Paul M. Smith
Hazardous Materials Specialist
Alameda County Health Care
Services Agency
80 Swan Way, Room 200
Oakland, CA 94621

Re: Harrison Street Garage
1432 Harrison Street
Oakland, CA 94612

Dear Mr. Smith:

Your letter order of July 31, 1990, and subsequent letters of August 27 and September 24, name my clients, Alvin Bacharach and Barbara Borsuk, as the parties responsible for the clean-up in the above referenced matter. The order is grossly unjust in this regard. At no time did my clients ever own, operate or in any way control these underground petroleum tanks. They were owned and operated exclusively by Douglas Motor Services/Parking Company ("Douglas"), which leased my clients' property for use as an auto repair shop and parking garage for sixteen years. Douglas, and not my clients, is the party responsible for the contamination and as such is the party that should be named in the County's clean-up order. The County has the legal authority to take action against the actual polluter and equity requires that it do so in this case.

There is no question that Douglas was both the owner and operator of the two underground storage tanks at issue. It bought, installed and owned the tanks, and was responsible for their daily operation. See Health & Safety Code §§25299.19, 25299.20 (defining the terms "operator" and "owner"). Douglas registered itself as the "owner" of the tanks on permits issued by the City of Oakland in both 1975 and 1982 which authorized the installation of the two

tanks. See Attachment 1. In addition, a permit to operate was issued to Douglas in November, 1987 by Alameda County. See Attachment 2. Moreover, Douglas identified itself as the "owner" of these tanks on several State Water Resources Control Board Hazardous Substance Storage Statements. See Attachment 3. The tanks were not used for any purpose once Douglas vacated the premises at the expiration of the lease in March 1988.

Not only did Douglas own, install and operate the tanks; it knew that they leaked. As long ago as 1982, Douglas was put on notice that there were "many leaks in [the] tank and product line." See Attachment 4. Moreover, it is our understanding that Steve Davis (who succeeded Douglas as the tenant of the Harrison Street Garage) testified in a deposition that Douglas had informed him that Douglas had known in 1988 that the tanks were leaking. By contrast, my clients never owned the tanks or had any control over them. Indeed, Douglas did not even inform my clients of its intent to install and operate these tanks. My clients were simply presented with a fait accompli once the tanks were in place. In a 1975 letter to Douglas, Mr. Bacharach declined to pay any of the costs incurred by Douglas relative to the installation of the first tank. See Attachment 5.

State agencies will remove a party named in an abatement order if there is no substantial evidence that the party was responsible for the contamination. See In Re Exxon Order No. 85-7 (1985). In that case the State Water Resources Control Board granted Exxon's petition to be removed from an abatement order regarding a leaking underground petroleum tank in the absence of substantial evidence that Exxon owned the tanks or was responsible for their operation. There is no reason why the County should not follow that precedent here with regard to my clients in light of the overwhelming evidence that they never had anything to do with the tanks at issue. All of the equities in this case weigh heavily against charging Mr. Bacharach and Ms. Borsuk with any of the liability for cleaning up the site, since it is beyond dispute that the contamination was due entirely to the actions of Douglas.

Douglas is the responsible party not only under all precepts of basic fairness, but pursuant to state law as well. The California Underground Storage Tank Act, Health & Safety Code § 25280 et seq., authorizes the County to require all responsible parties to incur cleanup and remediation costs associated with underground storage tanks, not just present landowners. Section 25299.37 provides that:

> Each owner, operator, or other responsible party shall take corrective action in response to an unauthorized release * * *.

This broad language is inclusive enough to encompass owners and operators of underground tanks even if they leased the premises.

The statute does not limit the scope of liability to owners or operators but includes also "other responsible parties." Surely a prior tenant which installed, owned and operated the tanks for well over a decade falls within this category. In a similar case involving a prior lessee's responsibility for petroleum contamination the State Water Resources Control Board found:

> [Lessee's] lack of present control is not relevant. Responsibility for a problem created in the past is.

In Re Stuart Petroleum, Order No. WQ 86-15 at 8-9 (1986).

As the owner, operator and party responsible for the tanks, Douglas was required to close the tanks pursuant to Health & Safety Code §25298(c). Moreover, §25298(a) prohibits abandonment of underground tanks. Douglas blatantly violated these express code sections by failing to remove the tanks and clean up the site when its lease ended in 1988. In addition, Water Code §13272, provides that "persons," which would include Douglas, must notify the state regarding any discharge to water of oil or petroleum. At no time did Douglas comply with this mandate although it knew about the gas leakage since 1982, the year §13272 was enacted. These code violations further argue in favor of naming Douglas as the party responsible under the County's current clean-up order.

Douglas is also responsible for site assessment and closure under federal law. The state statute, Health & Safety Code §25299.37(e), provides that the federal Underground Storage Tank Act, 42 U.S.C. § 6991 et seq., is applicable to corrective actions which must be taken by responsible parties. Under the federal regulations, 40 CFR §280.73, owners and operators of USTs which are permanently closed before December 1988 -- and this system was permanently abandoned as of March 1988:

> must assess the excavation zone and close the UST system in accordance with this subpart if releases from the UST may, in the judgment of the implementing agency, pose a current or potential threat to human health and the environment.

Thus, under federal law, which is applicable here by way of Health and Safety Code Section 25299.37(e), Douglas is directly responsible for evaluation and closure of the site.

Finally, Douglas is responsible for removal and cleanup of the tanks pursuant to the lease agreement with my clients in several respects. First, the lease contains an express statement that:

> Lessee agrees to keep, save, and hold Lessor free from all liability, penalties . . . from any causes whatsoever, including leakage . . .

See January 30, 1981 Lease ¶9, Attachment 6. Thus the parties specifically agreed that Douglas, and not the landlord, would bear the responsibility of damages and costs associated with leakage from the tanks.

> Second, the lease provides that the lessee agrees to: repair and maintain the demised premises in compliance and conformity with all laws and ordinances, municipal, state, federal and/or any other governmental authority and all lawful requirements or orders of any . . . [government] in anywise relating to the condition, use or occupancy of the . . . premises throughout the entire term of this lease and to the perfect exoneration from liability of the lessor.

Lease ¶ 3. Thus, the parties contemplated that any statutory or regulatory violation occurring during the term of the lease was to be Douglas' sole responsibility.

Third, the lease establishes that the landlord had the express right to request that Douglas remove any fixtures installed by Douglas. See Lease ¶ 5. At least one court has held that a UST is a removable fixture which does not become a part of the realty. See Murr v. Cohn (1927), 87 Cal. App. 478. The critical issue, the court stated, was the intent of the parties. In this case, Mr. Bacharach specifically informed Douglas in 1988 (the year the lease expired) that it was responsible for the remediation of any contamination caused by leakage from the tanks.

In sum, it is our position that Douglas, and not the landowners, is the party entirely responsible for the contamination of the Harrison Street property under both applicable law and the lease agreement. The equities here argue overwhelmingly in favor of substituting Douglas for my clients in the County's cleanup order.

I would also like to take this opportunity to address the issues raised in your letter of September 24. In that letter you instructed my clients to remove the liquid remaining in the tanks

prior to their removal. You requested a response to this, and the other concerns raised, within fourteen days. On October 12 SCS Engineers, my clients' consultant, wrote to you in response and informed you that it had attempted to remove the remaining liquid from the tanks on October 3 but was denied access by Steve Davis, the tenant on the premises at that time. Access to the site was eventually provided and all of the product was removed from both the waste oil and the gasoline tanks on October 27. See Uniform Hazardous Waste Manifest, Attachment 7. We would like to discuss this activity with you when we meet.

Your September 24 letter also refers to the need for a preliminary site assessment to assist in the determination of the amount and extent of site contamination and suggested that tank excavation and soil stockpiling may present human health hazards. We want to discuss these concerns with you, as well as the timing of tank removal and the other issues raised previously in this letter, as soon as possible.

We believe that a meeting with you, the Alameda County District Attorney and us (including our consultant) is far preferable to telephone communication and is also more likely to result in a quicker resolution of the issues. To that end, we request such a meeting on Friday, November 30 (when our consultant, Dr. John Cummings of SCS, will be available).

Please call me as soon as you have had the chance to review this letter and discuss it with the District Attorney, so that we can schedule the meeting. Thank you very much for your cooperation in this matter.

Sincerely,

Jonathan S. Leo

Attachments

cc: Mr. Alvin Bacharach
Mr. Mark Borsuk
Gil Jensen (Alameda County D.A.)

ATTACHMENT 1

Copy INSPECTOR Exc. Permit Granted No. 8091

CITY OF OAKLAND

Permit to Excavate and Install, Repair, or Remove Inflammable Liquid Tanks.

Tank Permit No.

Oakland, California, August 27 19 75

PERMISSION IS HEREBY GRANTED TO Install & remove ~~XXXXX~~ Gasoline tank and excavate commencing feet inside curb line

on the N side of Harrison Street Avenue 250 feet K of 14 Street Street Avenue

House No. L 1432 Harrison St. Present Storage 2-550 gal. tanks.

Owner Douglas Motors Address 1432 Harrison Phone

Applicant D.L. Stevens Co. Address 990 98 Avenue Phone 568-0938

Dimensions of street (sidewalk) surface to be disturbed 5' x 13' Number of Tanks 1 Capacity 1,000 Gallons each

Remarks: Remove 1-550 gal. tank and install 1-1,000 gal. tank

This Permit is granted in accordance with existing City Ordinances.
Owner hereby agrees to remove tanks on discontinuance of use or when notified by the City Authorities.
When installing, removing or repairing tanks, no open flame to be on or near premises.

Approved _____ Fire Marshal

Approved OK per Mark Ng 8-27-75 (see white office copy) Drainage Division Engineering Dept.

EXCAVATING PERMIT

Issued in accordance with Ord. No. 278 CMS, Sec. 6-2.84

_____ square feet of digging or removal granted.

The receipt of $ _____ special deposit is hereby acknowledged.

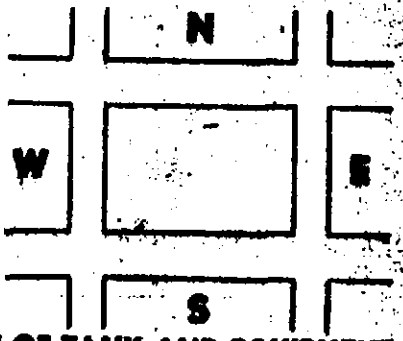
GENERAL DEPOSIT.

BUREAU OF PERMITS AND LICENSES.

Inspection Fee Paid . . . . . $ 30.00 Cash

Received by J. Griffin Rec. #12676

J. Griffin FIRE PREVENTION BUREAU



CERTIFICATE OF TANK AND EQUIPMENT INSPECTION

Inspected and passed on Sept 5 19 75

By Louis J. Brooks & G. Fire Marshal

NOTICE

Before Covering Tanks, Above Certificate Must Be Signed

When ready for inspection notify Fire Prevention Bureau, 271-3351

THIS PERMIT MUST BE LEFT ON THE WORK AS AUTHORITY THEREFOR.

Okb

Copy for INSPECTOR

Excavation Permit Granted ______ No. ______

CITY OF OAKLAND

Tank Permit

Permit to Excavate and Install, Repair, or Remove Inflammable Liquid Tanks. No. ______

Oakland, California, November 12, 1982 19__

PERMISSION IS HEREBY GRANTED TO install remove XXXXXr Gasoline tank and excavate commencing ______ feet inside curb ______ line

on the east side of Harrison Street Avenue ______ feet ______ of ______ Street Avenue

House No. 1432 Harrison Street Street Avenue Present Storage ______

Owner Douglas Parking Company Address 1432 Harrison Street Phone ______

Applicant Walter R. Schneider, Inc. Address 3885 Rhoda Ave. Oakland 94602 Phone 532-2026

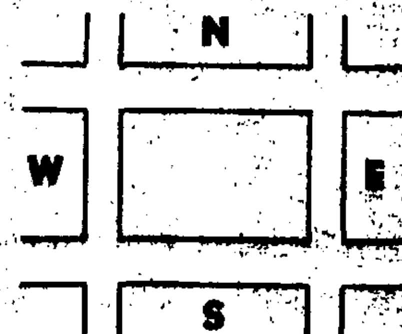
Dimensions of street (sidewalk) surface to be disturbed ______ x ______ Number of Tanks 1 Capacity 1000 Gallons each

Remarks: ______

This Permit is granted in accordance with existing City Ordinances.
Owner hereby agrees to remove tanks on discontinuance of use or when notified by the City Authorities.
When installing, removing or repairing tanks, no open flame to be on or near premises.

Approved ______
Fire Marshal

Approved ______
Drainage Division Engineering Dept.



EXCAVATING PERMIT

Issued in accordance with Ord. No. 278 CMS, Sec. 6-2.04

______ square feet of digging or removal granted.

The receipt of $ ______ special deposit is hereby acknowledged.

GENERAL DEPOSIT.

BUREAU OF PERMITS AND LICENSES.

CERTIFICATE OF TANK AND EQUIPMENT INSPECTION

Inspected and passed on Dec 2 19[illegible]

By Donald J. Mockel #6
Fire Marshal

Inspection Fee Paid $ 40.00 ck#2105 rec#17938

Received by [illegible]
FIRE PREVENTION BUREAU

NOTICE

Before Covering Tanks, Above Certificate Must Be Signed.
When ready for inspection notify Fire Prevention Bureau, [illegible]

THIS PERMIT MUST BE LEFT ON THE WORK AS AUTHORITY THEREFOR.

[illegible] (1-67)

ATTACHMENT 2

Alameda County Health Care Services Agency

Department of Environmental Health

COUNTY OF ALAMEDA
CALIFORNIA

This is to certify that DOUGLAS PAINTING COMPANY
doing business as HARRISON STREET BRIDGE, is permitted
to operate a ONE (1) UNDERGROUND STORAGE TANK
at 1832 HARRISON STREET, OAKLAND, CA 94612
This permit is not transferable and is good until
6 MONTHS FROM DATE OF ISSUANCE
Issued this 30th day of MAY 19 88

Sanitarian

By Authority of
County Health Officer

400-WALNUT

STATE ID NUMBER 000000122128001

APPLICATION FOR PERMIT TO OPERATE UNDERGROUND STORAGE TANK

( ) 01 NEW PERMIT ( ) 05 RENEWED PERMIT ( ) 07 TANK CLOSED ( ) 09 DELETE FROM FILE (NO FEE
( ) 02 CONDITIONAL PERMIT ( ) 06 AMENDED PERMIT ( ) 08 MINOR CHANGE (NO SURCHARGE)

I OWNER

NAME(CORPORATION,INDIVIDUAL OR PUBLIC AGENCY)			PUBLIC AGENCY ONLY
DOUGLAS PARKING CO. ← Notice name change			( ) 01 FED ( ) 02 STATE ( ) 03 LOCA
STREET ADDRESS 1721 WEBSTER ST.	CITY OAKLAND	STATE CA	ZIP 94612

II FACILITY

FACILITY NAME		DEALER/FOREMAN/SUPERVISOR	
HARRISON ST. GARAGE		~~MANAGER~~ EARL GLEDN	
STREET ADDRESS 2432 HARRISON ST.		NEAREST CROSS STREET 16TH ST.	
CITY OAKLAND		COUNTY ALAMEDA	ZIP 94612
MAILING ADDRESS 1721 WEBSTER ST.	CITY OAKLAND	STATE CA	ZIP 94612
PHONE W/AREA CODE 415-452-2440	TYPE OF BUSINESS (X) 01 GASOLINE STATION ( ) 02 OTHER Parking Garage		
NUMBER OF CONTAINERS 1	RURAL AREAS ONLY :	TOWNSHIP	RANGE	SECTION

III 24 HOUR EMERGENCY CONTACT PERSON

DAYS: NAME(LAST NAME FIRST) AND PHONE W/AREA CODE	NIGHTS: NAME(LAST NAME FIRST) AND PHONE W/AREA CODE
VASQUEZ, MAX 415-452-2440	~~VASQUEZ, MAX 415-524-4436~~

COMPLETE THE FOLLOWING ON A SEPARATE FORM FOR EACH CONTAINER

IV DESCRIPTION

A. (X) 01 TANK ( ) 04 OTHER:	CONTAINER NUMBER 005
B. MANUFACTURER (IF APPROPRIATE): UNK YEAR MFG:	C. YEAR INSTALLED 1981 ( ) UNKNOWN
D. CONTAINER CAPACITY: 1000 GALLONS ( ) UNKNOWN	E. DOES THE CONTAINER STORE: ( ) 01 WASTE (X) 02 PRODUCT

F. DOES THE CONTAINER STORE MOTOR VEHICLE FUEL OR WASTE OIL ? (X) 01 YES ( ) 02 NO IF YES CHECK APPROPRIATE BOX(ES):
(X) 02 UNLEADED ( ) 02 REGULAR ( ) 03 PREMIUM ( ) 04 DIESEL ( ) 05 WASTE OIL ( ) 06 OTHER

V CONTAINER CONSTRUCTION

Record 1

A. THICKNESS OF PRIMARY CONTAINMENT: ( ) GAUGE ( ) INCHES ( ) CM (X) UNKNOWN

B. ( ) 01 VAULTED (LOCATED IN AN UNDERGROUND VAULT) ( ) 02 NON-VAULTED (X) 03 UNKNOWN

[1 Abandoned]

C. ( ) 01 DOUBLE WALLED ( ) 02 SINGLE WALLED ( ) 03 LINED

D. ( ) 01 CARBON STEEL ( ) 02 STAINLESS STEEL ( ) 03 FIBERGLASS ( ) 04 POLYVINYL CHLORIDE ( ) 05 CONCRETE
( ) 06 ALUMINUM ( ) 07 STEEL CLAD ( ) 08 BRONZE ( ) 09 COMPOSITE ( ) 10 NON-METALLIC
(X) 12 UNKNOWN ( ) 13 OTHER:

STATE ID NUMBER 0000001221200:

CONTAINER CONSTRUCTION

( ) 01 RUBBER LINED ( ) 02 ALKYD LINING ( ) 03 EPOXY LINING ( ) 04 PHENOLIC LINING ( ) 05 GLASS LINING
( ) 07 UNLINED (X) 08 UNKNOWN ( ) 09 OTHER:

F. ( ) 01 POLYETHLENE WRAP ( ) 02 VINYL WRAPPING ( ) 03 CATHODIC PROTECTION (X) 04 UNKNOWN ( ) 05 NONE
( ) 06 TAR OR ASPHALT ( ) 09 OTHER:

VI PIPING

A. ABOVEGROUND PIPING: ( ) 01 DOUBLE-WALLED PIPE ( ) 02 CONCRETE-LINED TRENCH ( ) 03 GRAVITY
(CHECK APPROPRIATE BOX(ES) ( ) 04 PRESSURE ( ) 05 SUCTION ( ) 06 UNKNOWN ( ) 07 NONE

B. UNDERGROUND PIPING: ( ) 01 DOUBLE-WALLED PIPE ( ) 02 CONCRETE-LINED TRENCH ( ) 03 GRAVITY
(CHECK APPROPRIATE BOX(ES) ( ) 04 PRESSURE ( ) 05 SUCTION (X) 06 UNKNOWN ( ) 07 NONE

VII LEAK DETECTION

( ) 01 VISUAL (X) 02 STOCK INVENTORY ( ) 04 VAPOR SNIFF WELLS ( ) 05 SENSOR INSTRUMENT
( ) 06 GROUND WATER MONITORING WELLS ( ) 07 PRESSURE TEST ( ) 09 NONE ( ) 10 OTHER:

VIII CHEMICAL COMPOSITION OF MATERIALS STORED IN UNDERGROUND CONTAINERS

IF YOU CHECKED YES TO IV-F YOU ARE NOT REQUIRED TO COMPLETE THIS SECTION

CURRENTLY STORED	PREVIOUSLY STORED	DELETE	CASE (IF KNOWN)	CHEMICAL (DO NOT USE COMMERCIAL NAME)
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		
( ) 01	( ) 02	( ) 03		

CHECK STATE BOARD CHEMICAL CODE LISTING FOR POSSIBLE SYNONYMS.

IS CONTAINER LOCATED ON AN AGRICULTURAL FARM? ( ) 01 YES (X) 02 NO

THIS FORM HAS BEEN COMPLETED UNDER THE PENALTY OF PERJURY AND, TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT.

PERSON FILING (SIGNATURE)	PHONE W/AREA CODE

FOR LOCAL AGENCY USE ONLY

ADMINISTRATING AGENCY	CITY CODE	COUNTY CODE

CONTACT PERSON	PHONE W/AREA CODE

MO	LAST INSPECTION	IN COMPLIANCE ( ) 01 YES ( ) 02 NO	PERMIT APPROVAL DATE	TRANSACTION DATE	LOCAL PERMIT ID #

CO4-070185 (09/25/85)

ATTACHMENT 3

Official Registration Form

California Water Resources Control Board

Hazardous Substance Storage Statement

Who Must File: Each person storing hazardous substances in any underground container must file this form no later than July 1, 1984 (After October 1, 1984 and no later than January 1, 1985 for tanks used on farms).

Definition of Underground Containers: The law applies to "concrete sumps nonvaulted buried tanks or other underground containers" (Water Code section 13173). All containers including earthen walled pits, ponds, lagoons and sumps that are below the normal ground surface level must register. A tank sitting on the ground is not included. Containers partially beneath the surface are included. Lined or unlined pits, ponds and lagoons are covered if earth has been removed from the storage area to construct the facility. Normal grading is not considered construction below ground level.

Definition of Hazardous Substance: Any substance listed in Section 6382 of the Labor Code or in Section 25316 of the Health and Safety Code. This includes gasoline, diesel fuel, all industrial solvents, pesticides, herbicides and fumigants. If the material must be carried by a registered hauler disposed of at a hazardous waste site, is explosive, generates pressure due to heat or decomposition or would harm humans or wildlife you must register the tank. Wastes are included.

Fee: For each tank registered a $10 fee must be paid except that retail gasoline stations pay $5 per tank.

Penalties: For failure to file the penalty is $500-$5,000 per day. If you falsify information, you can be fined up to $20,000 for each day the information is incorrect and has not been corrected.

Confidentiality: If you have information protected by trade secret laws, please attach a list of the information on this form that is confidential and the justification for confidentiality, including specific citations of relevant statutory and case law.

Multiple Containers: Fill I and II on one form and leave it blank on all the remaining forms. Attach all forms together securely. If you own more than 50 tanks you can file information on computer tape. Call 916/324-1262 for information.

This is not a Permit Application. All Underground Tanks will be subject to local regulation. Some jurisdictions have already begun programs. Check with your local county government for further information.

NOTE: ALL UNDERGROUND CONTAINERS MUST REGISTER EVEN IF STATE AND/OR LOCAL PERMITS ARE IN FORCE.

I Owner

Name (Corporation, Individual or Public Agency): DOUGLAS PARKING CO.

Street Address: 1221 WEBSTER ST. | City: OAKLAND | State: CA | ZIP: 94612

II Facility

Facility Name: HARRISON ST. GARAGE | Owner/Foreman/Supervisor: MAXIMO VASQUEZ

Street Address: 1432 HARRISON ST. | Nearest Cross Street: 14TH ST

City: OAKLAND | County: ALAMEDA | ZIP: 94612

Mailing Address: 1221 WEBSTER ST. | City: OAKLAND | State: CA | ZIP: 94612

Phone w/area code: (415) 452-2440 | Type of Business: ☑ 01 Motor Vehicle Fuel Station ☐ 02 Other: _____

Number of Tanks at this Facility	Rural Areas Only: Township	Range	Section
2			

III 24 Hour Emergency Contact Person

Days: Name (last name first) and Phone w/area code: VASQUEZ, MAX (415) 452-2440

Nights: Name (last name first) and Phone w/area code: VASQUEZ, MAX (415) 522-4428

COMPLETE THE FOLLOWING ON A SEPARATE FORM FOR EACH CONTAINER

IV Description

A. ☑ 01 Tank ☐ 02 Sump ☐ 03 Lagoon, Pit or Pond ☐ 04 Other: _____ | Container Number (if more than one): 005

B. Manufacturer (if appropriate): UNK Year of Mfg.: UNK | C. Year Installed: 1981 ☐ Unknown

D. Container Capacity: 12000 gallons ☐ Unknown | E. Container Repairs: ☑ 01 None ☐ 02 Unknown ☐ 03 Yes Year: _____

F. Is Container currently used? ☑ 01 Yes ☐ 02 No If No, year of last use: _____ ☐ 03 Unknown

G. Does the Container Store (Check One): ☐ 01 Waste ☑ 02 Product

H. Does the Container Store Motor Vehicle Fuel or Waste Oil? ☑ 01 Yes ☐ 02 No If Yes, Check appropriate box(es):

☑ 01 Unleaded ☐ 02 Regular ☐ 03 Premium ☐ 04 Diesel ☐ 05 Waste Oil ☐ 06 Other (List): _____

V Container Construction

A. Thickness of Primary Containment: _____ ☐ Gauge ☐ Inches ☐ cm ☑ Unknown

B. ☐ 01 Vaulted (Located in an underground Vault) ☐ 02 Non-vaulted ☑ 03 Unknown

C. ☐ 01 Double Walled ☐ 02 Single Walled ☐ 03 Lined ☐ 04 Wrapped ☑ 05 Unknown ☐ 06 None

D. ☐ 01 Carbon Steel ☐ 02 Stainless Steel ☐ 03 Fiberglass ☐ 04 Polyvinyl Chloride ☐ 05 Concrete ☐ 06 Aluminum

☐ 07 Steel Clad ☐ 08 Bronze ☐ 09 Composite ☐ 10 Non-metallic ☐ 11 Earthen Walls

☑ 12 Unknown ☐ 13 Other: _____

E. ☐ 01 Rubber Lined ☐ 02 Alkyd Lining ☐ 03 Epoxy Lining ☐ 04 Phenolic Lining ☐ 05 Glass Lining ☐ 06 Clay Lining

☐ 07 Unlined ☑ 08 Unknown ☐ 09 Other: _____

F. ☐ 01 Polyethlene Wrap ☐ 02 Vinyl Wrapping ☐ 03 Cathodic Protection ☑ 04 Unknown ☐ 05 None ☐ 06 Other

VI Piping

A Associated Piping	☐ 01 Above Ground	☑ 02 Underground	☐ 03 Vaulted	
B Underground Piping	☐ 01 Gravity	☐ 02 Pressure	☐ 03 Suction	☑ 04 Unknown
C Piping Repairs:	☐ 01 None	☑ 02 Unknown	☐ 03 Yes, Year of most recent repair: _____	

VII Leak Detection

☐ 01 Visual ☑ 02 Stock Inventory ☐ 03 Tile Drain ☐ 04 Vapor Sniff Wells ☐ 05 Sensor Instrument

☐ 06 Ground Water Monitoring Wells ☐ 07 Pressure Test ☐ 08 Internal Inspection ☐ 09 None

☐ 10 Other: _____

VIII Chemical Composition of Materials *Currently* or *Previously* Stored in Underground Containers

If you checked yes to IV-H you are not required to complete this section

currently stored	previously stored	CAS # (If known)	Chemical Do Not Use Commercial Name (Use additional paper for more room)
☐ 01	☐ 02		
☐ 01	☐ 02		
☐ 01	☐ 02		
☐ 01	☐ 02		
☐ 01	☐ 02		
☐ 01	☐ 02		
☐ 01	☐ 02		
☐ 01	☐ 02		
☐ 01	☐ 02		
☐ 01	☐ 02		
☐ 01	☐ 02		
☐ 01	☐ 02		
☐ 01	☐ 02		

Is Container located on an Agricultural Farm? ☐ 01 Yes ☑ 02 No

IX IMPORTANT! Read instructions before signing

Signature: The form must be signed by 1) a principal executive officer at the level of vice-president or by an authorized representative. The representative must be responsible for the overall operation of the facility where the tank(s) are located. 2) a general partner proprietor, or 3) a principal executive officer, ranking elected official or authorized representative of a public agency.

This form has been completed under the penalty of perjury and, to the best of my knowledge, is true and correct.

Signature	Date
	6/11/84

Printed Name	Title	Phone w/area code
LELAND DOUGLAS	Partner	(415) 444-7412

Send check to: Hazardous Substance Storage Statement, State Water Resources Control Board, P.O. Box 100, Sacramento CA 95801-0100

Person Filing Statement	Phone w/area code
	(415) 444-7412

For additional forms or more information call 916/324-1252

FOR STATE USE ONLY

ID Number	Accounting Number	County Number
	002048	01

Date Received	☐ 01	☐ 02	☐ 03
JUN 18 1984	5 —	0	

*** M17 ***

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STATE WATER RESOURCES CONTROL BOARD
HAZARDOUS SUBSTANCE STORAGE CONTAINER INFORMATION FOR ALAMEDA COUNTY
CONTAINER TYPES: 1,2,3,4,5 06/01/88
(1=FARM MOTOR VEHICLE FUEL TANKS, 2=ALL OTHER PRODUCT TANKS, 3=WASTE TANKS, 4=SUMPS, 5=PITS, PONDS, LAGOONS & OTHERS)

I OWNER
DOUGLAS PARKING CO.
1721 WEBSTER ST. OAKLAND CA 94612

II FACILITY

HARRISON ST. GARAGE
1432 HARRISON ST.
OAKLAND CA 94612

MAILING ADDRESS
TOWNSHIP/RANGE/SECTION
1721 WEBSTER ST.
OAKLAND CA 94612

DEALER/FOREMAN/SUPERVISOR
TELEPHONE
MAXIMO VASQUEZ
(415) 452-2440

TYPE OF BUSINESS
NO. OF CONTAINERS
GASOLINE STATION
2

CROSS STREET :
14TH ST.

III 24-HR. CONTACT PERSON / TELEPHONE
DAY: VASQUEZ, MAX (415) 452-2440 NIGHT: VASQUEZ, MAX (415) 522-4428

********** OWNER ASSIGNED CONTAINER NUMBER: 005 ********** STATE BOARD ASSIGNED CONTAINER ID NUMBER: 00000012212001 **********

IV DESCRIPTION
A. CONTAINER TYPE : TANK
B. MANUFACTURER/YR OF MFG: UNK
C. YEAR INSTALLED : 1981
D. CAPACITY (GALLONS) : 1,000
E. REPAIRS : NONE IF YES WHEN :
F. CURRENTLY USED : YES IF NO, YEAR OF LAST USE:
G. STORES : PRODUCT
H. MOTOR VEHICLE FUEL/WASTE OIL : YES CONTAINS: UNLEADED

IS CONTAINER LOCATED ON A FARM : NO

V CONTAINER CONSTRUCTION
A. INTERIOR:
B. VAULTING: UNKNOWN C. WELDING: UNKNOWN
D. MATERIAL : UNKNOWN
E. LINING : UNKNOWN
F. INSPECTED : UNKNOWN

VI PIPING
A. ABOVEGROUND PIPING :
B. UNDERGROUND PIPING : UNKNOWN
C. REPAIRS : UNKN IF YES, YEAR OF MOST RECENT REPAIR:

VII LEAK DETECTION
STOCK INVENTORY

VIII CHEMICAL COMPOSITION OF SUBSTANCES CURRENTLY STORED IN CONTAINER
TANK 5 : UNLEADED MOTOR VEHICLE FUEL

HAZARDOUS SUBSTANCE STORAGE CONTAINER INFORMATION FOR ALAMEDA COUNTY — STATE WATER RESOURCES CONTROL BOARD — 06/01/88

CONTAINER TYPES: (1=FARM MOTOR VEHICLE FUEL TANKS, 2=ALL OTHER ABOVEGROUND TANKS, 3=VAULTED TANKS, 4=SUMPS, 5=PITS, PONDS, LAGOONS & OTHERS)

********** OWNER ASSIGNED CONTAINER NUMBER: 004 ********** STATE BOARD ASSIGNED CONTAINER ID NUMBER: 0000001221002 **********

IV DESCRIPTION:
- A. CONTAINER TYPE : 1 TANK
- B. MANUFACTURER/YR OF MFG: UNK
- C. YEAR INSTALLED : UNK
- D. CAPACITY (GALLONS) : 1,000
- E. REPAIRS : UNKN IF YES WHEN :
- F. CURRENTLY USED : YES IF NO, YEAR OF LAST USE:
- G. STORES : PRODUCT
- H. MOTOR VEHICLE FUEL/WASTE OIL : YES CONTAINS: PREMIUM

IS CONTAINER LOCATED ON A FARM : NO

V CONTAINER CONSTRUCTION
- A. THICKNESS:
- B. MATERIAL : UNKNOWN
- B. VAULTING: UNKNOWN
- C. WALLING: UNKNOWN
- E. LINING : UNKNOWN
- F. WRAPPING : UNKNOWN

VI PIPING
- A. ABOVEGROUND PIPING :
- B. UNDERGROUND PIPING : UNKNOWN
- C. REPAIRS : UNKN IF YES, YEAR OF MOST RECENT REPAIR:

VII LEAK DETECTION
- STOCK INVENTORY

VIII CHEMICAL COMPOSITION OF SUBSTANCES CURRENTLY STORED IN CONTAINER
- 12053 PREMIUM MOTOR VEHICLE FUEL

ATTACHMENT 4

GASOLINE AND O[illegible] ELING SYSTEMS ▼ AIR COMPRESSOR.

ROBERT J. MILLER CO.

Service Station and Industrial Equipment

04776

CONTRACTORS LICENSE NO. 118850

3261 GROVE STREET OAKLAND, CALIFORNIA 94609

(415) 653-5469

DATE	YOUR ORDER NO	OUR ORDER NO	VIA	TERMS
10/19/32	Ron Douglas	15931		NET 30 DAYS

SOLD TO Douglas Motor Service
1721 Webster Street
Oakland, CA 94612

SHIPPED TO 1432 Harrison Street
Oakland, CA

PART NO.	DESCRIPTION	UNIT	AMOUNT	
	Dug up sidewalk - found many leaks in tank and		$ 332	50
	product line. (Note: Barricades are still at job			
	site - to be billed upon removal)			
	Rental for compressor, jack hammer, asphalt blade		150	00
	and air hose.			
	TOTAL...............		$ 982	50

Any invoice not paid within 30 days from date of invoice will be [illegible] finance charge of 1½% per month of unpaid balance (18%) annually.

PLEASE PAY ON INVOICE

NO STATEMENT WILL BE SENT UNLESS REQUESTED

It is understood that the title of goods received shall remain in the name of Robert J. Miller Company until the full amount of this bill is paid.

[illegible]aximum FINANCE CHARGE, if any, is determined by applying a Periodic Rate of 1½% [illegible]ervice period to the Previ[illegible] [illegible]nce corresponding to an ANNUAL PERCENTAGE RATE of 18%

ATTACHMENT 5

October 28, 1975

Mr. Sanford Douglas
Douglas Motor Service
1721 Webster Street
Oakland, CA 94612

Re: Gasoline Tank at 1434 Harrison Street.

Dear Sanford:

With reference to our meeting of yesterday, I have reviewed our lease and do not feel that we are in any way responsible for any of the cost incurred by you relative to your replacing the gasoline tank.

If you will note in Paragraph #3 of our lease, that the express use of the premises are for "Parking Garage, Auto Repair Shop, and Auto Service Center". With further reference to Paragraph #28, you specifically wanted the revenue for the sales of gasoline not to be included in your gross sales figure, as per copy attached hereto. Because of these factors, I do not feel it proper for us to participate in your expenditure of this item.

Thanking you, I remain with kindest personal regards.

Sincerely,

Alvin H. Bacharach

AHB:bv
Encl:

ATTACHMENT 6

STANDARD FORM LEASE

THIS LEASE made this 30th day of January, 1981, between ALVIN H. BACHARACH and BARBARA JEAN BORSUK as "Lessor," and DOUGLAS MOTOR SERVICE, a partnership composed of LELAND DOUGLAS, RONALD DOUGLAS, SANFORD DOUGLAS and DAVID FLETT as "Lessee."

For and in consideration of the rents, covenants and agreements hereinafter agreed by Lessee to be paid, kept and performed, Lessor leases unto Lessee and Lessee hires from Lessor the following described premises, together with appurtenances, situate in the City of Oakland, County of Alameda, State of California:

That certain real property more commonly known as 1434 Harrison Street and 1439 Alice Street comprising approximately 68,000 square feet. Said premises specifically excludes 1428 Harrison Street (1,800 square feet) and 1441-43 Alice Street (4,600 square feet)

Said hiring and letting is upon the following terms and conditions:

1. TERM; POSSESSION.

(a) The term of this lease shall be for a period of Seven (7) years commencing on the 1st day of April, 1981 and ending on the last day of March, 1988.

(b) Lessee agrees that in the event of the inability of Lessor to deliver possession of the premises at the commencement of the term as hereinbefore specified, Lessor shall not be liable for any damage caused thereby nor shall this lease be void or voidable but Lessee shall not be liable for rent until such time as Lessor offers to deliver possession of the premises to Lessee, but the term hereof shall not be extended by such delay. If Lessee, with Lessor's consent, takes possession prior to the commencement of the term, Lessee shall do so subject to all of the covenants and conditions hereof and shall pay rent for the period ending with the commencement of the term at the same rental as that prescribed for the first month of the term, prorated at the rate of 1/30th thereof per day.

See Rider No. 1 2. RENTAL. ~~As rental for the demised premises Lessee hereby agrees to pay to Lessor without deduction~~ or demand, the sum of Thirty-Eight Hundred Dollars ($3,800.00) per month in advance on the ~~day of each month~~ in lawful money of the United States of America, ~~commencing ... day of ...~~

Rental for any partial month shall be prorated at the rate of 1/30th of monthly rent per day. Rent shall be paid c/o Alvin H. Bacharach, 11 Embarcadero-West, Oakland, CA. 94607 or at such other place or places as Lessor may from time to time direct.

In consideration of Lessor executing this lease, Lessee hereby agrees to pay Lessor the sum of $9,100.00, receipt of which is hereby acknowledged. Lessor agrees that $3,800.00 of said sum shall be applied as the rent for the first month of the term hereof. Lessor further agrees that if, at the time, Lessee is not in default of any terms, covenants and conditions contained herein, the sum of $5,300.00, constituting a security deposit, shall be repaid to Lessee upon termination of this lease or any extension thereof, without interest.

3. USE. The premises are hereby leased to Lessee upon the express condition that Lessee shall use said premises for parking garage, auto repair shop, auto service center, and auto rental agency

and for no other purpose without the written consent of Lessor first obtained.

Lessee agrees that the said Lessee's business shall be established and conducted throughout the term hereof in a first class manner; that Lessee will not use the demised premises for, or carry on or permit upon said premises any offensive, noisy or dangerous trade, business, manufacture or occupation or any nuisance, or anything against public policy, nor permit any auction sale to be held or conducted on or about said premises; that Lessee shall not commit, or suffer to be committed any waste upon the premises; that Lessee will not do or suffer anything to be done upon said premises which will cause structural injury to said premises or the building of which same form a part; that said premises will not be overloaded and that no machinery, apparatus or other appliance shall be used or operated in or upon the demised premises which will in any manner injure, vibrate or shake said premises or the building of which it is a part; that no use will be made of the demised premises which will in any way impair the efficient operation of the sprinkler system (if any) within the building containing the demised premises; that Lessee will not leave the said premises unoccupied or vacant during the term hereof; and that without the

written permission of Lessor, no musical instrument of any sort, or any noise making device will be operated or allowed upon said premises for the purpose of attracting trade or otherwise. Lessee further agrees not to use or permit the use of the demised premises or any part thereof, for any immoral or other purpose prohibited by law or which will increase the existing rate of insurance upon the building in which said demised premises may be located, or cause a cancellation of any insurance policy covering said building or any part thereof. If any act on the part of Lessee or use of the premises by Lessee shall cause, directly or indirectly, any increase of Lessor's insurance expense, said additional expense shall be paid by Lessee to Lessor upon demand. No such payment by Lessee shall limit Lessor in the exercise of any other rights or remedies, or constitute a waiver of Lessor's right to require Lessee to discontinue such act or use. No use shall be made or permitted to be made of the demised premises or any part thereof and no acts done therein which may disturb the quiet enjoyment of any other tenant in the building of which the demised premises are a part. Lessee, at Lessee's sole cost and expense, agrees to do all things necessary to maintain the demised premises, including sidewalks adjacent thereto, in a clean, neat and sanitary manner and to alter, repair and maintain the demised premises in compliance and conformity with all laws and ordinances, municipal, state, federal and/or any other governmental authority and any and all lawful requirements or orders of any properly constituted municipal, state, federal or other governmental board or authority, present or future, in anywise relating to the condition, use or occupancy of the demised premises throughout the entire term of this lease and to the perfect exoneration from liability of Lessor. The judgment of any court of competent jurisdiction or the admission of Lessee in any action or proceeding against Lessee, whether Lessor be a party thereto or not, that Lessee has violated any such law, ordinance, requirement or order in the use of the premises, shall be conclusive of that fact as between Lessor and Lessee.

4. **ACCEPTANCE AND SURRENDER OF PREMISES; REPAIRS.** Lessee accepts the premises as they are now and agrees that the premises are now in a tenantable and good condition. Lessee agrees at its own cost and expense to maintain, repair and keep the interior and exterior of the demised premises and each and every part thereof, and all appurtenances (including without limitation, sidewalks fronting thereon, wiring, plumbing, sewage system, heating and air cooling installations, all glazing in or bordering the premises and any store front), excepting only the roof, exterior walls, foundations and other structural portions of the premises, in good condition and repair during the term of this lease, damage thereto by fire, earthquake, act of God or the elements alone excepted. In the event Lessee should fail to make the repairs required of Lessee forthwith upon notice by Lessor, Lessor, in addition to all other remedies available hereunder or by law, and without waiving any said alternative remedies, may make same and Lessee agrees to repay Lessor the cost thereof as part of the rental payable as such on the next day upon which rent becomes due, and failure to pay same shall carry with it the same consequences as failure to pay any installment of rental. Lessee waives all rights to make repairs at the expense of Lessor as provided for in any statute or law in effect at the time of execution of this lease or any amendment thereof or any other statute or law which may be hereafter enacted during the term of this lease and agrees upon the expiration of the term of this lease or sooner termination hereof to surrender unto Lessor the demised premises in the same condition as received, ordinary wear and tear and damage by fire, earthquake, act of God or the elements alone excepted. Lessor agrees, after written notice of the necessity therefor, and should the same not be caused by Lessee or by reason of Lessee's occupancy, to make necessary repairs to the roof, exterior walls (excluding painting thereof and repair of glazing), foundations and other structural portions of the premises within a reasonable time. Lessee agrees during the full term of this lease, at its own cost and expense, to make all repairs and replacements of whatever kind or nature, either to the exterior or to the interior of said premises rendered necessary by reason of any act or omission of Lessee or its agents, servants or employees.

5. **ALTERATIONS; LIENS.** Lessee agrees not to make any alterations of, changes in or addition to the demised premises without the prior written consent of Lessor. Lessee agrees that should Lessor give said written consent all alterations, additions and improvements, including fixtures, made in, to or on the premises, except unattached movable business fixtures, shall be the property of Lessor and shall remain upon and be surrendered with the premises, except that Lessee will assert claim to Lessor within thirty (30) days before the end of this term whether Lessor desires to have the premises or any part or parts thereof, restored to their condition when the premises were delivered to Lessee and if Lessor shall so desire, Lessee shall restore said premises or such part or parts thereof before the end of the term of this lease, entirely at Lessee's own cost and expense.

Lessee agrees that if any such alterations, changes or additions are to be made, same shall not be commenced until two days after receipt of the written consent of Lessor required by this paragraph, in order that Lessor may post appropriate notices to avoid any liability on account thereof. Lessee agrees to indemnify and save harmless Lessor from all liens, claims or demands arising out of any work performed, materials furnished, or obligations incurred by or for Lessee upon said premises during said term, and agrees not to suffer any such lien or other lien to be created.

6. **UTILITIES.** Lessee agrees to pay for all the water, fuel, gas, oil, heat, electricity, power, materials and services which may be furnished to or used in or about said premises during the term of this lease.

7. **ENTRY AND INSPECTION.** Lessee agrees that Lessor and his agents may enter upon the demised premises at all reasonable times to inspect the same, to submit them to a prospective purchaser, or to make any changes or alterations or repairs which Lessor shall consider necessary for the protection, improvement or preservation thereof, or of the building in which the demised premises are situate, or to make changes in the plumbing, wiring, meters or other equipment, fixtures or appurtenances of the building, or to post any notice provided for by law, or otherwise to protect any and all rights of Lessor, and Lessor shall have the right to erect and maintain all necessary or proper scaffolding or other structures for the making of such changes, alterations or repairs (provided the entrance to the demised premises shall not be blocked thereby and that such work shall be completed with diligence and dispatch) and there shall be no liability against Lessor for damages thereby sustained by Lessee, nor shall Lessee be entitled to any abatement of rental by reason of the exercise by Lessor of any such rights herein reserved. Nothing herein contained shall be construed to obligate Lessor to make any changes, alterations or repairs. Lessee further agrees that at any time after sixty (60) days prior to the termination of this lease, Lessor may place thereon any usual or ordinary "To Let" or "To Lease" signs.

8. **ASSIGNMENT AND SUBLETTING.** (a) Lessee shall not assign or mortgage this lease or any right hereunder or interest herein and Lessee shall not sublet the premises in whole or in part or suffer any other person (the agents and servants of Lessee excepted) to occupy or use the said premises, or any portion thereof, without the prior written consent of Lessor. Any such assignment, mortgage or subletting without such consent shall be void and shall, at the option of Lessor, be deemed a breach of this lease. No consent to any assignment or mortgage of this lease or any subletting of said premises, shall constitute a waiver or discharge of the provisions of this paragraph except as to the specific instance covered thereby.

(b) Lessee agrees that neither this lease nor any interest herein shall be assignable or transferable by operation of law, and it is agreed that in the event any proceeding under the Bankruptcy Act, or any amendment thereto, be commenced by or against Lessee (or should there be more than one, then any Lessee) or in the event Lessee (or should there be more than one, then any Lessee) be adjudged insolvent, or makes an assignment for the benefit of creditors, or if a writ of attachment or execution be levied on the leasehold estate created hereby and be not released or satisfied within ten (10) days thereafter, or if a receiver be appointed in any proceeding or action to which Lessee is a party, with authority to take possession or control of the demised premises or the business conducted therein by Lessee, this lease at the option of Lessor shall immediately cease and terminate and shall in nowise be treated as an asset of Lessee after the exercise of the aforesaid option, and Lessee shall have no further rights hereunder; and Lessor shall have the right, after the exercise of said option, to forthwith re-enter and repossess itself of said premises as of its original estate.

9. HOLD HARMLESS. This lease is made upon the express condition that Lessee agrees to keep, save and hold Lessor free from all liability, penalties, losses, damages, costs, expenses, causes of action, claims and/or judgments arising by reason of any injury or damage to any person or persons, including without limitation, Lessee, its servants, agents and employees, or property of any kind whatsoever and to whomsoever belonging, including without limitation, Lessee's, its servants', agents', and employees', from any cause or causes whatsoever, including leakage, while in, upon or in any way connected with said demised premises, or its appurtenances, or the sidewalks adjacent thereto, during the term of this lease or any occupancy hereunder, Lessee hereby covenanting and agreeing to indemnify, protect and save Lessor harmless from all liability, loss, costs and obligations on account of or arising out of any such injuries or losses however occurring.

Lessee, as a material part of the consideration to be rendered to Lessor, hereby waives all claims against Lessor for damages to goods, wares and merchandise in, upon or about said premises and for injuries to Lessee, his agents, or third persons in or about said premises from any cause arising at any time, including, without limiting the generality of the foregoing, damages arising from acts or omissions of other tenants of the building of which the demised premises are a part and from the failure of either party to make repairs.

10. INSURANCE. Lessee further agrees to take out and keep in force during the life hereof at Lessee's expense, public liability and other insurance in companies acceptable to Lessor to protect against any liability to the public, whether to persons or property, incident to the use of or resulting from an accident occurring in or about said premises, the sidewalks adjacent thereto and such other areas which Lessee, its officers, servants, agents, employees, contractors and invitees shall have the right to use under the terms hereof during the term of this lease or any occupancy hereunder, in the amount of $500,000.00 to indemnify against the claim of one person and $1,000,000.00 against the claims of two or more persons in any one occurrence, and property damage insurance in an amount of not less than $100,000.00 per occurrence. The said policy shall also insure the contingent liability of Lessor. Lessee further agrees, during the term hereof, to carry full coverage plate glass insurance on said demised premises in the joint names of Lessor and Lessee, and to pay the premiums therefor.

Lessee agrees that every insurer shall agree by endorsement upon the policy or policies issued by it, or by independent instrument furnished to Lessor, that it will give Lessor ten (10) days written notice at the address where rental is paid, before the policies in question shall be altered or cancelled. Either the originals or certified copies of said policies or a certificate of insurance shall be placed with or furnished Lessor.

11. WAIVER OF SUBROGATION. Lessor hereby releases Lessee, and Lessee hereby releases Lessor, and their respective officers, agents, employees and servants, from any and all claims or demands for damages, loss, expense or injury to the demised premises, or to the furnishings and fixtures and equipment, or inventory or other property of either Lessor or Lessee in, about or upon the demised premises, as the case may be, which be caused by or result from perils, events or happenings which are the subject of insurance carried by the respective parties and in force at the time of any such loss; provided, however, that such waiver shall be effective only to the extent permitted by the insurance covering such loss and to the extent such insurance is not prejudiced thereby or the expense of such insurance is not thereby increased.

12. TAXES. Lessee shall be liable for all taxes levied against personal property and trade fixtures on or about the demised premises, including, but without prejudice to the generality of the foregoing, shelves, counters, vaults, vault doors, walls, partitions, fixtures, machinery, printing presses, plant equipment and atmospheric coolers, and if any such taxes on Lessee's personal property or trade fixtures are levied against Lessor or Lessor's property, and if Lessor pays the same, or ~~any such~~ shall have the right to do regardless of the validity of such levy, or if the assessed value of Lessor's premises is increased by the inclusion therein of a value placed on such property of Lessee and if Lessor pays the taxes based on such increased assessment, which Lessor shall have the right to do, regardless of the validity thereof, Lessee, upon demand shall, as the case may be, repay to Lessor the taxes so levied against Lessor, or the proportion of such taxes resulting from such increase in the assessment.

See Rider No. 3

In addition to the rental herein provided for and during the term hereof, Lessee agrees to pay 90% of any ~~increase in~~ real property taxes and special assessments levied or assessed against the building of which the demised premises are a part and the land upon which said building is located and appurtenances thereto, ~~over and above the amount of the real property taxes levied or assessed against said premises and appurtenances for the fiscal tax year (of the governmental agency levying such property taxes)~~ in which the term hereof commences (or, if the foregoing percentage has not been specified, then that portion of any such increase as the total net rentable area within the demised premises bears to the total net rentable area within the building or buildings, including the demised premises, which are included in the unit so taxed or assessed by said taxing authorities). The amounts provided for in this paragraph shall be paid by Lessee within ten (10) days after written notice thereof from Lessor.

See Rider No. 3

13. DEFAULT. This lease is made upon the express condition and Lessee hereby agrees that:

~~(a) Should Lessee fail to pay the rental herein reserved, or any part thereof, or any other sum required by Lessee to~~ be paid to the Lessor at the times or in the manner herein provided; or

(b) If Lessee shall abandon or vacate said premises or violate the provisions of paragraph 8(b) hereof; or

(c) If default should be made in any of the other covenants or conditions on Lessee's part herein contained, and not be cured within ten (10) days after written notice by Lessor or Lessor's agent to Lessee of such default.

such default, breach or act shall give Lessor, or Lessor's agents and representatives, with or without terminating this lease, the right to re-enter the demised premises or any part thereof, either with or without process of law, and expel, remove and put out Lessee or any person or persons occupying said premises and remove all personal property therefrom, using such force as may be necessary to again repossess and enjoy said premises as before this demise without prejudice to any remedy which might otherwise be used for arrears of rent or preceding breach of covenant or condition, and without liability to any person for damages sustained by reason of such removal. No such re-entry or taking of possession of said premises by Lessor shall be construed as an election on his part to terminate this lease unless a written notice of such intention be given Lessee, said notice being given as provided herein. Lessor may likewise, at Lessor's option, but at the cost of Lessee and in addition to any other remedies which Lessor may have upon such default or failure or neglect and without notice to Lessee, petition the Superior Court of the State of California for and be entitled as a matter of right to the appointment of a Receiver and said Court may appoint such Receiver and vest in him such powers and authority as may be necessary or proper to fully protect all the rights herein granted or reserved to Lessor.

Lessor may likewise, at Lessor's option and in addition to any other remedies which Lessor may have upon such default, failure or neglect, let and relet said premises in whole or in part, altering, changing or subdividing the same as in its unqualified judgment may accomplish the best results at such rental and upon such terms and for such length of time, whether less or greater than the unexpired portion of the term of this lease, as Lessor may see fit, and Lessee shall be liable unto Lessor for any deficiency between the rentals so procured by Lessor for the period of said letting or reletting, not to exceed, however, the ~~balance of the original term hereof, after deducting therefrom the cost of such letting or reletting (including the cost of any~~

~~such alterations or other changes), and the rental herein reserved for a period or periods identical with the term of subletting~~ or reletting, and Lessor may institute action for the whole or any such deficiency immediately upon effecting ~~the letting~~ and shall not thereafter be precluded from further like action in the event such letting or reletting shall not cover the whole unexpired portion of the term hereof, or Lessor may monthly, or at such greater intervals as it may see fit, collect payment of said deficiency then existing, and the Lessee agrees to pay said deficiency then existing unto Lessor from time to time when called upon by Lessor so to do, and ~~should this lease~~ not be terminated, Lessor may, notwithstanding such letting or reletting, at any time thereafter ~~elect to terminate~~ it; or should this lease, prior to the expiration of the term hereof, be terminated by Lessor by reason of any breach hereof by Lessee, Lessor shall thereupon, at its option, be entitled to recover from Lessee the ~~worth~~ at the time of such termination of the excess, if any, of the amount of rent and charges equivalent to rent reserved in this lease for the balance of the term hereof, over the then reasonable value of the premises for said period.

14. **ABANDONMENT.** If Lessee should abandon, vacate or surrender said premises or be dispossessed by process of law, or in addition to all other remedies of Lessor, Lessor at its option may deem that any personal property belonging to Lessee left on the premises is abandoned and/or Lessor may at once enter upon said premises and remove therefrom any and all equipment, fixtures and merchandise therein and may sell said fixtures, equipment and merchandise at public or private sale at such price and upon such terms as Lessor may determine, without notice to or demand upon Lessee. Out of the proceeds of such sale, Lessor may reimburse itself for the expense of such taking, removal and sale and for any indebtedness of Lessee to Lessor and the surplus, if any, shall be accounted for to Lessee.

15. **DESTRUCTION; RENEWAL.** (a) In the event of damage or destruction of the demised premises during the term hereof from fire, earthquake, act of God or the elements, Lessor shall forthwith repair the same, provided such repairs can be made with~~in~~ thirty (30) ~~XXXXXXXXXX~~ days under the laws and regulations of State, Federal, County or Municipal authorities, but such destruction shall in nowise annul or void this lease, except that Lessee shall be entitled to a proportionate deduction of the monthly rental while such repairs are being made, such proportionate deduction to be based upon the extent to which the making of such repairs shall interfere with the business carried on by Lessee in said premises. If such repairs cannot be made within ~~XXXXXXX~~thirty days, Lessor may, at its option, make same within a reasonable time, in which event this lease shall continue in full force and effect and the monthly rental shall be proportionately abated as aforesaid in this paragraph provided. In the event that Lessor does not so elect to make such repairs which cannot be made in ~~thirty (30)~~ days, or such repairs cannot be made under the laws and regulations, this lease may be terminated at the option of either party.

In respect to any damage or destruction which Lessor is obligated to repair or may elect to repair under the terms of this paragraph, the provisions of Section 1932, Subdivision 2, and of Section 1933, Subdivision 4 of the Civil Code of the State of California are waived by Lessee. In the event that the building in which the demised premises may be situated be damaged or destroyed to the extent of not less than 33⅓% of the replacement cost thereof, Lessor may elect to terminate this lease, whether the demised premises be injured or not.

Should the parties hereto be unable to agree in writing as to the time required for repair of any such damage or destruction to the demised premises or as to the percentage of damage to the building of which the same are a part, within five (5) days after the happening of said occurrence, or to the extent, if any, of reduction of rental during the period of repair within fifteen (15) days after the happening of said occurrence, each shall within five (5) days following written notice from either party to such effect, provided such party is not in default of this lease at such time, select an arbitrator and notify in writing the other of the name and address of the arbitrator so selected. Within five (5) days thereafter the two so selected shall appoint a third arbitrator and notify in writing within said last mentioned time the Lessor and Lessee of [illegible] appointee, or of their inability to agree upon said appointee, if such should be the fact. In the latter event the selection of the third arbitrator shall be committed to the Presiding Judge of the Superior Court of the State of California, of the County in which the demised premises are located, and such appointment shall be invoked by written request addressed to said Judge signed by Lessor or by Lessee, or their respective counsel, within five (5) days after receipt by the Lessor and Lessee of said notice of inability from said two arbitrators. The appointee of said Presiding Judge shall be accepted by said two arbitrators and Lessor and Lessee. When the three arbitrators have been selected in either of the ways above set forth, they shall forthwith convene and determine the issue or issues submitted unto them, and the written determination under the signatures of a majority of said arbitrators shall be final, binding and conclusive upon the parties hereto. Should either party refuse or fail to select an arbitrator within the time as above provided and notify the other party thereof, the arbitrator selected by such other party shall be the sole arbitrator and his decision shall have the same effect as if rendered by a majority of three arbitrators. Save as modified hereby, the provisions of Title IX of Part III of the Code of Civil Procedure of the State of California dealing with the subject of arbitration, shall apply. The costs of any arbitration shall be borne equally by the parties except in the instance of refusal of a party to abide thereby, in which event, and should the award be confirmed by judicial order in conformity with the said provisions of said Title, all costs, including those incurred in the court proceeding, shall be assessed against and borne by the disaffirming party.

(b) Notwithstanding anything herein to the contrary, if, at any time during the term hereof, any governmental agency having jurisdiction over the premises demised or the building of which the said premises are a part shall require the making of any repairs, improvements or alterations to said building or premises and Lessor determines to demolish said building or premises rather than to make said repairs, improvements or alterations, or allow same to be made, Lessor, upon at least ninety (90) days written notice to Lessee shall have the right to terminate this lease. Upon the date specified in such notice, this lease shall terminate and Lessor shall have no further liability to Lessee except that: (i) Lessor shall refund to Lessee any unearned rentals and shall return any security deposit, and (ii) in the event Lessor had theretofore given written consent to any leasehold improvements upon the premises made by Lessee and had agreed, in writing, as to the cost thereof to Lessee, Lessor shall pay to Lessee upon such termination that percentage of such cost to Lessee as the number of full calendar months remaining in the original term of this lease bears to the total number of calendar months in said original term.

16. **COSTS OF SUIT.** Lessee agrees that if Lessor is involuntarily made a party defendant to any litigation concerning this lease or the demised premises or the premises of which the demised premises are a part by reason of any act or omission of Lessee and not because of any act or omission of Lessor, then Lessee shall hold harmless the Lessor from all liability by reason thereof including reasonable attorneys fees incurred by Lessor in such litigation and all taxable court costs. If legal action shall be brought by either of the parties hereto for the unlawful detainer of the premises, for the recovery of any rent due under the provisions of this lease, or because of the breach of any term, covenant or provision hereof, the party prevailing in said action (Lessor or Lessee as the case may be) shall be entitled to recover from the party not prevailing costs of suit and a reasonable attorney's fee which shall be fixed by the Judge of the Court.

17. **HOLDING OVER.** Should Lessee hold over the term hereby created with the consent of Lessor, Lessee shall become a tenant from month to month at the monthly rental payable hereunder for the prior six (6) months, and otherwise upon the covenants and conditions in this lease contained, and shall continue to be such tenant until thirty (30) days after either party hereto serves upon the other written notice of intention to terminate such monthly tenancy. Should such termination occur on any day other than the last day of any rental month, any unearned prepaid rental shall, immediately following surrender of the demised premises by Lessee, be refunded unto him.

18. SALE OF PREMISES. In the event of a sale or conveyance by Lessor of the building containing the demised premises or assignment of the Senior Lease (if any), the same shall operate to release Lessor from any future liability upon any of the covenants or conditions, express or implied, herein contained in favor of Lessee, and in such event Lessee agrees to look solely to the responsibility of the successor in interest of Lessor. If any security be given by Lessee to secure faithful performance of Lessee's covenants in this lease, Lessor may transfer the security, as such, to the purchaser of the reversion and thereupon Lessor shall be discharged from any further liability in reference thereto.

19. APPOINTMENT OF RECEIVER. In the event a receiver be appointed at the instance of Lessor in any action against Lessee, the receiver may take possession of any personal property belonging to Lessee and used in the conduct of the business of Lessee being carried on in said premises and Lessee agrees that the entry or possession by said receiver shall not constitute an eviction of Lessee from the demised premises or any portion thereof, and Lessee hereby agrees to indemnify and hold Lessor harmless from any claim of any character by any person arising out of or connected with the entry by said receiver and taking possession of the demised premises or said personal property. Neither the application for the appointment of such receiver, nor the appointment of such receiver, shall be construed as an election on Lessor's part to terminate this lease unless a written notice of such intention is given by Lessor to Lessee.

20. CONDEMNATION. If any part of the demised premises or of the building of which same are a part (even though no part of the premises be taken) be condemned for a public or quasi-public use by right of eminent domain, with or without litigation, or transferred by agreement in connection with such public or quasi-public use, this lease, as to the part so taken, shall terminate as of the date title shall vest in the condemnor, and the rent payable hereunder shall be adjusted so that Lessee shall be required to pay for the remainder of the term only such portion of such rent as the value of the part remaining after condemnation bears to the value of the entire premises at the date of condemnation; but in either such event Lessor shall have the option to terminate this lease as of the date when title to the part so condemned vests in the condemnor.

All compensation awarded upon such condemnation or taking shall belong and be paid to Lessor and Lessee shall have no claim thereto, and Lessee hereby irrevocably assigns and transfers to Lessor any right to compensation or damages to which Lessee may become entitled during the term hereof by reason of the condemnation of all or a part of the demised premises.

21. SENIOR LEASE. Lessee agrees that in the event Lessor holds the demised premises or the premises of which the demised premises are a part by virtue of any lease or tenancy (herein referred to as the "Senior Lease"), Lessee will not suffer any act or omission on the premises which will violate any of the terms and conditions of the said Senior Lease, Lessee hereby admitting knowledge of and familiarity with the terms and conditions of the said Senior Lease. In the event the Senior Lease is terminated for any cause then this lease at Lessor's option shall forthwith terminate and Lessor shall not be under any responsibility or liability therefor to Lessee.

22. SUBORDINATION. Notwithstanding anything herein to the contrary, Lessee agrees that this lease is and shall be subordinate to any mortgage, deed of trust or other instrument of security which have been or shall be placed on the land and building or land or building of which the demised premises form a part, and such subordination is hereby made effective without any further act by Lessee. Lessee agrees that at any time or from time to time upon request by Lessor to execute and deliver any instruments, releases or other documents that may be required in connection with subjecting and subordinating this lease to the lien of said mortgage, deed of trust or other instrument of security. Lessee hereby appoints Lessor as Lessee's attorney in fact, irrevocably, to execute and deliver any such instruments.

23. SIGNS. Lessor reserves the right to the use of the exterior walls and the roof of the demised premises and of the building of which the demised premises are a part. Lessee agrees not to inscribe, paint or affix any signs, advertisements, placards or awnings on the exterior or roof of the demised premises or upon the entrance doors, windows, or the sidewalk on or adjacent to the demised premises without the written consent of Lessor first obtained. Any signs so placed on the premises shall be so placed upon the understanding and agreement that Lessee will remove same at the termination of the tenancy herein created and repair any damage or injury to the premises caused thereby, and if not so removed by Lessee then Lessor may have same so removed at Lessee's expense. Lessee shall not be allowed to use the name of the building in which the demised premises are located, or of the owner of such building, or words to such effect in connection with any business carried on in said premises (except as the address of the Lessee) without the written consent of Lessor. Lessor reserves the right to change the name and title of the building at any time during the term of said lease. Lessee hereby expressly agrees to such change at the option of Lessor and waives any and all damage occasioned thereby.

24. SURRENDER OF LEASE. No act or conduct of Lessor, whether consisting of the acceptance of the keys to the demised premises, or otherwise, shall be deemed to be or constitute an acceptance of the surrender of the demised premises by Lessee prior to the expiration of the term hereof, and such acceptance by Lessor of surrender by Lessee shall only flow from and must be evidenced by a written acknowledgment of acceptance of surrender by Lessor. The voluntary or other surrender of this lease by Lessee, or a mutual cancellation thereof, shall not work a merger, and shall, at the option of Lessor, terminate all or any existing subleases or subtenancies, or concessions, or may at the option of Lessor, operate as an assignment to him of any or all such subleases or subtenancies or concessions.

25. NOTICES. It is agreed between the parties hereto that any notice required hereunder or by law to be served upon either of the parties shall be in writing and shall be delivered personally upon the other or sent by registered or certified mail, postage prepaid, addressed to the demised premises, in the instance of Lessee, and to the place where rental is paid as provided in paragraph 2 hereof, in the instance of Lessor, or to such other address as may be from time to time furnished in writing by Lessor to Lessee or by Lessee to Lessor, each of the parties hereto waiving personal or any other service than as in this paragraph provided for. Notice by registered or certified mail shall be deemed to be communicated forty-eight (48) hours from the time of mailing.

26. CUMULATIVE REMEDIES; NON-WAIVER. The receipt by Lessor of any rent or payment with or without knowledge of the breach of any covenant hereof shall not be deemed a waiver of any such breach and no waiver by Lessor of any sum due hereunder or any provision hereof shall be deemed to have been made unless expressed in writing and signed by Lessor. No delay or omission in the exercise of any right or remedy accruing to Lessor upon any breach by Lessee under this lease shall impair such right or remedy or be construed as a waiver of any such breach theretofore or hereafter occurring. The waiver by Lessor of any breach of any term, covenant or condition herein contained shall not be deemed to be a waiver of any subsequent breach of the same or any other term, covenant or condition herein contained. All rights, powers, options or remedies afforded to Lessor either hereunder or by law shall be cumulative and not alternative and the exercise of one right, power, option or remedy shall not bar other rights, powers, options or remedies allowed herein or by law.

27. MISCELLANEOUS. (a) It is agreed by and between the parties hereto that all the agreements herein contained upon the part of Lessee, whether technically covenants or conditions, shall be deemed conditions for the purpose hereof, conferring upon Lessor, in the event of breach of any of said agreements, the right to terminate this lease.

(b) Lessee agrees at any time and from time to time within ten (10) days of written request from Lessor, to execute, acknowledge and deliver to Lessor a statement in writing certifying that this lease is unmodified and in full force and effect (or if there have been modifications, that the same is in full force and effect as modified, and stating the modifications), and the dates to which the rent and other charges have been paid in advance, if any, it being intended that any such statement delivered pursuant to this paragraph may be relied upon by any prospective purchaser, mortgagee or assignee of any mortgagee of the premises.

(c) Lessee and Lessee's Guarantor, if any, agree to deliver to Lessor, within thirty (30) days from written request therefor (but not more frequently than once each calendar year), a balance sheet prepared and certified by a Public Accountant or Certified Public Accountant showing the true and accurate net worth of Lessee and said Guarantor, if any, as of the close of Lessee's and said Guarantor's last accounting period.

(d) In case there is more than one Lessee the obligation of Lessees executing this lease shall be joint and several. The words "Lessor" and "Lessee" as used herein shall include the plural as well as the singular. The covenants and agreements contained herein shall be binding upon and be enforceable by the parties hereto and their respective heirs, executors, administrators, successors and assigns, subject to the restrictions herein imposed on assignment by Lessee.

(e) Time is of the essence of this lease and of each and every covenant, condition and provision herein contained.

(f) The paragraph headings of this lease are inserted only as a matter of convenience and for reference and in no way define, limit or describe the scope or intent of this agreement or any provision thereof or in any way effect this agreement.

Paragraphs 28-32 attached hereto are by this reference thereto incorporated herein.

IN WITNESS WHEREOF, the parties hereto have subscribed their names, and if corporations, executed this lease by officers thereunto duly authorized by resolution of said corporations, in duplicate the day and year first hereinabove written.

LESSOR:

ALVIN H. BACHARACH

BARBARA JEAN BORSUK

LESSEE:

DOUGLAS MOTOR SERVICE, a partnership

by _____ partner
LELAND DOUGLAS

by _____ partner
RONALD DOUGLAS

by _____ partner
SANFORD DOUGLAS

by _____ partner
DAVID FLETT

RIDERS to Lease dated January 30th 1981, between Alvin H. Bacharach and Barbara Jean Borsuk as Lessor and Douglas Motor Service, a partnership composed of Leland Douglas, Ronald Douglas, Sanford Douglas and David Flett as Lessee.

Rider No. 1. RENTAL. As rental for the demised premises Lessee hereby agrees to pay to Lessor in lawful money of the United States without deductions, set off, prior notice or demand, the sum of Three Thousand Eight Hundred Dollars ($3,800.00) per month in advance on the first day of each month of the first twelve months of the term commencing on April 1, 1981, and continuing through March 1, 1982; the sum of Four Thousand Dollars ($4,000.00) per month on the first day of each month commencing on the first day of April 1982, and continuing through March 1, 1983; the sum of Four Thousand Two Hundred Fifty Dollars ($4,250.00) per month on the first day of each month, commencing on the first day of April 1983, and continuing through March 1, 1984; the sum of Four Thousand Four Hundred Fifty Dollars ($4,450.00) per month on the first day of each month, commencing on the first day of April 1984, and continuing through March 1, 1985; the sum of Four Thousand Seven Hundred Dollars ($4,700.00) per month, commencing on the first day of April 1985, and continuing through March 1, 1986; the sum of Five Thousand Dollars ($5,000.00) per month, commencing on the first day of April 1986, and continuing through March 1, 1987; the sum of Five Thousand Three Hundred Dollars ($5,300.00) per month, commencing on the first day of April 1987, and continuing through March 1, 1988.

Rider No. 2. TAXES. If at any time during the lease term under the laws of the United States Government, State of California, or any political subdivision, agency, board, commission or other duely constituted authorities thereof in which the premises are situated, a tax, excise on rent or any other tax however described is levied or assessed by any such political body, against Lessor on account of rentals payable to Lessor hereunder, or upon land or land use of any kind within the boundaries of the demised premises, such tax or excise shall be considered "taxes" for the purposes of Paragraph 12, excluding, however, from such tax or excise all general income taxes, gift taxes, inheritance taxes and estate or death taxes. Any such tax under this paragraph shall be paid ninety (90) percent by Lessee.

Rider No. 3. 13.(a) In the event of any breach of this lease by Lessee, then Lessor, besides other rights and remedies he may have, shall have the right to terminate this lease, and shall have the immediate right of re-entry and may remove all persons and property from the premises. If the Lessor's right of re-entry is exercised following abandonment of the premises by the Lessee, then Lessor may consider any personal property belonging to Lessee and left on the premises also to have been abandoned, in which case Lessor may dispose of all such personal property in any manner Lessor shall deem proper and is hereby relieved of all liability for doing so.

(b) If Lessee breaches this lease and abandons the property before the end of the term, or if Lessee's right to possession is terminated by Lessor because of a breach of the lease, then in either such case, the lease

terminated, and Lessor may recover from Lessee all damages suffered by Lessor as the result of Lessee's failure to perform his obligations hereunder, and to the extent such damages arise from failure to pay rental, such damages shall be measured, and Lessor shall be entitled to recover from Lessee the following:

(1) The worth at the time of award of the unpaid rent which had been earned at the time of termination.

(2) The worth at the time of award of the amount by which the unpaid rent which would have been earned after termination until the time of award exceeds the amount of such rental loss that Lessee proves could have been reasonably avoided.

(3) The worth at the time of award of the amount by which the unpaid rent for the balance of the term after the time of award exceeds the amount of such rental loss for such period that Lessee proves could be reasonably avoided, and;

In addition thereto, Lessor shall be entitled to recover from Lessee any other amount necessary to compensate Lessor for all the detriment proximately caused by Lessee's failure to perform his obligations under this lease, or which in the ordinary course of things would be likely to result therefrom.

The "worth at the time of award" of the amounts referred to in subparagraphs (1) and (2) of Section (b) is computed by allowing interest at the legal rate. The worth at the time of award of the amount referred to subparagraph (3) of Section (b) is computed by discounting such amount at the discount rate of Federal Reserve Bank of San Francisco at the time of award plus one percent.

(c) Lessor may relet this property prior to the time of award for breach of this lease by Lessee. In such case, if Lessor proves that in reletting the property he acted reasonably and in good-faith effort to mitigate the damages, then he shall be entitled to the following award for Lessee's improper termination of this lease: the worth at the time of award of the amount by which the unpaid rent for the balance of the term after the time of award exceeds the amount of such rental loss that Lessee proved could be reasonably avoided. The recovery of damages under this section is subject to any limitation specified in this lease.

(d) Optional Remedy, To Be Deleted If Subletting, As Provided Below, Is Not To Be Permitted:

Even though Lessee has breached this lease and abandoned the property, this lease continues in effect for so long as Lessor does not terminate Lessee's right to possession; and Lessor may enforce all his rights and remedies under this lease, including the right to recover the rent as it becomes due under this lease.

For the purposes of this subsection, the following do not constitute a termination of Lessee's right to possession:

(1) Acts of maintenance or preservation or efforts to relet the property.

(2) The appointment of a receiver on initiative of Lessor to protect his interest under this lease.

Lessee may, at his option, transfer his interest hereunder in the following manner so long as Lessor has not terminated Lessee's right to possession for breach of this lease otherwise and abandonment of the property, sublet the property, assign his interest in the lease,

or both, with the consent of Lessor, which consent shall not be withheld unreasonably. A consent to one assignment or subletting with the Lessor's consent shall not be deemed to be a consent to any subsequent assignment or subletting and any such subsequent assignment for subletting without Lessor's consent shall be void and shall, at Lessor's option, terminate this lease. This lease shall not, nor shall any interest therein, be assignable as to the interest of the Lessee by operation of law without the written consent of Lessor, but such consent shall not unreasonably be withheld.

(e) The rights of Lessor under all of the above paragraph shall be cumulative to all other rights or remedies now or hereafter given to Lessor by law or by the terms of this lease.

Nothing in such paragraph affects the right of Lessor to equitable relief where such relief is appropriate.

Nothing in such paragraph affects the rights of the parties under statutory provisions relating to actions for unlawful detainer, forceable detainer except as above set forth.

The bringing of any such action as described above does not affect Lessor's right to bring a separate action for relief on termination, for liquidated damages, or in equity; but no relief shall be requested and no damages shall be recovered in the subsequent action for any detriment for which a claim for damages was made and determined on the merits in the previous action.

28. In addition to the minimum monthly fixed rentals hereinabove agreed to be paid by Lessee, Lessee shall and will pay to Lessor, at the times and in the manner hereinafter specified, an additional rental in the amount equal to forty-five percent (45%) of the amount of Lessee's total revenues derived from use of the premises made during each leasehold year of the term hereof, in, upon or from the demised premises, less the aggregate amount of the minimum monthly fixed rental paid by Lessee during said year.

The term total revenues, as used herein, shall (subject to the exception and authorized deductions as hereinafter set forth) mean the gross amount received by Lessee from use of the premises as parking garage, both for cash and on credit, and in case of sales on credit whether or not payment be actually made therefor; in this connection, Lessee agrees that its rates of charge for parking and/or storage shall be generally competitive with such charges in the area. Revenues shall include those received for any sub-leases or concessionaires.

There is excepted from Lessee's revenues (as said term is used herein) the amount of all sales tax receipts which has to be accounted for by Lessee to any government or governmental agency, the sales of gasoline, oil or fuel for motor vehicles, repairs to motor vehicles and the sales of automotive parts or accessories.

As used herein, the term "leasehold year" shall mean that the first twelve (12) calendar months of the term of this lease (contemplated to be April 1, 1981 - March 31, 1982 and each successive twelve (12) month period thereafter during the term. Percentage rental for any partial year at the end of the term hereof shall be equitably pro-rated.

Lessee shall keep full, complete and proper books, records, and accounts of the gross revenues (as said term is used herein), both for cash and on credit of each separate department at any time operated in the demised premises; said books, records and accounts, including copies of any sales tax or other reports that Lessee may be required to furnish to any government or governmental agency, shall at all times be open to the inspection of Lessor, Lessor's auditor or other authorized representative or agent.

Within ten(10) days after the end of each calendar month commencing with the 10th day following the first calendar month in which the lease term commences and ending with the 10th day of the month next succeeding the last month of the lease term, Lessee shall furnish Lessor with a statement, to be certified as correct by Lessee or the employee of Lessee authorized so to certify, which shall set forth the gross revenues (as herein defined) operating in the demised premises for the month just concluded, and the authorized deductions, if any, therefrom. Within fifteen (15) days immediately following the end of each leasehold quarter, (i.e. the 15th days of the months of July, October, January and April) Lessee shall furnish Lessor with a statement of the gross sales during the quarter so concluded, and the amount of any authorized deductions therefrom (including therein the aggregate of the minimum monthly fixed rental paid during said quarter); said last-mentioned statement shall be certified as correct by Lessee or the employee of Lessee authorized so to certify, and with it Lessee shall pay to Lessor the amount of the additional rental which is payable to Lessor as shown thereby.

If Lessee shall at any time cause an audit of Lessee's business for this location to be made by a certified public accountant, Lessee shall furnish Lessor with a copy of said audit without any cost or expense to Lessor. Lessor may, once in any calendar year, cause an audit of the business of Lessee to be made by a certified public accountant of Lessor's own selection and if statements of gross revenues previously made by Lessee to Lessor shall be found to be at least one percent (1%) less than the amount of Lessee's gross revenues shown by such audit, Lessee shall immediately pay the cost of such audit as well as the additional rental therein shown to be payable by Lessee to Lessor; otherwise, the cost of such audit shall be paid by Lessor.

The acceptance by Lessor of any monies paid to Lessor by Lessee as additional rental for the demised premises as shown by any yearly statement furnished by Lessee shall not be an admission of accuracy of said yearly statemnet of of any of the monthly statements furnished by Lessee during the year reported therein, or of the sufficiency of the amount of said additional rental payment, but Lessor shall be entitled at any time within two (2) years after the receipt of any such additional rental payment to question the sufficiency of the amount thereof and/or the accuracy of the statement or statements furnished by Lessee to justify the same. Lessee shall, for the said period of two (2) years after submission to Lessor of any such statement, keep safe and intact all of Lessee's records, books, accounts and other data which in any way bear upon or are required to establish in detail Lessee's gross revenues and any

authorized deductions therefrom as shown by any such statement, and shall upon request make the same available to Lessor, Lessor's auditor, representative or agent for examination at any time during said two (2) year period.

29. Subject to the paragraphs relating to destruction of premises, Lessee shall continuously during the entire term hereof conduct and carry on Lessee's aforesaid business in the demised premises and shall keep said premises open for business and cause such business to be conducted therein during each and every business day for such number of hours each day as is customary for businesses of like character in the area in which the demised premises are located to be open for business; provided, however, that this provision shall not apply if the demised premises shall be closed and the business of Lessee therein shall be temporarily shut down on account of strikes, lockouts, or causes beyond control of Lessee.

Lessee shall operate Lessee's said business in the demised premises with due diligence and efficiency and in like manner as comparable businesses in the area in which the demised presmises are located are operated so as to produce all of the gross sales which may be produced by such manner of operation.

30. Lessor shall take out and keep enforced during the term hereof fire insurance on improvements with standard extended coverage, vandalism and malicious mischief insurance in an amount equal to not less than ninety percent (90%) of the replacement value of said improvement. Lessee will pay to Lessor ninety percent (90%) of the premiums for said insurance. Lessor may at any time request the replacement value of the improvements to be redetermined in accordance

with the rules and regulations and or practices of any Board of Underwriters or like board or body recognized and accepted by the insurance company or companies writing such insurance.

With reference to Paragraph 10, Lessee agrees to replace any broken plate glass at the Harrison street downstairs location at their sole cost and expense promptly following destruction.

31. During the term of this lease, if Lessor shall accept a bonafide offer to purchase the demised premises, then Lessor may at Lessor's option terminate and cancel this lease ninety (90) days after service of written notice of the exercise of said option upon Lessee in the manner provided for service of notice in this lease.

32. In the event that the term of this lease has not been terminated under the provision permitting such termination by the Lessor ninety (90) days prior to March 31, 1988, then Lessor agrees to negotiate with Lessee with respect to the renewal of the term, to the end that the parties may mutually agree upon the terms and conditions for such an extended term.

If, during the term of this lease, Lessor shall receive a bonafide offer to lease the demised premises at the expiration of the term, March 30, 1988 (and the term has not otherwise previously terminated), which offer to lease Lessor is willing to accept, Lessor shall notify Lessee in writing thereof. Lessee shall have the option to lease the property under the terms and conditions of said offer to lease, provided that Lessee shall notify Lessor in writing of its intention to accept the extension of said lease on the terms and conditions contained in the said offer to lease which Lessor is willing to accept. Said right shall terminate automatically and shall be null and void if Lessee shall not notify Lessor of his election within ten (10) calendar days following the delivery of the proposal to lease to Lessee..

ATTACHMENT 7

Print or type (Form designed for use on elite (12-pitch typewriter))

and Front of Page 7

Department of Health Service
Toxic Substances Control Divisi
Sacramento, Californ

UNIFORM HAZARDOUS WASTE MANIFEST

1 Generator's US EPA ID No: CAC000510512 | Manifest Document No: 999991

2 Page 1 of 1 | Information in the shaded areas is not required by Federal law

3 Generator's Name and Mailing Address
A. BACHARACH & B. BORSUK
87 Rico Way
San Francisco, CA 94123

4 Generator's Phone (415) 922-4740

A State Manifest Document Number: 89618164

B State Generator's ID:

5 Transporter 1 Company Name: FALCON ENERGY ASSOCIATES
6 US EPA ID Number: CAD982526857
C State Transporter's ID: CA 2463
D Transporter's Phone: (209) 463-7108

7 Transporter 2 Company Name: C.O.R.I. dba Evergreen Environmental Svc
8 US EPA ID Number: CAD980695761
E State Transporter's ID: 107225
F Transporter's Phone: (800) 972-5284

9 Designated Facility Name and Site Address
EVERGREEN ENVIRONMENTAL SERVICES
6880 Smith Avenue
Newark, CA 94560
10 US EPA ID Number: CAD980695761
G State Facility's ID: CAD980695761
H Facility's Phone: (800) 972-5284

11 US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12 Containers No.	Type	13 Total Quantity	14 Unit Wt/Vol	I Waste No.
a. Waste Petroleum Oil, N.O.S., Combustible Liquid, NA 1270	001	TT	1500	G	State CA 221 / EPA/Other Non-RCRA
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J Additional Descriptions for Materials Listed Above: Waste oil tested at LT 1000 ppm chlorides.

K Handling Codes for Wastes Listed Above: a. 14 b. c. d.

15 Special Handling Instructions and Additional Information: Wear protective clothing.

16 GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR — Printed/Typed Name: BARBARA BORSK — Signature: Barbara Borsuk — Month Day Year: 10 27 90

TRANSPORTER

17 Transporter 1 Acknowledgement of Receipt of Materials — Printed/Typed Name: BRIAN MANNING — Signature: Brian Manning — Month Day Year: 10 27 90

18 Transporter 2 Acknowledgement of Receipt of Materials — Printed/Typed Name: Joseph Reis Limas Jr — Signature: Joseph Reis Limas Jr — Month Day Year: 10 29 90

FACILITY

19 Discrepancy Indication Space: BOX 9 777 S. Locust St Ripon CA

20 Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name: Joseph Reis Limas Jr — Signature: Joseph Reis Limas Jr — Month Day Year: 10 29 90

Do Not Write Below This Line

White: TSDF SENDS THIS COPY TO DOHS WITHIN 30 DAYS
To: P.O. Box 3000, Sacramento, CA 95812

DHS 8022 A (1/88)
EPA 8700-22
(Rev. 9-88) Previous editions are obsolete.

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

89618164

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TELEPHONE (415) 326-7600

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LOS ANGELES, CALIFORNIA 90071-2306
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TELEPHONE (213) 689-0200

JONATHAN SEBASTIAN LEO
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PORTLAND, OREGON 97201-5696
FACSIMILE (503) 241-0950
TELEPHONE (503) 227-7400

550 WEST 7TH AVENUE
ANCHORAGE, ALASKA 99501-3571
FACSIMILE (907) 277-1920
TELEPHONE (907) 277-1900

December 13, 1990

17409-0001

BY TELECOPY

Mark Thomson, Esq.
Deputy District Attorney
Office of the Alameda County District Attorney
7677 Oakport Street, Suite 400
Oakland, California 94621

Harrison Street Garage
Underground Storage Tank Removal and Clean-Up

Dear Mr. Thomson:

This letter is intended to supplement our telephone conversation of Tuesday, December 11, 1990. We discussed the order that the Alameda County Health Care Services Agency issued on July 31, 1990 to my client, Alvin Bacharach (the owner and landlord of the above-referenced property). This order directed him to investigate and, as appropriate, remediate petroleum hydrocarbon contamination from the underground gasoline storage tanks which were installed, owned and operated by a former long-time tenant Douglas Motor Services ("Douglas"). We also discussed the substitution of Douglas for my client on the order. You asked me the following five questions:

1. When did my client first learn about the tank leaks?

2. How did we obtain the 1982 receipt noting the leaking tanks?

3. Did my client receive any share of Douglas' profits from the sale of gasoline in the form of rent?

4. When were the original 550-gallon underground tanks installed?

5. Could we provide you with copies of the earlier leases?

I will respond to each of these questions in turn.

In response to the first and second questions, my client first learned about the leaking tanks in January or February of 1983 when Douglas forwarded the bill from the Robert J. Miller Company seeking reimbursement for those costs from my client. See Attachment 4 to my November 27 letter to Paul Smith. Thus, we obtained the document directly from Douglas. It was my client's clear understanding that Douglas, as the owner and operator of the underground tanks, would take all necessary steps to remedy any problems associated with tank leakage identified by its consultant. Douglas was in the business of selling gasoline, and had expertise in this area. Moreover, my client had no reason to believe that Douglas would not honor the terms of the lease which required Douglas to comply with all laws (see leases paragraph 3) including then-applicable laws requiring the reporting of discharges or releases of petroleum to soil and groundwater. Mr. Bacharach was entirely unaware that Douglas' contractor had simply removed the tank without addressing or remedying the contamination caused by the tank leakage.

Turning to the third question, my client did not receive any share of Douglas' profits from the sale of gasoline. In fact, the rent which Douglas paid to my client was exclusive of such sales. For this reason, Mr. Bacharach declined to pay for the installation of the underground storage tank in 1975. See Attachment 5 to my November 27 letter to Paul Smith. He did contribute approximately 21% of the cost of installing the second underground storage tank in 1982 as a gesture in response to the tenant's increased rent payments from the parking revenue.

In response to your fourth question, unfortunately my client has no documentation regarding the installation of the original 550-gallon tanks on the Harrison Street property. We have checked with the Fire Department, but their files do not contain this information. We will be happy to cooperate with you in any way we can to ascertain this information.

Finally, the leases for the Harrison Street property between my client and Douglas from 1972 through 1988 are enclosed as per your request.

For your further information, Douglas took no action on one of the tanks for at period of a least seven months in 1982 after it had been informed of a release. It was informed on April 19, 1982 by the Robert J. Miller Company ("RJM") that one of the

underground storage tanks was leaking. On May 4, RJM submitted a bid to pull out and replace the tank. Nevertheless, Douglas took no action until October, when it requested a revised estimate. The tank was not removed until November, 1982.

As an additional matter, we have noticed that Paul Smith, the County Hazardous Materials Specialist handling this matter, has been sending copies of all correspondence with my clients to Jonathan Redding, counsel for Steve Davis, former tenant of the Harrison Street property. Davis relinquished possession of the property on November 6 and has no further interest in the property or the tank removal and clean-up. When I first brought this issue to Mr. Smith's attention last month, he said that he wanted you to respond to this request. Therefore, I would appreciate your instructing Mr. Smith that it is no longer appropriate to forward correspondence in this matter to Mr. Redding since his role in this matter has terminated.

Please let me know if there is any further information that we can provide which would be helpful to you in any way. I look forward to working with you toward a speedy and equitable resolution of this matter, and to meeting with you and Mr. Smith at your earliest convenience to discuss the status of my client (and that of Douglas) on the County's order.

Very truly yours,

Jonathan S. Leo

Jonathan S. Leo

Enclosures

cc: (all without enclosures)
Mark Borsuk, Esq.
Mr. Alvin Bacharach
Mr. Paul Smith

bcc: Mr. John Cummings

2/21/91

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

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415)

January 25, 1991

Certified Mailer # P 062 127 954

Mr. John P. Cummings
SCS Engineers
6761 Sierra Court, Suite D
Dublin, CA 94568

Re: **Oakland Parking Garage, 1432 Harrison Street including connecting Alice Street garage, Oakland, CA 94612**

Dear Mr. Cummings:

This letter follows telephone conversations I shared on January 17, 1991, with Mr. Jonathan Leo, and yourself, outlining criteria required by this office for the preparation of a Site Characterization/ Assessment Proposal.

As you know, Subsurface Consultant's 10/19/90 report disclosed various areas of contamination and abandoned underground storage tanks at the above sites. In brief summary, the report indicates that abandoned underground storage tanks exist in the basement of the parking structure near Alice Street as well as under the sidewalk on Harrison street. An "anomalous" radar image also revealed a suspected former underground storage tank (ust) location next to the engine-hoist area. Laboratory results from seven soil borings indicated contamination levels of Total Petroleum Hydrocarbon as high as 9300 ppm, and benzene concentrations as high as 99,000 ppb. Lab analysis revealed contaminant sources of gasoline, diesel and PCBs.

Clearly, this preliminary data strongly suggests groundwater has been impacted and the probability that contamination has migrated off-site. More detail than that provided in the 10/19/90 report with regard to definition of the nature and extent of the problem is required.

It is my understanding that attorneys for the property owners and the District Attorney's office have agreed to the following time table:

Within 15 days of the date of this letter, you shall submit a proposal for site characterization/assessment for my review.

Within 5 days of my receipt of that proposal, I shall have completed my review and if the proposal is adequate, give my consent to commence site assessment. If the proposal is deficient, I shall apprise you of the deficiencies.

Within 45 days of my consent for you to commence site characterization/ assessment, you shall provide this office a report of the results of that site characterization/ assessment.

This Department will oversee the site assessment for the referenced facility. This oversight will include our review and comment on work proposals and technical guidance on appropriate investigative approaches. The issuance of well drilling permits, however, will be through the Alameda County Flood Control and Water Conservation District, Zone 7.

All reports and proposals must be submitted under seal of a California-Registered Geologist, Certified Engineering Geologist, or Registered Civil Engineer. Please include a statement of qualifications for each lead professional involved with this project.

Your proposal for site characterization/assessment shall be consistent with RWQCB Staff Recommendations for the Initial Evaluation and Investigation of Underground Tanks. The major elements of such an investigation are summarized in the attached Appendix A.

Essentially your proposal for site characterization/ assessment is a plan for investigative work which will identify and delimit areas of contamination. That investigative work will define the vertical and lateral impact upon groundwater and soils resulting from underground tanks and other contamination sources.

Your proposal for site characterization/ assessment shall also include:

- A risk assessment addressing the human health issues likely to occur resulting from exposure of contaminants emanating from the above site, and any mitigative measures proposed in association with the preliminary investigative assessment work.

- A subsurface assessment to determine the correct number of underground tanks or other sources of contamination at the Harrison/ Alice street sites.

- A plan for evaluation for PCB contamination and halogenated substances in the down gradient direction of the waste oil tanks located near Alice street.

Upon implementation of the site characterization/ assessment proposal, and as earlier noted, you will be submitting a report of the site characterization/ assessment to this office. The site characterization/ assessment report shall include, but shall not be limited to, the following information:

Information gathered to develop a strategy for further delimiting and effectively remediating subsurface contamination at the site.

A discussion of the human health issues associated with the removal of the UST's, and during site remediation may need to be conducted.

A tank closure/ modification plan for the removal of any additional underground storage tanks (USTs). The current closure plan approved by this office is for 2 UST's.

With the re-submitted tank closure plan, a revised Health & Safety Plan to address all issues of concern of the project.

A time schedule for the completion of the various phases of work including site characterization, plan implementation, tank removal, monitoring well installation, and soil and groundwater remediation.

After the completion of the site characterization/ assessment report subsequent reports must be submitted quarterly until this site qualifies for final RWQCB "sign off". Such quarterly reports are due the first day of the third month of each subsequent quarter (i.e., March 1, June 1, September 1, and December 1). These reports should describe the status of the investigation and must include, among others, the following elements:

- Details and results of all work performed during the designated period of time: records of field observations and data, boring and well construction logs, water level data, chain-of-custody forms, laboratory results for all samples collected and analyzed, tabulations of free product thicknesses and dissolved fractions, etc.

- Status of ground water contamination characterization

- Interpretation of results: water level contour maps showing gradients, free and dissolved product plume definition maps for each target component, geologic cross sections, etc.

- Recommendations or plans for additional investigative work or remediation

Should you have any questions about the content of this letter, please call me at 415/271-4320.

Sincerely,

Paul M. Smith

Paul M. Smith
Hazardous Materials Specialist

cc:
Mark Borsuk, Attorney at Law
Jonathan Leo, Heller, Ehrman, White & McAuliffe
Mark Thomson, Alameda County District Attorney's office of Consumer and Environmental Affairs
Rafat A. Shahid, Assistant Agency Director, Alameda County Environmental Health Department
Lester Feldman, SFRWQCB
Charlene Williams, DHS

AL

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TELEPHONE (206) 572-6666

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ANCHORAGE, ALASKA 99501-3571
FACSIMILE (907) 277-1920
TELEPHONE (907) 277-1900

91 JAN 02 A11:09

January 30, 1991

17409-0001

JONATHAN SEBASTIAN LEO
DIRECT DIAL (415) 772-6068

VIA TELECOPY

Mr. Paul M. Smith
Hazardous Materials Specialist
Alameda County Health Care Services Agency
Department of Environmental Health
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, California 94621

1432 Harrison Street Garage--Oakland, California
Site Characterization/Assessment Workplan

Dear Paul:

The purpose of this letter is to memorialize our telephone conversation today regarding your January 25, 1991 letter to John Cummings of SCS Engineers. In that letter, you described the criteria which your office required for a satisfactory Site Characterization/Assessment Proposal from my clients, Alvin Bacharach and Barbara Jean Borsuk, for the above-referenced property.

At the middle of page 3 of your January 25, 1991 letter, you stated that after the site characterization/assessment report had been submitted, my clients would be required to submit quarterly reports to your Agency thereafter "until this site qualifies for final RWQCB 'sign off'." I asked you for more information both about the criteria which would be considered by your Agency and the RWQCB in determining whether and when such a "sign-off" was appropriate, as well as about the legal document (i.e., Memorandum of Understanding) which establishes the relationship between your Agency and the RWQCB for purposes of enforcing compliance with the California Underground Storage of

Hazardous Substances Act in Alameda County. Please send me the requested information (with which you said you were familiar) at your earliest convenience and, if possible, by Tuesday, February 5.

We also discussed the due date for my clients' submittal to your Agency of the Site Characterization/Assessment Workplan. Your letter requiring that Workplan was dated January 25, 1991, but not received by John Cummings or myself until Monday, January 28, 1991. The letter requires your receipt of our Workplan "within 15 days of this letter. . . ." With respect to that deliverable date, I requested two things: first, that the 15 days begin to run from our receipt of the letter on January 28; and second, that the 15 "days" be understood to mean "working" rather than "calendar" days so that it may be due to you by February 15, 1991. The reason for the second request is itself twofold. First, I may have to be out of the office Thursday and/or Friday February 7 and/or 8 and, if so, would have insufficient time to review the draft Workplan with my clients and our consultant prior to its submittal to you on February 11 (Monday), if the 15 days is understood to mean "calendar" days. Second, I believe that the additional four days of review and refinement of the draft Workplan which we would derive from an understanding of the 15 days as "working" days will inure to your benefit as well, since it will increase the likelihood that the draft will satisfy your requirements with little, if any, further revision. You indicated to me that, although you personally did not object to my request, you would need to obtain the approval of Mark Thomson of the District Attorney's Office. For your and Mark's convenience, I have decided to telecopy this letter to both of you simultaneously so that this request can be answered without delay.

Thanks very much for your prompt attention to these matters.

Very truly yours,

Jonathan S. Leo

Jonathan S. Leo

cc: Mark Thomson, Esq. (by telecopy)
Mr. John Cummings (by telecopy)
Mark Borsuk, Esq. (by telecopy)

Environmental Consultants

SCS ENGINEERS

91 B15 AM10:35

response due from this office
2/21/91 Thursday

SITE CHARACTERIZATION/ ASSESSMENT PROPOSAL FOR PARKING GARAGE AT 1432 HARRISON STREET OAKLAND, CALIFORNIA

Submitted to:

Alameda County Health Care Services Agency
Hazardous Materials Program
Department of Environmental Health (ACDEH)
80 Swan Way, Room 200
Oakland, California 94621

Submitted by:

SCS Engineers
6761 Sierra Court, Suite D
Dublin, California 94568

February 15, 1991

File No. 0390044.00

Environmental Consultants

6761 Sierra Court
Suite D
Dublin, CA 94568

415 829-0661
FAX 415 829-5493

SCS ENGINEERS

February 15, 1991
File No. 0390044.00

Alameda County Health Care Services
Division of Hazardous Materials
Department of Environmental Health (ACDEH)
80 Swan Way, Room 200
Oakland, California 94621

Attention: Mr. Paul Smith

Subject: Site Characterization/Assessment Proposal
for Oakland Parking Garage
at 1432 Harrison Street
Oakland, California 94612

Dear Mr. Smith:

SCS Engineers (SCS) is pleased to offer this work plan for a site characterization/assessment at the above mentioned parking garage for your review. The attached work plan is consistent with the Regional Water Quality Control Board (RWQCB) "Staff recommendations for initial evaluation and investigation of underground tanks" and contains the following elements:

Introduction
Site Description
Plan for Determining Soil Contamination
Plan for Determining Groundwater Contamination
Site Safety Plan

As you know, previous reports have disclosed various areas of contamination and abandoned underground storage tanks at the above site. This work plan is to further define the nature and extent of soil and groundwater contamination, and to determine actual number of underground storage tanks or other sources of contamination.

This work plan has been prepared in accordance with the care and skill generally exercised with reputable professionals, under similar circumstances, in this or similar localities.

SCS Engineer appreciates the opportunity to provide you with these environmental services. If you have any questions, please contact either of the undersigned at (415) 829-0661.

Sincerely,

Nels R. Johnson, P.E.
Senior Project Engineer
SCS Engineers

John P. Cummings, Ph.D., R.E.A., R.E.P.
Office Director
SCS Engineers

NRJ/JPC/egh

Attachment

CONTENTS

1.0 INTRODUCTION

On January 25, 1991, Mr. Paul Smith with the Hazardous Materials Program of the Alameda County Health Care Services Agency's, Department of Environmental Health (the Department), requested SCS Engineers to submit a site characterization/assessment proposal for the property located at 1432 Harrison Street (including a connecting Alice Street property) in Oakland, California. Plate 1 is a vicinity map pinpointing the subject site's location. This request was made pursuant to a Cleanup Order under Health and Safety Code Section 25299.37(c) issued on September 24, 1990 to Alvin Bacharach and Barbara Borsuk, the owners of the property described. The following proposal has been prepared pursuant to and consistent with the California Regional Water Quality Board's "Staff recommendation for initial evaluation and investigation of underground tanks."

The site is currently a garage utilized for parking automobiles and light trucks. It essentially consists of two buildings. The first is the entrance of the parking garage on 1432 Harrison Street. This building is a single-story with partial mezzanine, and constructed of timber and masonry. The second is a multi-story garage that is on the Alice Street portion of the subject site and is composed of reinforced concrete construction. Historical aerial photographs date the buildings back some forty to fifty years.

Previous investigations conducted by other parties have determined that the soil and groundwater have been contaminated from gasoline, diesel and PCBs. Sources for this contamination may be from on-site underground storage tanks and/or adjacent off-site underground storage tanks. It is not known if off-site sources have migrated and contributed to the subject site's contamination. The Department determined that this preliminary data was not sufficient to determine the nature and extent of the contamination, and therefore requested the performance of a more comprehensive site characterization/assessment pursuant to its September 24, 1990 Cleanup Order.

Environmental Consultants

6761 Sierra Court
Suite D
Dublin, CA 94568

415 829-0661
FAX 415 829-5493

SCS ENGINEERS

91 FEB 20 AM 9:33

February 15, 1991
File No. 0390044.00

Alameda County Health Care Services
Division of Hazardous Materials
Department of Environmental Health (ACDEH)
80 Swan Way, Room 200
Oakland, California 94621

Attention: Mr. Paul Smith

Subject: SCS Report dated February 15, 1991

Dear Mr. Smith:

Attached is page 2 of the subject report on the Site Characterization for the Oakland Parking Garage at 1432 Harrison Street, Oakland, California. This page was inadvertently omitted. Please insert this page into your copy.

Thank you.

Sincerely,

John P. Cummings, Ph.D., R.E.A., R.E.P.
Office Director
SCS Engineers

TLS/sdd

Attachment

The previous investigation, disclosed that there are several underground storage tanks within the boundaries of the subject site. A description of these tanks and investigative and remedial actions which have been performed to date with respect to them is as follows:

Waste Oil Tanks

There are two waste oil tanks located in the basement of the multi-story parking structure along Alice Street. The date of installation of these tanks is unknown. There are no records currently available documenting the volume and composition of these tanks. However it is believed that each tank has a 1000-gallon capacity and is of steel construction. On October 27, 1990 Falcon Energy removed a total of 1300-gallons of waste oil product from both tanks.

Gasoline Tanks

There are two gasoline tanks located under the sidewalk on Harrison Street in front of subject site. Permits issued to a former long-term tenant of the garage, Douglas Motor Services, show that these tanks currently have 1000-gallon capacities, are of steel construction and were installed in 1975 and 1982 respectively. On October 27, 1990, Falcon Energy removed as much product as possible from the tanks. The condition of these tanks is unknown. The recovered gasoline product along with the waste oil which was recovered, has been accepted and utilized by a recycling contractor. A copy of the hazardous waste manifest is in Plate 7.

It should be noted that there is evidence of two other abandoned in-place underground storage tanks just a few feet from the above mentioned gasoline tanks, on the adjacent site owned by another party or parties.

Hydraulic Lift Reservoir

Recent geophysical investigations show evidence of an underground reservoir near the hydraulic lift area inside the parking garage at 1432 Harrison Street.

There is no record of any integrity testing for any of the above tanks. It is believed that these tanks may have been a source of the site's contamination. However, the total quantity of product loss cannot be estimated.

There was a previous subsurface investigation done by Subsurface Consultants in October 1990. The results of their report will be outlined in the Site Description section.

2.0 SITE DESCRIPTION

The site is bordered on the east by Alice Street and on the west by Harrison Street. Lake Merritt is approximately one-quarter mile east from subject site. Plate 2 is a site map that delineates the building perimeter, adjacent streets and suspected on-site as well as off-site underground storage tank locations.

A Preliminary Subsurface Investigation for 1432 Harrison Street was performed by Subsurface Consultants in October 1990. An outline of that report is as follows:

> Six test borings were drilled using four-inch diameter, solid-flight auger drilling equipment. Detailed logs were prepared and undisturbed samples of the soil collected by a geologist from Subsurface Consultants. Soil cuttings were stored in steel barrels and left on-site.
>
> Groundwater was encountered during drilling at depths varying from about 23 to 25 feet below the Harrison Street level. Information regarding flow direction below site is not available. However it is suspected to flow east toward Lake Merritt.
>
> Test borings indicate the site is underlain by dense, fine-grained sands containing varying amount of silt and clay. According to geologic maps, these sediments are part of the Merritt sand formation.
>
> Soil samples were selected to be analyzed based on visual inspection and organic vapor screening. The selected soil samples were analyzed by Curtis and Tompkins, Ltd., a laboratory certified by the California Department of Health Services. The results of the testing are summarized on Plate 4 and in the following Table 1. (Table 1 represents the analytical results obtained by Subsurface Consultants).

TABLE 1. CONTAMINANT CONCENTRATIONS IN SOIL
(Results of Subsurface Consultants October 1990 Investigation)

Boring & Depth	TVH[1] (ppm)	B[2] (ppb)	T[3] (ppb)	X[4] (ppb)	X[5] (ppb)	TOG[6] (ppm)	TKH[7] (ppm) Keros./Diesel	OTHER S010/Sol Ph/P ---/(ppm)/(p
B1 @ 20'	6,300	99,000	490,000	610,000	110,000	---	---/---	---/---/---
B2 @ 18.5'	9,300	98,000	900,000	1,100,000	190,000	---	---/---	---/0.21/---
B3	---[8]	---	---	---	---	---	---/---	---/---/---
B4 @ 10'	---	---	---	---	---	6,300	ND[9]/1,700	---/---/---
B5 @ 22.5'	110	24	210	1,300	69	---	---/---	---/---/---
B6 @ 9'	---	ND	ND	ND	ND	ND	98/ND	ND/0.06/9 (Arochlor 1
B6 @ 9.5'	---	---	---	---	---	ND	140/ND	---/---/---
B7 @ 13'	ND	ND	ND	ND	ND			
B7 @ 20'	2,500	3,500	34,000	130,000	33,000	---	---/---	---/0.07/---
B8 @ 22.5'	1,200	2,300	38,000	89,000	18,000	---	---/---	---/---/---

1 Total Volatile Hydrocarbons, mg/kg = ppm
2 Benzene, ug/kg = ppb
3 Toluene
4 Xylene
5 Ethylbenzene
6 Total Oil & Grease
7 Total Extractable Hydrocarbons (as kerosene and diesel)
8 Not tested for
9 Not detected

3.0 PLAN FOR DETERMINING EXTENT OF SOIL CONTAMINATION

As presently proposed, the soil sampling will be carried out concurrently with the drilling for the installation of the groundwater monitoring wells. As discussed in the following section, the placement of the wells is designed to investigate suspected sources of contamination. It is intended that the existing tanks will be removed after the completion of the site characterization and risk assessment.

The methodology for the collection and handling of the soil samples obtained during the drilling is presented in the following section. Spoils from the drilling will be placed in 55-gallon drums and stored on-site until the results of the analyses are available. All excavated soil will be removed from the site. There are presently no plans for any on-site surface remediation of any excavated soil.

In addition to the soil samples collected during the drilling, it is proposed that a section of the concrete floor overlying the two waste oil tanks adjacent to Alice Street be cut and removed. This would be done during the site characterization investigation to allow for hand auger sampling of the soil below these tanks. It will also provide additional data on the size and shape of the tanks and the location of associated piping.

There are presently no plans to conduct a soil gas survey at the site. If the results of the soil and groundwater analyses indicate that a soil gas survey would be useful in better defining the extent of the contamination, a soil gas survey would be considered for the future.

It is presently unclear what contaminants are present at the site and until that is established, it is not possible to define a process for screening for "clean" and "contaminated" soil. A screening process will be established at the time the tanks are removed.

4.0 PLAN FOR DETERMINING GROUNDWATER CONTAMINATION

A total of 13 monitoring wells are presently proposed to characterize the extent of suspected groundwater contamination at the site. The approximate locations of the proposed wells are shown on Plate 3. The exact locations may be slightly modified based on logistical constraints encountered in the field. After the approval of the proposal by the Department, the County will be approached as required to obtain proper encroachment permits.

4.1 Placement Rationale

The proposed wells are designed to investigate the level of contamination both at known or suspected sources and in the assumed downgradient direction. Based on the assumed southeasterly direction of groundwater flow, any contaminants which may migrate from their source are expected to move in a southeasterly direction toward Lake Merritt.

4.2 Drilling and Installation of Wells

The proposed groundwater monitoring wells will be installed using a hollow stem auger drilling rig. Because of the height constraints imposed by the ceiling within the existing structure, a small, skid-mounted rig will be utilized inside the building. The wells in the sidewalk area of Harrison Street will be installed using a truck-mounted drilling rig.

The well installation will be coordinated by a field geologist, under the supervision of a Certified Engineering Geologist (CEG). The borings will be logged by the field geologist and soils encountered will be classified using the Unified Soil Classification System. Well logs for each boring showing lithologies encountered and well construction details will be included in the final report.

The borings inside the building will be approximately 6 inches in diameter and the other borings will be 10 inches in diameter. They will be drilled to a depth of about 10 feet below the groundwater surface. The augers will be steam cleaned on-site at the completion of each boring. Waste water and sludge from the steam cleaning will be collected and transferred to 55-gallon drums for on-site storage. The waste water will be analyzed and the results will determine the final disposition.

Specify type of analytical sampling for each boring/mw

Soil samples will be collected at a minimum of every 5 feet, with a modified California sampler, retained in brass sleeves, examined, sealed with aluminum foil, capped with plastic end caps, tightly wrapped with tape, labeled, and kept in cold storage (4 degrees C) for transport to a chemical laboratory certified by the California Department of Health Services. Samples will be screened in the field by use of a photo-ionization detector (PID).

The groundwater monitoring well will be constructed in the borehole using flush-mounted threaded PVC well casing. As presently proposed, the wells inside the building will be two inches in diameter and the wells in the sidewalk area will be four inches in diameter. Factory slotted screen with 0.020 inch (or possibly 0.010 inch depending on the units) slots will be placed in the aquifer, with solid PVC pipe above. The perforated zone of the casing will be installed from about 5 feet above groundwater to the total depth of the well (approximately 10 feet below groundwater). This should accommodate the anticipated seasonal water level fluctuations at the site. A flush-mounted threaded end cap will be placed on the bottom of the perforated section. Couplings between the casing sections will be flush-set, threaded pipe with no glued connections. All casing will be steam-cleaned prior to installation.

The well casing will be set inside the hollow augers in order to prevent caving of the hole prior to installation of the casing. The annular space surrounding the well screen will be filled with a filter pack (Monterey Sand No. 3) to at least 2 feet above the top of the screened interval and capped off with a bentonite seal approximately 3 feet thick. The sand will be poured slowly into the annular space between the PVC pipe and the augers. This procedure will be interrupted periodically to measure the depth to the top of the sand by a weighted tape. The remaining annular space will be filled with a cement/grout mixture to about 1 foot below grade. The top of the well will be cemented and set with a locking monument well cover. The concrete surface seal will be sloped away from the well casing at the ground surface. Plate 5 presents a cross-sectional diagram of a typical monitoring well.

A reference point of each monitoring well casing will be marked and surveyed by SCS Engineers to establish elevations that will be used for depth to water measurements and gradient calculations. The leveling survey will measure elevations to the nearest 0.01 foot.

4.3 Well Development

The well will be developed to increase its specific capacity, to prevent sanding, to obtain maximum well life, and to collect representative samples of the groundwater. Well development generally repairs damage done to the formation by drilling operations, restores natural hydraulic properties to the adjacent soils, and improves hydraulic properties near the borehole so that water flows more freely into the well.

The wells will be developed by removing the finer material from the formation and filter pack surrounding the wells. This procedure will consist of several steps: bailing the well and then pumping the well until it produces clean water (water with less than 10 ppm suspended solids). All of the groundwater

produced during the well development operations will be stored in approved 55-gallon drums.

All equipment used in well development will be decontaminated prior to and after its use in a well. The decontamination procedures will consist of steam-cleaning and/or washing of equipment using Trisodium phosphate soap, tap water rinse, and distilled water rinse.

4.4 Water level Measurement and Groundwater Sampling

Prior to groundwater sampling, static water level measurements will be taken using a water level indicator. Readings will be taken to the nearest 0.01 foot from a marked reference point on the well casing.

A clear disposal bailer will be lowered into each well to sample the upper surface of the groundwater prior to purging. Any floating product will be noted and measured in the bailer.

Following the water level measurement, the wells will be purged of three to four well volumes of water. This procedure will permit a representative sample of groundwater to be obtained from the aquifer rather than water which had been standing in the well. Notations will be made as to odor, color, and turbidity of the water being removed from the well.

Samples will be collected using an acrylic bailer and contained in pre-cleaned 40 ml vials with Teflon-coated septa or 1 liter amber jars. All efforts will be made to minimize the volatilization of the samples. Samples will be labeled with a sample tag and placed in an ice chest along with Chain-of-Custody documentation. A copy of the Chain-of-Custody form to be used for documentation is attached as Plate 6.

4.5 Laboratory Analysis of Groundwater Samples

A state-certified laboratory will be utilized to analyze all soil and water samples. These samples will be analyzed using standard EPA methodologies and protocol.

Duplicate samples will be collected from each well in the manner described above. The duplicate will be analyzed in the event that the original sample has been tampered with, broken, or otherwise rendered unusable.

Trip and field blanks will also accompany samples submitted to the laboratory. The trip blank will be filled in the laboratory using ultrapure laboratory water. The field or rinsate blank will be collected at the sampling site using ultrapure water which has been poured into the acrylic bailer and sampled under the same conditions as the groundwater samples.

Groundwater purged from the well will be contained in drums on-site at each well location. Drums will be clearly marked to identify the contents and source.

Samples taken to the laboratory will be refrigerated at 4 degrees Celsius until they are analyzed. All samples will be analyzed within the proper time of sample retention per EPA guidelines. Laboratory reports will include information regarding sample identification, date sampled, date received, and date analyzed. Laboratory QA/QC details will be available for inspection and inclusion in reports.

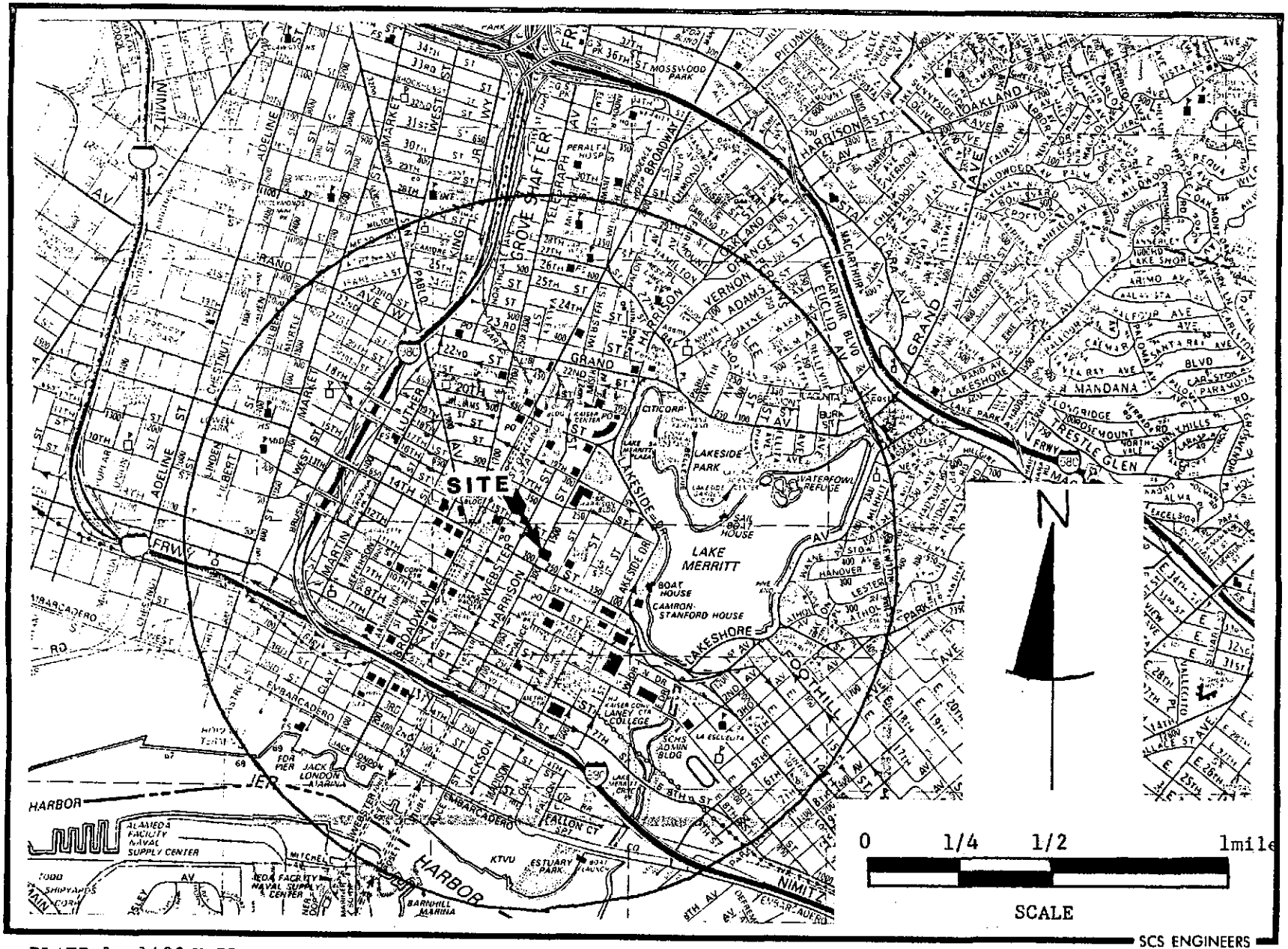


PLATE 1: 1432 HARRISON STREET SITE, VICINITY MAP

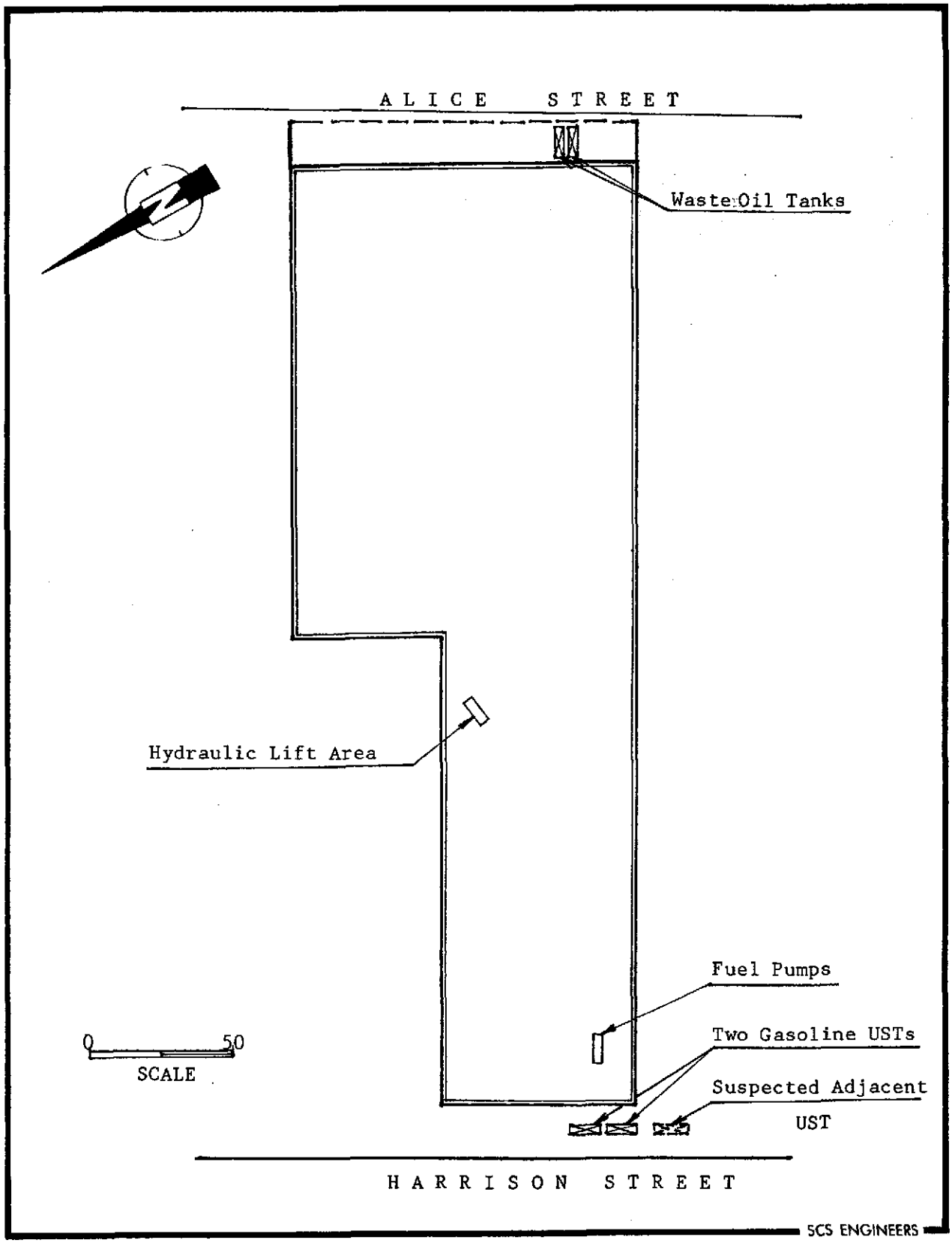


PLATE 2: 1432 HARRISON Street , OAKLAND , Site Map

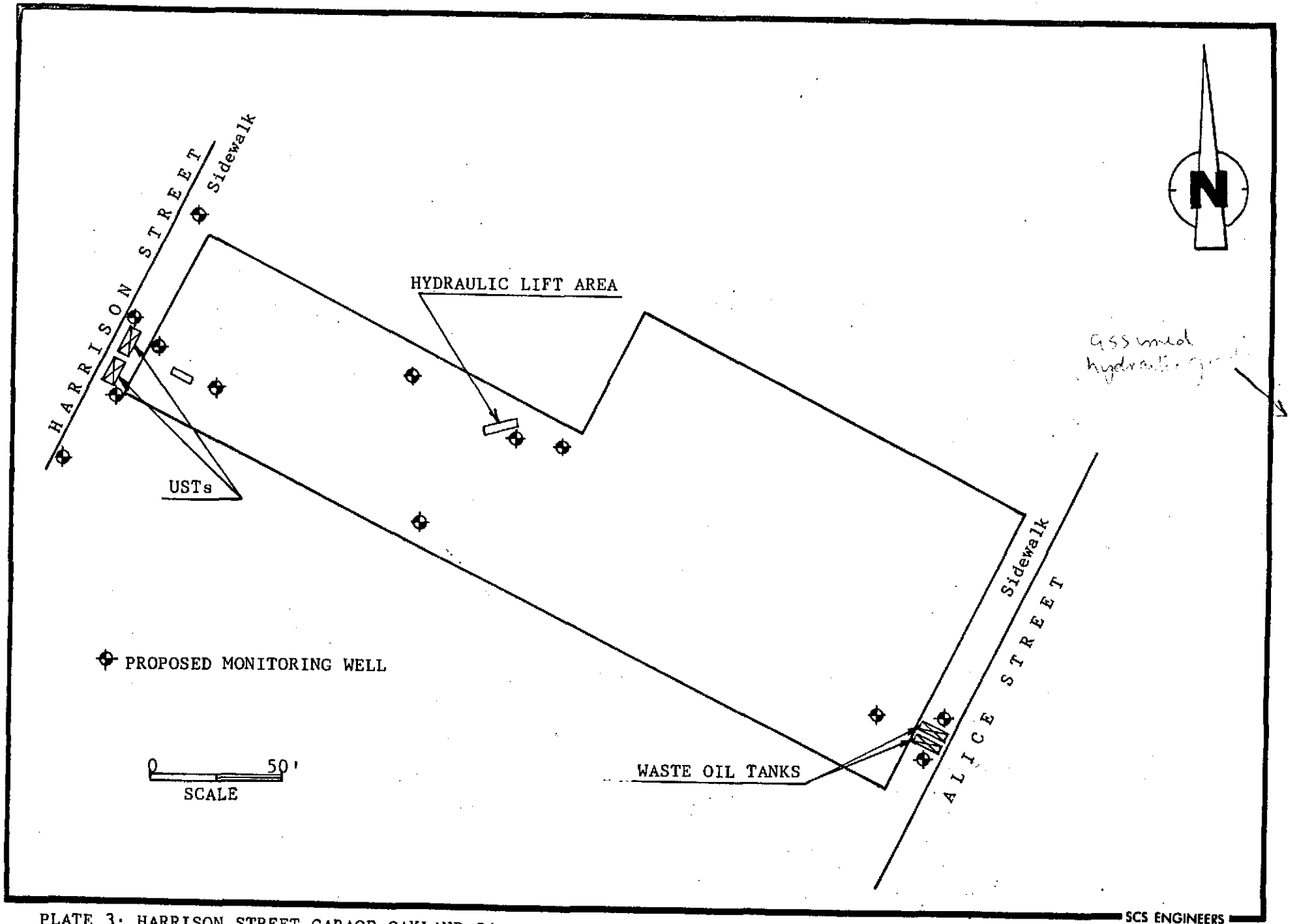


PLATE 3: HARRISON STREET GARAGE-OAKLAND Site , Proposed Monitoring Wells

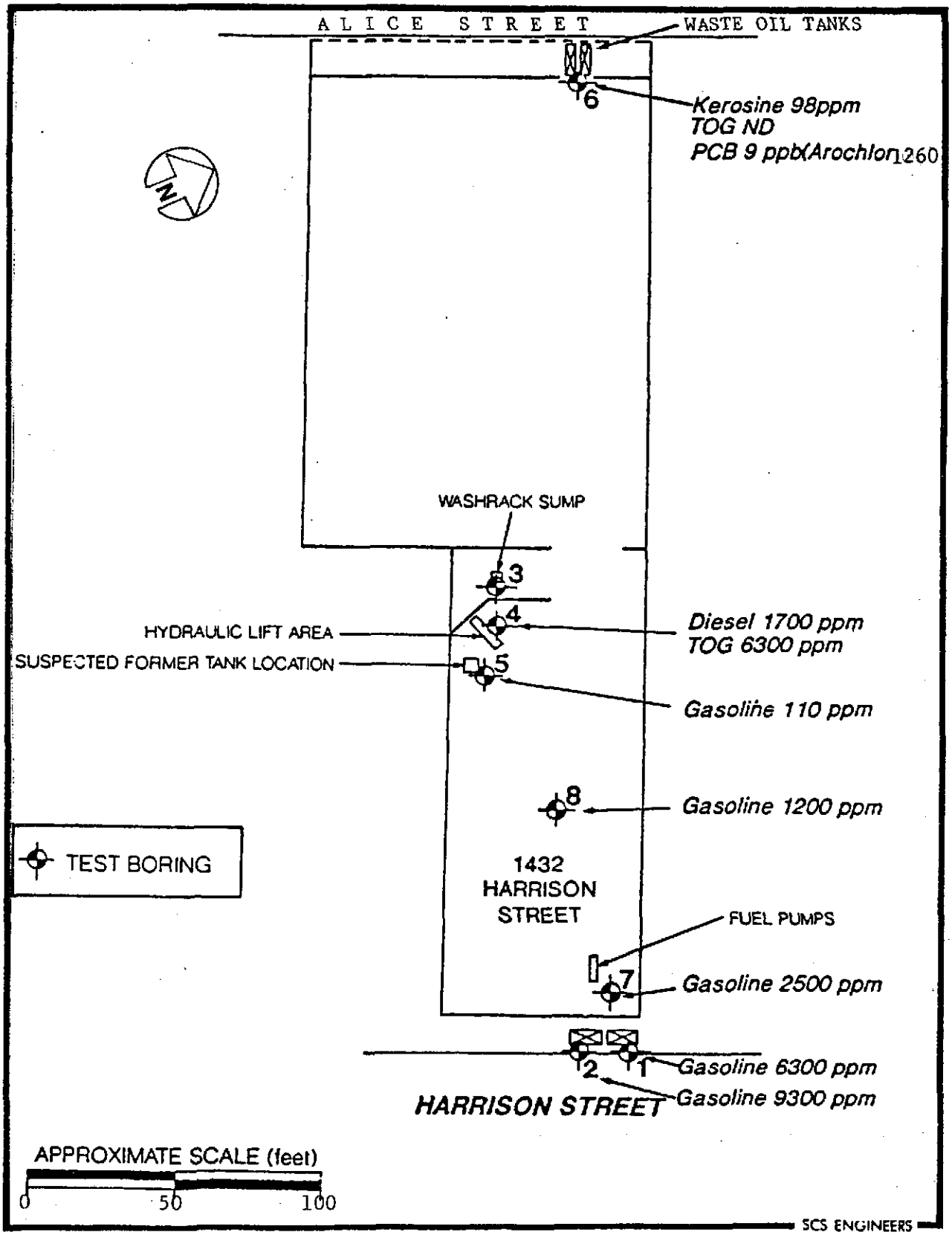
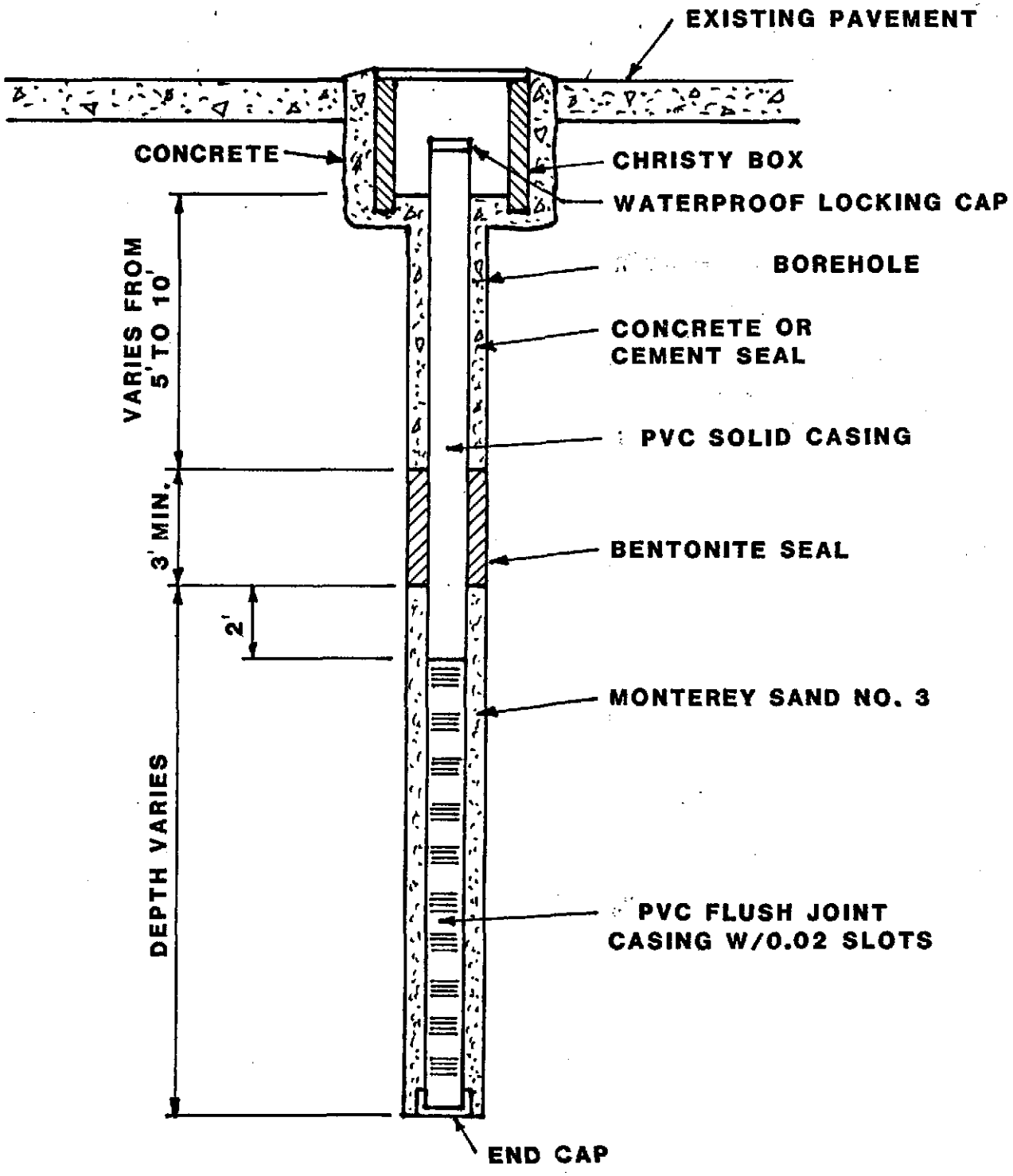


PLATE 4: RESULTS FROM SUBSURFACE CONSULTANTS

GROUNDWATER MONITORING WELL



NOT TO SCALE

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, INC.
6761-D SIERRA COURT
DUBLIN, CA 94568

1432 HARRISON STREET, MONITORING WELL

Project No.

Date:

Plate 5

CHAIN OF CUSTODY RECORD

SCS ANALYTICAL LABORATORY
2860 WALNUT AVENUE
LONG BEACH, CALIFORNIA 90806
(213) 595-9324
Fax (213) 595-6709

PERSONNEL

Name (signature) _____

Name (print) _____

Company _____

Address _____

City, State, Zip _____

Telephone _____

SITE INFORMATION

Job Name _____

Job Number _____

Sample Location _____

_____

_____

P.O. Number _____

Relinquished by (Signature)	Received by (Signature)	Date	Time
Relinquished by (Signature)	Received by (Signature)	Date	Time

Analysis laboratory should complete "sample cond. upon receipt" section below, sign, and return copy to Shipper

Sample Number	Sample Type	No. of Cont.	Site Identification	Date Sampled	Analysis Requested	Sample Cond. Upon Receipt

Remarks: _____

_____

PLATE 6: 1432 HARRISON STREET, CHAIN OF CUSTODY

Department of Health Services
Toxic Substances Control Division
Sacramento, California

Form Approved OMB No. 2050—0039 (Expires 9-30-81)

Please print or type. (Form designed for use on elite (12-pitch typewriter).

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CA0000511951 — Manifest Document No. 200001

2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
A. BACHARACH & B. BORSUK
87 Rico Way
San Francisco, CA 94123

4. Generator's Phone (415) 922-4740

A. State Manifest Document Number 89618164

B. State Generator's ID

5. Transporter 1 Company Name: FALCON ENERGY ASSOCIATES — 6. US EPA ID Number: CAD982526857

C. State Transporter's ID: CA 2463

D. Transporter's Phone: (209) 463-7108

7. Transporter 2 Company Name: C.O.R.I. dba Evergreen Environmental Svc — 8. US EPA ID Number: CAD980695761

E. State Transporter's ID

F. Transporter's Phone: (800) 972-5284

9. Designated Facility Name and Site Address: EVERGREEN ENVIRONMENTAL SERVICES, 6880 Smith Avenue, Newark, CA 94560 — 10. US EPA ID Number: CAD980695761

G. State Facility's ID: CAD980695761

H. Facility's Phone: (800) 972-5284

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste No.
a. Waste Petroleum Oil, N.O.S., Combustible Liquid, NA 1270	001	TT	1500	G	State CA 221 / EPA/Other Non-RCRA
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above: Waste oil tested at LT 1000 ppm chlorides.

K. Handling Codes for Wastes Listed Above: a. 14 b. c. d.

15. Special Handling Instructions and Additional Information: Wear protective clothing.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR — Printed/Typed Name: BARBARA BORSK — Signature: Barbara Borsuk — Month Day Year: 10 27 90

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials — Printed/Typed Name: Brian Mannix — Signature: Brian Mannix — Month Day Year: 11 02 90

18. Transporter 2 Acknowledgement of Receipt of Materials — Printed/Typed Name: Joseph Eric Limal — Signature: Joseph Eric Limal — Month Day Year: 11 02 90

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19. — Printed/Typed Name: Joseph Eric Limal — Signature: Joseph Eric Limal — Month Day Year: 11 02 90

Do Not Write Below This Line

DHS 8022 A (1/88)
EPA 8700—22
(Rev. 9-86) Previous editions are obsolete.

GREEN: HAULER RETAINS

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

89618164

SCS ENGINEERS

PLATE 7: 1432 HARRISON STREET , OAKLAND, HAZARDOUS WASTE MANIFEST

APPENDIX I

Site Safety Plan

SITE HEALTH AND SAFETY PLAN FOR UNDERGROUND STORAGE TANK INSPECTIONS

The following is a generic site health and safety plan for underground storage tank inspections. As indicated throughout the plan, selected sections should only be filled out by people with technical expertise in health and safety issues. In addition, State organizations using this plan should set up a system to ensure that: (1) the plan is used properly and (2) staff follow proper safety procedures.

PART I

Part I (Sections I-IV) should be completed by the UST inspector prior to the site visit.

SECTION I. GENERAL SITE INFORMATION

SITE NAME AND ADDRESS: Oakland Parking Garage
1432 Harrison Street
Oakland, CA 94612

CONTACT PERSON AND PHONE NUMBER:
John P. Cummings
SCS Engineers (415) 829-0661

SITE IDENTIFICATION NUMBER: NA

PROPOSED DATE(S) OF SITE WORK: February - April 1991

SECTION II. DESCRIPTION OF INSPECTION ACTIVITY

PURPOSE OF ACTIVITY:

New Tank Installation	( )
Tank Closure	( )
Tank/Pipe Removal	( )
Tank/Pipe Disposal	( )
Petroleum Release Investigation	(X)
Tank/Pipe Repair	( )
Leak Detection Testing	( )
Installation of Monitor Wells/Sampling	(X)

PROVIDE A BRIEF NARRATIVE DESCRIPTION OF THE PROPOSED INSPECTION ACTIVITIES:

Drilling and installation of at least 13 monitoring wells. At least 9 wells will be inside an existing structure and 3 of the wells will be in an enclosed area with possible poor ventillation. Collection of soil and groundwater samples with probable hydrocarbon contamination.

SECTION III. SPECIFIC SITE INFORMATION

SPECIFIC TANK SYSTEM INFORMATION: Four known underground storage tanks, one reservoir for hydraulic fluid.

Age/Size/Capacity of Tanks and Piping:

Contents of Tank: 2 gasoline storage tanks
2 waste oil tanks

Other (Specify):

TYPE OF SITE

CHECK ALL APPROPRIATE:

X Active
__Inactive
__Industrial facility
X Gas station
__TSDF
__R & D Facility
__Military base
X Other (Specify) existing parking garage

RELEASE HISTORY

No evidence of leaks or soil contamination ( )

Suspected or known leaks and soil contamination (X)

Known groundwater contamination ( )

BACKGROUND AND DESCRIPTION OF ANY PREVIOUS INVESTIGATIONS OR INCIDENCE:

Previous investigations consisted of soil borings and soil sampling at selected locations.

BACKGROUND INFORMATION STATUS: ( ) COMPLETE (X) INCOMPLETE

SECTION IV. POTENTIAL HEALTH AND SAFETY HAZARDS

ANTICIPATED PHYSICAL HAZARDS OF CONCERN: (CHECK ALL THAT APPLY AND DESCRIBE)

__Heat (high ambient temp.)
__Cold
_X_ Noise
_X_ Oxygen depletion
___Asphyxiation

___ Excavation
___Cave-ins
___Falls, trips, slipping

__Handling and transfer of petroleum products
___Fire
___Explosions

_X_ Heavy equipment
_X_ Physical injury and trauma resulting from moving machinery

___General construction
___Physical injury and trauma
___Electrical Hazards

_X_ Confined space entry
___Explosions

___Other (Specify)

ANTICIPATED BIOLOGICAL HAZARDS: (LIST BELOW) NA

__Snakes
__Insects
__Rodents
__Poisonous plants
__Other

NARRATIVE: (Provide all information which could impact Health and Safety – e.g., power lines, integrity of dikes, terrain, etc.)

Outside wells - in vicinity of underground utilities; USA to be notified prior to drilling.

Interior wells - care must be taken to avoid possible live overhead electrical cables; may need to arrange for ventilation in enclosed areas.

ANTICIPATED CHEMICAL HAZARDS: (LIST BELOW ALL CHEMICALS PRESENT ON SITE; ATTACH MATERIAL SAFETY DATA SHEETS-MSDS)

1. Gasoline
2. Benzene
3. Toluene
4. Xylene
5. Ethylbenzene
6. Kerosene
7. Diesel Fuel
8. Polychlorinated Biphenyl (Arochlor 1260)
9.
10.

PART II

Section V should only be completed by persons with technical expertise in health and safety.

SECTION V. EVALUATION OF POTENTIAL HAZARDS

" To Be Completed If Appropriate "

CHEMICALS OF CONCERN

Chemical	Highest Observable Concentration (media)	PEL/ TLV	IDLH	Symptoms/ Effects of Acute Exposure

PART III

Sections VI and VII should be completed by the UST Inspector prior to the site visit.

SECTION VI. METHODS TO CONTROL POTENTIAL HEALTH AND SAFETY HAZARDS

MONITORING INSTRUMENTATION: (NOTE: MONITORING INSTRUMENTS MUST BE USED FOR ALL OPERATIONS UNLESS APPROPRIATE RATIONALE OR RESTRICTIONS ARE PROVIDED).

__X__ Organic Vapor Analyzer

____ Photoionization Detector

__X__ Combustible Gas Indicator (CGI)

__X__ Oxygen Meter

____ Hydrogen Sulfide Meter

____ Detector Tubes (specify)

____ Other, specify (toxic gas, air sampling pumps, etc.)

IF MONITORING INSTRUMENTS ARE NOT USED, SPECIFY RATIONALE OR JUSTIFICATION OR ACTIVITY/AREA RESTRICTIONS.

NA

ACTION LEVELS (breathing zone):

Combustible Gas Indicator

0 - 10%	LEL	No Explosion Hazard
10 -25%	LEL	Potential Explosion Hazard; Notify Site Health and Safety Officer
>25%	LEL	Explosion Hazard; Interrupt Task/Evacuate

ACTION LEVELS (breathing zone): continued

Oxygen Meter

<21.0%	O_2	Oxygen Normal
<21.0%	O_2	Oxygen Deficient; Notify Site Health and Safety Officer
<19.5%	O_2	Oxygen Deficient; Interrupt Task/Evacuate

Photoionization Detector — Specify: NA

( ) 11.7 ev
( ) 10.2 ev
( ) 9.8 ev

Type:

Flame Ionization Detector — Specify: NA

Type:

Detector Tubes — Specify: NA

Type

Type

Type

PERSONAL PROTECTIVE EQUIPMENT: List all applicable items

Minimum personal protective equipment:

1. Hardhat
2. Safety glasses/goggles
3. Steel toed/shank shoes or boots
4. Flame retardant coveralls
5. Hearing protection (muffs or ear plugs)

Is additional PPE required? (YES) / NO

PERSONAL PROTECTIVE EQUIPMENT continued

Check all additional necessary items:

__Uncoated tyvek coveralls
__Saranex tyvek coveralls
__Rubber boots
__Overboots
X Surgical (inner) gloves
X Butyl/neoprene/viton/nitrile outer gloves

X Full face respirators standby
type of cartridge:__
__SCBA / SAR
__ELSAs
__Other (specify):

VII. EMERGENCY INFORMATION

Emergency Contact:

Fire/Rescue: 911

Ambulance: 911

Police: 911

Hazardous Waste Material Response Units 911

Health and Safety Director: Mr. THOMAS D. WETHERILL

Poison Control Center:

On-site medical facility (clinic): YES / (NO)

Facility health and safety officer: YES / (NO)

Name:

Phone number:

Hospital Name and Address: Peralta Hospital
450 - 30th Street, Oakland

Directions to hospital (include a map): 14th St. to Telegraph, north (right) to 30th St., left on 30th, hospital on left.

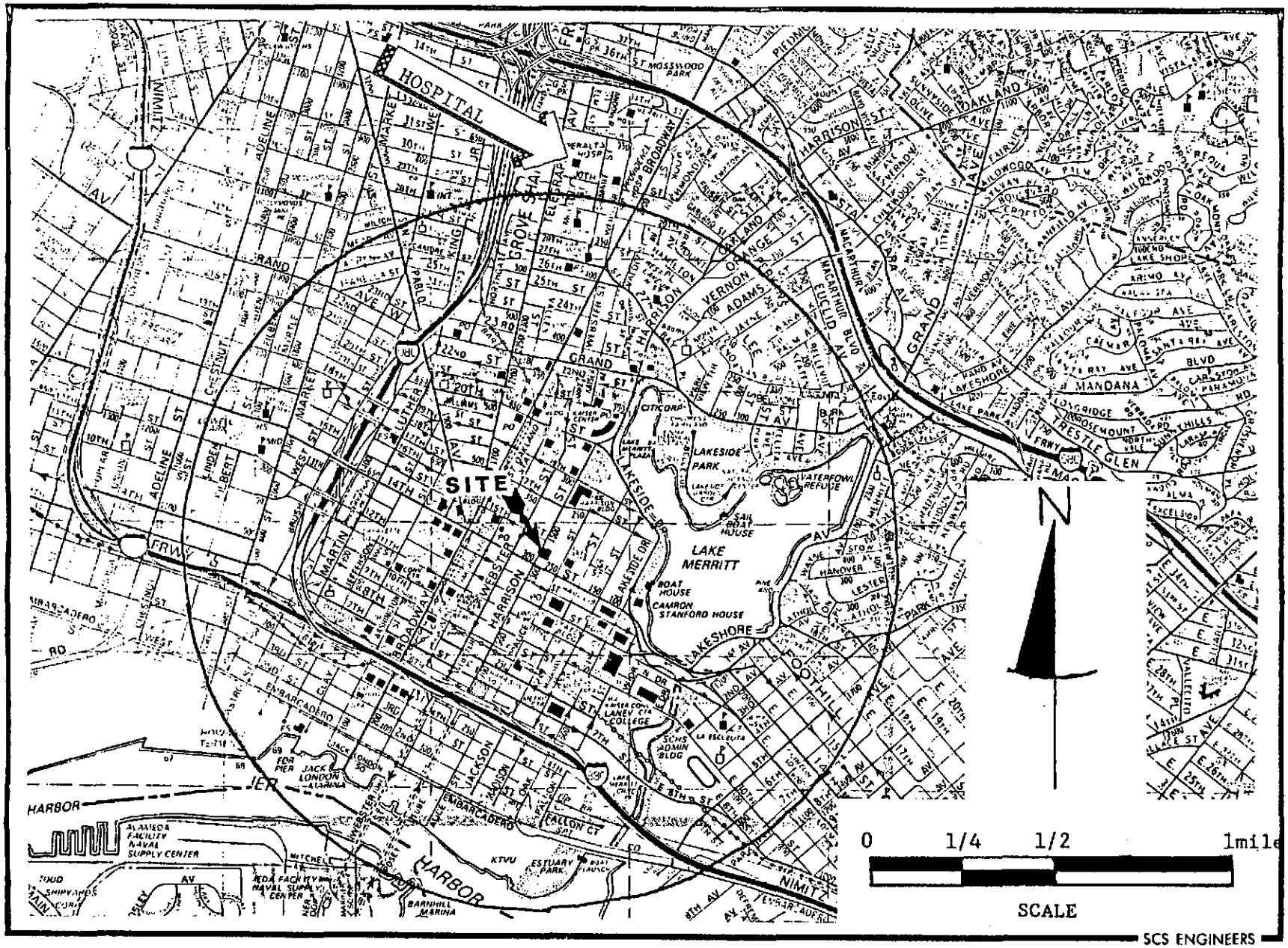
PART IV

SECTION VIII. PLAN APPROVAL

Plan prepared by: SCS ENGINEERS 2/15/91 (Date)

Plan approved by: [signature] 2/19/91 (Date)

Plan approved by: [signature] 2/12/91 (Date)



SCS ENGINEERS

SITE SAFETY PLAN : HOSPITAL ROUTE

GASOLINES: AUTOMOTIVE (<4.23g lead/gal)

GAT

Common Synonyms	Watery liquid	Colorless to pale brown or pink	Gasoline odor
Motor spirit Petrol	Floats on water. Flammable, irritating vapor is produced.		

Stop discharge if possible. Keep people away.
Shut off ignition sources and call fire department.
Stay upwind and use water spray to "knock down" vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE.
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
Extinguish with dry chemical, foam, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
If inhaled, will cause dizziness, headache, difficult breathing or loss of consciousness.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Irritating to skin and eyes.
If swallowed, will cause nausea or vomiting.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
DO NOT INDUCE VOMITING.

Water Pollution

HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
Fouling to shoreline.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Issue warning-high flammability
Evacuate area
Disperse and flush

2. LABEL

2.1 Category: Flammable liquid
2.2 Class: 3

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Miscellaneous Hydrocarbon Mixtures
3.2 Formula: (Mixture of hydrocarbons)
3.3 IMO/UN Designation: 3.1/1203
3.4 DOT ID No.: 1203
3.5 CAS Registry No.: Data not available

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Colorless to brown
4.3 Odor: Gasoline

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Protective goggles, gloves.
5.2 Symptoms Following Exposure: Irritation of mucous membranes and stimulation followed by depression of central nervous system. Breathing of vapor may also cause dizziness, headache, and incoordination or, in more severe cases, anesthesia, coma, and respiratory arrest. If liquid enters lungs, it will cause severe irritation, coughing, gagging, pulmonary edema, and, later, signs of bronchopneumonia and pneumonitis. Swallowing may cause irregular heartbeat.
5.3 Treatment of Exposure: INHALATION: maintain respiration and administer oxygen; enforce bed rest if liquid is in lungs. INGESTION: do NOT induce vomiting; stomach should be lavaged (by doctor) if appreciable quantity is swallowed. EYES: wash with copious quantity of water. SKIN: wipe off and wash with soap and water.
5.4 Threshold Limit Value: 300 ppm
5.5 Short Term Inhalation Limits: 500 ppm for 30 min.
5.6 Toxicity by Ingestion: Grade 2; LD_{50} = 0.5 to 5 g/kg.
5.7 Late Toxicity: None
5.8 Vapor (Gas) Irritant Characteristics: Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.
5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 Odor Threshold: 0.25 ppm
5.11 IDLH Value: Data not available

6. FIRE HAZARDS

6.1 Flash Point: −36°F C.C.
6.2 Flammable Limits in Air: 1.4%-7.4%
6.3 Fire Extinguishing Agents: Foam, carbon dioxide, dry chemical
6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective
6.5 Special Hazards of Combustion Products: None
6.6 Behavior in Fire: Vapor is heavier than air and may travel considerable distance to a source of ignition and flash back.
6.7 Ignition Temperature: 853°F
6.8 Electrical Hazard: Class I, Group D
6.9 Burning Rate: 4 mm/min.
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 33

8. WATER POLLUTION

8.1 Aquatic Toxicity:
90 ppm/24 hr/juvenile American shad/TL_m/fresh water
91 mg/l/24 hr/juvenile American shad/TL_m/salt water
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): 8%, 5 days
8.4 Food Chain Concentration Potential: None

9. SHIPPING INFORMATION

9.1 Grades of Purity: Various octane ratings; military specifications
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Open (flame arrester) or pressure-vacuum

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

A-T-U-V-W

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Flammable liquid
11.2 NAS Hazard Rating for Bulk Water Transportation:

Category	Rating
Fire	3
Health	
Vapor irritant	1
Liquid or Solid Irritant	1
Poisons	2
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	2
Aesthetic Effect	2
Reactivity	
Other Chemicals	0
Water	0
Self Reaction	0

11.3 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue)	1
Flammability (Red)	3
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 15°C and 1 atm: Liquid
12.2 Molecular Weight: Not pertinent
12.3 Boiling Point at 1 atm:
140—390°F
= 60—199°C = 333—472°K
12.4 Freezing Point: Not pertinent
12.5 Critical Temperature: Not pertinent
12.6 Critical Pressure: Not pertinent
12.7 Specific Gravity:
0.7321 at 20°C (liquid)
12.8 Liquid Surface Tension:
19-23 dynes/cm
= 0.019—0.023 N/m at 20°C
12.9 Liquid Water Interfacial Tension:
49-51 dynes/cm
= 0.049—0.051 N/m at 20°C
12.10 Vapor (Gas) Specific Gravity: 3.4
12.11 Ratio of Specific Heats of Vapor (Gas):
(est) 1.054
12.12 Latent Heat of Vaporization:
130—150 Btu/lb = 71—81 cal/g
= 3.0 — 3.4 X 10^5 J/kg
12.13 Heat of Combustion: −18,720 Btu/lb
= −10,400 cal/g = 435.1 X 10^5 J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: Data not available
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: 7.4 psia

NOTES

BENZENE

BNZ

Common Synonyms	Watery liquid	Colorless	Gasoline-like odor
Benzol Benzole	Floats on water. Flammable, irritating vapor is produced. Freezing point is 42°F.		

Avoid contact with liquid and vapor. Keep people away.
Wear goggles and self-contained breathing apparatus.
Shut off ignition sources and call fire department.
Stop discharge if possible.
Stay upwind and use water spray to "knock down" vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE.
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.

Wear goggles and self-contained breathing apparatus.
Extinguish with dry chemical, foam, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.
VAPOR
Irritating to eyes, nose and throat.
If inhaled, will cause headache, difficult breathing, or loss of consciousness.

Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.
LIQUID
Irritating to skin and eyes.
Harmful if swallowed.

Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.

Water Pollution

HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Issue warning-high flammability
Restrict access

2. LABEL

2.1 **Category:** Flammable liquid
2.2 **Class:** 3

3. CHEMICAL DESIGNATIONS

3.1 **CG Compatibility Class:** Aromatic Hydrocarbon
3.2 **Formula:** C_6H_6
3.3 **IMO/UN Designation:** 3.2/1114
3.4 **DOT ID No.:** 1114
3.5 **CAS Registry No.:** 71-43-2

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid
4.2 **Color:** Colorless
4.3 **Odor:** Aromatic; rather pleasant aromatic odor; characteristic odor

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Hydrocarbon vapor canister, supplied air or a hose mask; hydrocarbon-insoluble rubber or plastic gloves; chemical goggles or face splash shield; hydrocarbon-insoluble apron such as neoprene.
5.2 **Symptoms Following Exposure:** Dizziness, excitation, pallor, followed by flushing, weakness, headache, breathlessness, chest constriction, coma and possible death.
5.3 **Treatment of Exposure:** SKIN: flush with water followed by soap and water; remove contaminated clothing and wash skin. EYES: flush with plenty of water until irritation subsides. INHALATION: remove from exposure immediately. Call a physician. IF breathing is irregular or stopped, start resuscitation, administer oxygen.
5.4 **Threshold Limit Value:** 10 ppm
5.5 **Short Term Inhalation Limits:** 75 ppm for 30 min.
5.6 **Toxicity by Ingestion:** Grade 3; LD_{50} = 50 to 500 mg/kg
5.7 **Late Toxicity:** Leukemia
5.8 **Vapor (Gas) Irritant Characteristics:** If present in high concentrations, vapors may cause irritation of eyes or respiratory system. The effect is temporary.
5.9 **Liquid or Solid Irritant Characteristics:** Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 **Odor Threshold:** 4.68 ppm
5.11 **IDLH Value:** 2,000 ppm

6. FIRE HAZARDS

6.1 **Flash Point:** 12°F C.C.
6.2 **Flammable Limits in Air:** 1.3%-7.9%
6.3 **Fire Extinguishing Agents:** Dry chemical, foam, or carbon dioxide
6.4 **Fire Extinguishing Agents Not to be Used:** Water may be ineffective
6.5 **Special Hazards of Combustion Products:** Not pertinent
6.6 **Behavior in Fire:** Vapor is heavier than air and may travel considerable distance to a source of ignition and flash back
6.7 **Ignition Temperature:** 1097°F
6.8 **Electrical Hazard:** Class I, Group D
6.9 **Burning Rate:** 6.0 mm/min.
6.10 **Adiabatic Flame Temperature:** Data not available
6.11 **Stoichiometric Air to Fuel Ratio:** Data not available
6.12 **Flame Temperature:** Data not available

7. CHEMICAL REACTIVITY

7.1 **Reactivity With Water:** No reaction
7.2 **Reactivity with Common Materials:** No reaction
7.3 **Stability During Transport:** Stable
7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
7.5 **Polymerization:** Not pertinent
7.6 **Inhibitor of Polymerization:** Not pertinent
7.7 **Molar Ratio (Reactant to Product):** Data not available
7.8 **Reactivity Group:** 32

8. WATER POLLUTION

8.1 **Aquatic Toxicity:**
5 ppm/6 hr/minnow/lethal/distilled water
20 ppm/24 hr/sunfish/TL_m/tap water
8.2 **Waterfowl Toxicity:** Data not available
8.3 **Biological Oxygen Demand (BOD):** 1.2 lb/lb, 10 days
8.4 **Food Chain Concentration Potential:** None

9. SHIPPING INFORMATION

9.1 **Grades of Purity:**
Industrial pure .....99+ %
Thiophene-free .....99+ %
Nitration .....99+ %
Industrial 80% .....85+ %
Reagent ..... 99+ %
9.2 **Storage Temperature:** Open
9.3 **Inert Atmosphere:** No requirement
9.4 **Venting:** Pressure-vacuum

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

A-T-U-V-W

11. HAZARD CLASSIFICATIONS

11.1 **Code of Federal Regulations:** Flammable liquid
11.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	3
Health	
Vapor Irritant	1
Liquid or Solid Irritant	1
Poisons	3
Water Pollution	
Human Toxicity	3
Aquatic Toxicity	1
Aesthetic Effect	3
Reactivity	
Other Chemicals	2
Water	1
Self Reaction	0

11.3 **NFPA Hazard Classification:**

Category	Classification
Health Hazard (Blue)	2
Flammability (Red)	3
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 **Physical State at 15°C and 1 atm:** Liquid
12.2 **Molecular Weight:** 78.11
12.3 **Boiling Point at 1 atm:** 176°F = 80.1°C = 353.3°K
12.4 **Freezing Point:** 42.0°F = 5.5°C = 278.7°K
12.5 **Critical Temperature:** 552.0°F = 288.9°C = 562.1°K
12.6 **Critical Pressure:** 710 psia = 48.3 atm = 4.89 MN/m²
12.7 **Specific Gravity:** 0.879 at 20°C (liquid)
12.8 **Liquid Surface Tension:** 28.9 dynes/cm = 0.0289 N/m at 20°C
12.9 **Liquid Water Interfacial Tension:** 35.0 dynes/cm = 0.035 N/m at 20°C
12.10 **Vapor (Gas) Specific Gravity:** 2.7
12.11 **Ratio of Specific Heats of Vapor (Gas):** 1.061
12.12 **Latent Heat of Vaporization:** 169 Btu/lb = 94.1 cal/g = 3.94×10^5 J/kg
12.13 **Heat of Combustion:** −17,460 Btu/lb = −9698 cal/g = -406.0×10^5 J/kg
12.14 **Heat of Decomposition:** Not pertinent
12.15 **Heat of Solution:** Not pertinent
12.16 **Heat of Polymerization:** Not pertinent
12.25 **Heat of Fusion:** 30.45 cal/g
12.26 **Limiting Value:** Data not available
12.27 **Reid Vapor Pressure:** 3.22 psia

NOTES

TOLUENE

TOL

Common Synonyms	Watery liquid	Colorless	Pleasant odor
Toluol Methylbenzene Methylbenzol	Floats on water. Flammable, irritating vapor is produced.		

Stop discharge if possible. Keep people away.
Shut off ignition sources and call fire department.
Stay upwind and use water spray to "knock down" vapor.
Avoid contact with liquid and vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE.
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
Wear goggles and self-contained breathing apparatus.
Extinguish with dry chemical, foam, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
If inhaled, will cause nausea, vomiting, headache, dizziness, difficult breathing, or loss of consciousness.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing difficult, give oxygen.

LIQUID
Irritating to skin and eyes.
If swallowed, will cause nausea, vomiting or loss of consciousness.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
If IN EYES, hold eyelids open and flush with plenty of water.
If SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
DO NOT INDUCE VOMITING.

Water Pollution

Dangerous to aquatic life in high concentrations.
Fouling to shoreline.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Issue warning-high flammability
Evacuate area

2. LABEL

2.1 Category: Flammable liquid
2.2 Class: 3

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Aromatic Hydrocarbon
3.2 Formula: $C_6H_5CH_3$
3.3 IMO/UN Designation: 3.2/1294
3.4 DOT ID No.: 1294
3.5 CAS Registry No.: 108-88-3

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Colorless
4.3 Odor: Pungent, aromatic, benzene-like; distinct, pleasant

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Air-supplied mask, goggles or face shield; plastic gloves.
5.2 Symptoms Following Exposure: Vapors irritate eyes and upper respiratory tract; cause dizziness, headache, anesthesia, respiratory arrest. Liquid irritates eyes and causes drying of skin. If aspirated, causes coughing, gagging, distress, and rapidly developing pulmonary edema. If ingested causes vomiting, griping, diarrhea, depressed respiration.
5.3 Treatment of Exposure: INHALATION: remove to fresh air, give artificial respiration and oxygen if needed; call a doctor. INGESTION: do NOT induce vomiting; call a doctor. EYES: flush with water for at least 15 min. SKIN: wipe off, wash with soap and water.
5.4 Threshold Limit Value: 100 ppm
5.5 Short Term Inhalation Limits: 600 ppm for 30 min.
5.6 Toxicity by Ingestion: Grade 2; LD_{50} = 0.5 to 5 g/kg
5.7 Late Toxicity: Kidney and liver damage may follow ingestion.
5.8 Vapor (Gas) Irritant Characteristics: Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.
5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 Odor Threshold: 0.17 ppm
5.11 IDLH Value: 2,000 ppm

6. FIRE HAZARDS

6.1 Flash Point: 40°F C.C.; 55°F O.C.
6.2 Flammable Limits in Air: 1.27%-7%
6.3 Fire Extinguishing Agents: Carbon dioxide or dry chemical for small fires, ordinary foam for large fires.
6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective
6.5 Special Hazards of Combustion Products: Not pertinent
6.6 Behavior in Fire: Vapor is heavier than air and may travel a considerable distance to a source of ignition and flash back.
6.7 Ignition Temperature: 997°F
6.8 Electrical Hazard: Class I, Group D
6.9 Burning Rate: 5.7 mm/min.
6.10 Adiabatic Flame Temperature: Data not available

(Continued)

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 32

8. WATER POLLUTION

8.1 Aquatic Toxicity: 1180 mg/l/96 hr/sunfish/TL_m/fresh water
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): 0%, 5 days; 38% (theor), 8 days
8.4 Food Chain Concentration Potential: None

9. SHIPPING INFORMATION

9.1 Grades of Purity: Research, reagent, nitration-at 99.8 + %; industrial: contains 94 + %, with 5% xylene and small amounts of benzene and nonaromatic hydrocarbons; 90/120: less pure than industrial.
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Open (flame arrester) or pressure-vacuum

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

A-T-U

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Flammable liquid
11.2 NAS Hazard Rating for Bulk Water Transportation:

Category	Rating
Fire	3
Health	
Vapor Irritant	1
Liquid or Solid Irritant	1
Poisons	2
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	3
Aesthetic Effect	2
Reactivity	
Other Chemicals	1
Water	0
Self Reaction	0

11.3 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue)	2
Flammability (Red)	3
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 15°C and 1 atm: Liquid
12.2 Molecular Weight: 92.14
12.3 Boiling Point at 1 atm: 231.1°F = 110.6°C = 383.8°K
12.4 Freezing Point: −139°F = −95.0°C = 178.2°K
12.5 Critical Temperature: 605.4°F = 318.6°C = 591.8°K
12.6 Critical Pressure: 596.1 psia = 40.55 atm = 4.108 MN/m²
12.7 Specific Gravity: 0.867 at 20°C (liquid)
12.8 Liquid Surface Tension: 29.0 dynes/cm = 0.0290 N/m at 20°C
12.9 Liquid Water Interfacial Tension: 36.1 dynes/cm = 0.0361 N/m at 25°C
12.10 Vapor (Gas) Specific Gravity: Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): 1.089
12.12 Latent Heat of Vaporization: 155 Btu/lb = 86.1 cal/g = 3.61 X 10⁵ J/kg
12.13 Heat of Combustion: −17,430 Btu/lb = −9686 cal/g = −405.5 X 10⁵ J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: 17.17 cal/g
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: 1.1 psia

6. FIRE HAZARDS (Continued)

6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

m-XYLENE

XLM

Common Synonyms	Watery liquid	Colorless	Sweet odor
1, 3-Dimethylbenzene Xylol	Floats on water. Flammable, irritating vapor is produced.		

Stop discharge if possible. Keep people away.
Call fire department.
Avoid contact with liquid and vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
Wear self-contained breathing apparatus.
Extinguish with foam, dry chemical, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose, and throat.
If inhaled, will cause headache, difficult breathing, or loss of consciousness.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Irritating to skin and eyes.
If swallowed, will cause nausea, vomiting, or loss of consciousness.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
DO NOT INDUCE VOMITING.

Water Pollution

HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
Fouling to shoreline.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Issue warning-high flammability
Evacuate area
Should be removed
Chemical and physical treatment

2. LABEL

2.1 **Category:** Flammable liquid
2.2 **Class:** 3

3. CHEMICAL DESIGNATIONS

3.1 **CG Compatibility Class:** Aromatic Hydrocarbon
3.2 **Formula:** m-$C_6H_4(CH_3)_2$
3.3 **IMO/UN Designation:** 3.2/1307
3.4 **DOT ID No.:** 1307
3.5 **CAS Registry No.:** 108-38-3

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid
4.2 **Color:** Colorless
4.3 **Odor:** Like benzene; characteristic aromatic

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Approved canister or air-supplied mask; goggles or face shield; plastic gloves and boots.
5.2 **Symptoms Following Exposure:** Vapors cause headache and dizziness. Liquid irritates eyes and skin. If taken into lungs, causes severe coughing, distress, and rapidly developing pulmonary edema. If ingested, causes nausea, vomiting, cramps, headache, and coma; can be fatal. Kidney and liver damage can occur.
5.3 **Treatment of Exposure:** INHALATION: remove to fresh air, administer artificial respiration and oxygen if required; call a doctor. INGESTION: do NOT induce vomiting; call a doctor. EYES: flush with water for at least 15 min. SKIN: wipe off, wash with soap and water.
5.4 **Threshold Limit Value:** 100 ppm
5.5 **Short Term Inhalation Limits:** 300 ppm for 30 min.
5.6 **Toxicity by Ingestion:** Grade 3; LD_{50} = 50 to 500 g/kg
5.7 **Late Toxicity:** Kidney and liver damage.
5.8 **Vapor (Gas) Irritant Characteristics:** Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.
5.9 **Liquid or Solid Irritant Characteristics:** Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 **Odor Threshold:** 0.05 ppm
5.11 **IDLH Value:** 10,000 ppm

6. FIRE HAZARDS

6.1 **Flash Point:** 84°F C.C.
6.2 **Flammable Limits in Air:** 1.1%-6.4%
6.3 **Fire Extinguishing Agents:** Foam, dry chemical, or carbon dioxide
6.4 **Fire Extinguishing Agents Not to be Used:** Water may be ineffective.
6.5 **Special Hazards of Combustion Products:** Not pertinent
6.6 **Behavior in Fire:** Vapor is heavier than air and may travel considerable distance to a source of ignition and flash back.
6.7 **Ignition Temperature:** 865°F
6.8 **Electrical Hazard:** Class I, Group D
6.9 **Burning Rate:** 5.8 mm/min.
6.10 **Adiabatic Flame Temperature:** Data not available
6.11 **Stoichiometric Air to Fuel Ratio:** Data not available
6.12 **Flame Temperature:** Data not available

7. CHEMICAL REACTIVITY

7.1 **Reactivity With Water:** No reaction
7.2 **Reactivity with Common Materials:** No reaction
7.3 **Stability During Transport:** Stable
7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
7.5 **Polymerization:** Not pertinent
7.6 **Inhibitor of Polymerization:** Not pertinent
7.7 **Molar Ratio (Reactant to Product):** Data not available
7.8 **Reactivity Group:** 32

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** 22 ppm/96 hr/bluegill/TL_m/fresh water
8.2 **Waterfowl Toxicity:** Data not available
8.3 **Biological Oxygen Demand (BOD):** 0 lb/lb, 5 days; 0% (theor.), 8 days
8.4 **Food Chain Concentration Potential:** Data not available

9. SHIPPING INFORMATION

9.1 **Grades of Purity:** Research: 99.99%; Pure: 99.9%; Technical: 99.2%
9.2 **Storage Temperature:** Ambient
9.3 **Inert Atmosphere:** No requirement
9.4 **Venting:** Open (flame arrester) or pressure-vacuum

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

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11. HAZARD CLASSIFICATIONS

11.1 **Code of Federal Regulations:** Flammable liquid
11.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	3
Health	
Vapor Irritant	1
Liquid or Solid Irritant	1
Poisons	2
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	3
Aesthetic Effect	2
Reactivity	
Other Chemicals	1
Water	0
Self Reaction	0

11.3 **NFPA Hazard Classification:**

Category	Classification
Health Hazard (Blue)	2
Flammability (Red)	3
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 **Physical State at 15°C and 1 atm:** Liquid
12.2 **Molecular Weight:** 106.16
12.3 **Boiling Point at 1 atm:** 269.4°F = 131.9°C = 405.1°K
12.4 **Freezing Point:** −54.2°F = −47.9°C = 225.3°K
12.5 **Critical Temperature:** 650.8°F = 343.8°C = 617.0°K
12.6 **Critical Pressure:** 513.8 atm = 34.95 psia = 3.540 MN/m^2
12.7 **Specific Gravity:** 0.864 at 20°C (liquid)
12.8 **Liquid Surface Tension:** 28.6 dynes/cm = 0.0286 N/m at 20°C
12.9 **Liquid Water Interfacial Tension:** 36.4 dynes/cm = 0.0364 N/m at 30°C
12.10 **Vapor (Gas) Specific Gravity:** Not pertinent
12.11 **Ratio of Specific Heats of Vapor (Gas):** 1.071
12.12 **Latent Heat of Vaporization:** 147 Btu/lb = 81.9 cal/g = 3.43×10^5 J/kg
12.13 **Heat of Combustion:** −17,554 Btu/lb = −9752.4 cal/g = -408.31×10^5 J/kg
12.14 **Heat of Decomposition:** Not pertinent
12.15 **Heat of Solution:** Not pertinent
12.16 **Heat of Polymerization:** Not pertinent
12.25 **Heat of Fusion:** 26.01 cal/g
12.26 **Limiting Value:** Data not available
12.27 **Reid Vapor Pressure:** 0.34 psia

NOTES

o-XYLENE

XLO

Common Synonyms	Watery liquid	Colorless	Sweet odor
1, 2-Dimethylbenzene Xylol	Floats on water. Flammable, irritating vapor is produced.		

Stop discharge if possible. Keep people away.
Call fire department.
Avoid contact with liquid and vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
Wear self-contained breathing apparatus.
Extinguish with foam, dry chemical, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
If inhaled, will cause headache, difficult breathing, or loss of consciousness.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Irritating to skin and eyes.
If swallowed, will cause nausea, vomiting, or loss of consciousness.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
DO NOT INDUCE VOMITING.

Water Pollution

Dangerous to aquatic life in high concentrations.
Fouling to shoreline.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Issue warning-high flammability
Evacuate area
Should be removed
Chemical and physical treatment

2. LABEL

2.1 Category: Flammable liquid
2.2 Class: 3

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Aromatic Hydrocarbon
3.2 Formula: o-$C_6H_4(CH_3)_2$
3.3 IMO/UN Designation: 3.2/1307
3.4 DOT ID No.: 1307
3.5 CAS Registry No.: 95-47-6

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Colorless
4.3 Odor: Benzene-like; characteristic aromatic

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Approved canister or air-supplied mask; goggles or face shield; plastic gloves and boots.
5.2 Symptoms Following Exposure: Vapors cause headache and dizziness. Liquid irritates eyes and skin. If taken into lungs, causes severe coughing, distress, and rapidly developing pulmonary edema. If ingested, causes nausea, vomiting, cramps, headache, and coma. Can be fatal. Kidney and liver damage can occur.
5.3 Treatment of Exposure: INHALATION: remove to fresh air; administer artificial respiration and oxygen if required; call a doctor. INGESTION: do NOT induce vomiting; call a doctor. EYES: flush with water for at least 15 min. SKIN: wipe off, wash with soap and water.
5.4 Threshold Limit Value: 100 ppm
5.5 Short Term Inhalation Limits: 300 ppm for 30 min.
5.6 Toxicity by Ingestion: Grade 3; LD_{50} = 50 to 500 mg/kg
5.7 Late Toxicity: Kidney and liver damage.
5.8 Vapor (Gas) Irritant Characteristics: Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.
5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 Odor Threshold: 0.05 ppm
5.11 IDLH Value: 10,000 ppm

6. FIRE HAZARDS

6.1 Flash Point: 63°F C.C.; 75°F O.C.
6.2 Flammable Limits in Air: 1.1%-7.0%
6.3 Fire Extinguishing Agents: Foam, dry chemical, or carbon dioxide
6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective.
6.5 Special Hazards of Combustion Products: Not pertinent
6.6 Behavior in Fire: Vapor is heavier than air and may travel considerable distance to a source of ignition and flash back.
6.7 Ignition Temperature: 869°F
6.8 Electrical Hazard: Class I, Group D
6.9 Burning Rate: 5.8 mm/min.
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 32

8. WATER POLLUTION

8.1 Aquatic Toxicity: > 100 mg/l/96 hr/D. magna/TL_m/fresh water
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): 0 lb/lb. 5 days; 2.5% (theor.), 8 days
8.4 Food Chain Concentration Potential: Data not available

9. SHIPPING INFORMATION

9.1 Grades of Purity: Research: 99.99%; Pure: 99.7%; Commercial: 95+%
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No reaction
9.4 Venting: Open (flame arrester) or pressure-vacuum

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

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11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Flammable liquid
11.2 NAS Hazard Rating for Bulk Water Transportation:

Category	Rating
Fire	3
Health	
Vapor Irritant	1
Liquid or Solid Irritant	1
Poisons	2
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	3
Aesthetic Effect	2
Reactivity	
Other Chemicals	1
Water	0
Self Reaction	0

11.3 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue)	2
Flammability (Red)	3
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 15°C and 1 atm: Liquid
12.2 Molecular Weight: 106.16
12.3 Boiling Point at 1 atm: 291.9°F = 144.4°C = 417.6°K
12.4 Freezing Point: —13.3°F = —25.2°C = 248.0°K
12.5 Critical Temperature: 674.8°F = 357.1°C = 630.3°K
12.6 Critical Pressure: 541.5 atm = 36.64 psia = 3.732 MN/m²
12.7 Specific Gravity: 0.880 at 20°C (liquid)
12.8 Liquid Surface Tension: 30.53 dynes/cm = 0.03053 N/m at 15.5°C
12.9 Liquid Water Interfacial Tension: 36.06 dynes/cm = 0.03606 N/m at 20°C
12.10 Vapor (Gas) Specific Gravity: Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): 1.068
12.12 Latent Heat of Vaporization: 149 Btu/lb = 82.9 cal/g = 3.47 X 10^5 J/kg
12.13 Heat of Combustion: —17,558 Btu/lb = —9754.7 cal/g = —408.41 X 10^5 J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: 30.64 cal/g
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: 0.26 psia

NOTES

p-XYLENE

XLP

Common Synonyms
1, 4-Dimethylbenzene
Xylol

Watery liquid | Colorless | Sweet odor

Floats on water. Flammable, irritating vapor is produced.
Freezing point is 56°F.

Stop discharge if possible. Keep people away.
Call fire department.
Avoid contact with liquid and vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
Wear self-contained breathing apparatus.
Extinguish with foam, dry chemical, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
If inhaled, will cause dizziness, difficult breathing, or loss of consciousness.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Irritating to skin and eyes.
If swallowed, will cause nausea, vomiting, loss of consciousness.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
DO NOT INDUCE VOMITING.

Water Pollution

HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
Fouling to shoreline.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)
Issue warning-high flammability
Evacuate area
Should be removed
Chemical and physical treatment

2. LABEL

2.1 Category: Flammable liquid
2.2 Class: 3

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Aromatic Hydrocarbon
3.2 Formula: p-$C_6H_4(CH_3)_2$
3.3 IMO/UN Designation: 3.2/1307
3.4 DOT ID No.: 1307
3.5 CAS Registry No.: 106-42-3

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Colorless
4.3 Odor: Like benzene; characteristic aromatic

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Approved canister or air-supplied mask; goggles or face shield; plastic gloves and boots.
5.2 Symptoms Following Exposure: Vapors cause headache and dizziness. Liquid irritates eyes and skin. If taken into lungs, causes severe coughing, distress, and rapidly developing pulmonary edema. If ingested, causes nausea, vomiting, cramps, headache, and coma. Can be fatal. Kidney and liver damage can occur.
5.3 Treatment of Exposure: INHALATION: remove to fresh air; administer artificial respiration and oxygen if required; call a doctor. INGESTION: do NOT induce vomiting; call a doctor. EYES: flush with water for at least 15 min. SKIN: wipe off, wash with soap and water.
5.4 Threshold Limit Value: 100 ppm
5.5 Short Term Inhalation Limits: 300 ppm for 30 min.
5.6 Toxicity by Ingestion: Grade 3; LD_{50} = 50 to 500 mg/kg
5.7 Late Toxicity: Kidney and liver damage.
5.8 Vapor (Gas) Irritant Characteristics: Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.
5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 Odor Threshold: 0.05 ppm
5.11 IDLH Value: 10,000 ppm

6. FIRE HAZARDS

6.1 Flash Point: 81°F C.C.
6.2 Flammable Limits in Air: 1.1%-6.6%
6.3 Fire Extinguishing Agents: Foam, dry chemical, or carbon dioxide
6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective.
6.5 Special Hazards of Combustion Products: Not pertinent
6.6 Behavior in Fire: Vapor is heavier than air and may travel considerable distance to a source of ignition and flash back.
6.7 Ignition Temperature: 870°F
6.8 Electrical Hazard: Class I, Group D
6.9 Burning Rate: 5.8 mm/min.
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 32

8. WATER POLLUTION

8.1 Aquatic Toxicity: 22 ppm/96 hr/bluegill/TL_m/fresh water
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): 0 lb/lb in 5 days
8.4 Food Chain Concentration Potential: Data not available

9. SHIPPING INFORMATION

9.1 Grades of Purity: Research: 99.99%; Pure: 99.8%; Technical: 99.0%
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Open (flame arrester) or pressure-vacuum

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)
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11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Flammable liquid
11.2 NAS Hazard Rating for Bulk Water Transportation:

Category	Rating
Fire	3
Health	
Vapor Irritant	1
Liquid or Solid Irritant	1
Poisons	2
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	3
Aesthetic Effect	2
Reactivity	
Other Chemicals	1
Water	0
Self Reaction	0

11.3 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue)	2
Flammability (Red)	3
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 15°C and 1 atm: Liquid
12.2 Molecular Weight: 106.16
12.3 Boiling Point at 1 atm: 280.9°F = 138.3°C = 411.5°K
12.4 Freezing Point: 55.9°F = 13.3°C = 286.5°K
12.5 Critical Temperature: 649.4°F = 343.0°C = 616.2°K
12.6 Critical Pressure: 509.4 atm = 34.65 psia = 3.510 MN/m²
12.7 Specific Gravity: 0.861 at 20°C (liquid)
12.8 Liquid Surface Tension: 28.3 dynes/cm = 0.0283 N/m at 20°C
12.9 Liquid Water Interfacial Tension: 37.6 dynes/cm = 0.0376 N/m at 20°C
12.10 Vapor (Gas) Specific Gravity: Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): 1.071
12.12 Latent Heat of Vaporization: 150 Btu/lb = 81 cal/g = 3.4 X 10^5 J/kg
12.13 Heat of Combustion: −17,559 Btu/lb = −9754.7 cal/g = −408.41 X 10^5 J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: 37.83 cal/g
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: 0.34 psia

NOTES

ETHYLBENZENE

ETB

Common Synonyms	Liquid	Colorless	Sweet, gasoline-like odor
Phenylethane EB	Floats on water. Flammable, irritating vapor is produced.		

Avoid contact with liquid and vapor. Keep people away.
Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves).
Shut off ignition sources and call fire department.
Stop discharge if possible.
Stay upwind and use water spray to "knock down" vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE.
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves).
Extinguish with dry chemical, foam, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
If inhaled, will cause dizziness or difficult breathing.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Will burn skin and eyes.
Harmful if swallowed.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
DO NOT INDUCE VOMITING.

Water Pollution

HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
Fouling to shoreline.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Mechanical containment
Should be removed
Chemical and physical treatment

2. LABEL

2.1 **Category:** Flammable liquid
2.2 **Class:** 3

3. CHEMICAL DESIGNATIONS

3.1 **CG Compatibility Class:** Aromatic hydrocarbon
3.2 **Formula:** $C_6H_5CH_2CH_3$
3.3 **IMO/UN Designation:** 3.3/1175
3.4 **DOT ID No.:** 1175
3.5 **CAS Registry No.:** 100-41-4

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid
4.2 **Color:** Colorless
4.3 **Odor:** Aromatic

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Self-contained breathing apparatus, safety goggles.
5.2 **Symptoms Following Exposure:** Inhalation may cause irritation of nose, dizziness, depression. Moderate irritation of eye with corneal injury possible. Irritates skin and may cause blisters.
5.3 **Treatment of Exposure:** INHALATION: if ill effects occur, remove victim to fresh air, keep him warm and quiet, and get medical help promptly. If breathing stops, give artificial respiration. INGESTION: induce vomiting only upon physician's approval; material in lung may cause chemical pneumonitis. SKIN AND EYES: promptly flush with plenty of water (15 min. for eyes) and get medical attention; remove and wash contaminated clothing before reuse.
5.4 **Threshold Limit Value:** 100 ppm
5.5 **Short Term Inhalation Limits:** 200 ppm for 30 min.
5.6 **Toxicity by Ingestion:** Grade 2; LD_{50} = 0.5 to 5 g/kg (rat)
5.7 **Late Toxicity:** Data not available
5.8 **Vapor (Gas) Irritant Characteristics:** Vapors cause moderate irritation such that personnel will find high concentrations unpleasant. The effect is temporary.
5.9 **Liquid or Solid Irritant Characteristics:** Causes smarting of the skin and first-degree burns on short exposure; may cause secondary burns on long exposure.
5.10 **Odor Threshold:** 140 ppm
5.11 **IDLH Value:** 2,000 ppm

6. FIRE HAZARDS

6.1 **Flash Point:** 80°F O.C.; 59°F C.C.
6.2 **Flammable Limits in Air:** 1.0%-6.7%
6.3 **Fire Extinguishing Agents:** Foam (most effective), water fog, carbon dioxide or dry chemical.
6.4 **Fire Extinguishing Agents Not to be Used:** Not pertinent
6.5 **Special Hazards of Combustion Products:** Irritating vapors are generated when heated.
6.6 **Behavior in Fire:** Vapor is heavier than air and may travel considerable distance to the source of ignition and flash back.
6.7 **Ignition Temperature:** 860°F
6.8 **Electrical Hazard:** Not pertinent
6.9 **Burning Rate:** 5.8 mm/min.
6.10 **Adiabatic Flame Temperature:** Data Not Available

(Continued)

7. CHEMICAL REACTIVITY

7.1 **Reactivity With Water:** No reaction
7.2 **Reactivity with Common Materials:** No reaction
7.3 **Stability During Transport:** Stable
7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
7.5 **Polymerization:** Not pertinent
7.6 **Inhibitor of Polymerization:** Not pertinent
7.7 **Molar Ratio (Reactant to Product):** Data Not Available
7.8 **Reactivity Group:** 32

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** 29 ppm/96 hr/bluegill/TL_m/fresh water
8.2 **Waterfowl Toxicity:** Data not available
8.3 **Biological Oxygen Demand (BOD):** 2.8% (theor.), 5 days
8.4 **Food Chain Concentration Potential:** None

9. SHIPPING INFORMATION

9.1 **Grades of Purity:** Research grade: 99.98%; pure grade: 99.5%; technical grade: 98.0%
9.2 **Storage Temperature:** Ambient
9.3 **Inert Atmosphere:** No requirement
9.4 **Venting:** Open (flame arrester) or pressure-vacuum

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

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11. HAZARD CLASSIFICATIONS

11.1 **Code of Federal Regulations:** Flammable liquid
11.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	3
Health	
Vapor Irritant	2
Liquid or Solid Irritant	2
Poisons	2
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	3
Aesthetic Effect	2
Reactivity	
Other Chemicals	1
Water	0
Self Reaction	0

11.3 **NFPA Hazard Classification:**

Category	Classification
Health Hazard (Blue)	2
Flammability (Red)	3
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 **Physical State at 15°C and 1 atm:** Liquid
12.2 **Molecular Weight:** 106.17
12.3 **Boiling Point at 1 atm:** 277.2°F = 136.2°C = 409.4°K
12.4 **Freezing Point:** −139°F = −95°C = 178°K
12.5 **Critical Temperature:** 651.0°F = 343.9°C = 617.1°K
12.6 **Critical Pressure:** 523 psia = 35.6 atm = 3.61 MN/m²
12.7 **Specific Gravity:** 0.867 at 20°C (liquid)
12.8 **Liquid Surface Tension:** 29.2 dynes/cm = 0.0292 N/m at 20°C
12.9 **Liquid Water Interfacial Tension:** 35.48 dynes/cm = 0.03548 N/m at 20°C
12.10 **Vapor (Gas) Specific Gravity:** Not pertinent
12.11 **Ratio of Specific Heats of Vapor (Gas):** 1.071
12.12 **Latent Heat of Vaporization:** 144 Btu/lb = 80.1 cal/g = 3.35 X 10^5 J/kg
12.13 **Heat of Combustion:** −17,780 Btu/lb = −9877 cal/g = −413.5 X 10^5 J/kg
12.14 **Heat of Decomposition:** Not pertinent
12.15 **Heat of Solution:** Not pertinent
12.16 **Heat of Polymerization:** Not pertinent
12.25 **Heat of Fusion:** Data Not Available
12.26 **Limiting Value:** Data Not Available
12.27 **Reid Vapor Pressure:** 0.4 psia

6. FIRE HAZARDS (Continued)

6.11 **Stoichiometric Air to Fuel Ratio:** Data Not Available
6.12 **Flame Temperature:** Data Not Available

KEROSENE

KRS

Common Synonyms	Watery liquid	Colorless	Fuel oil odor
Illuminating oil Kerosine Range oil Fuel oil No. 1 Jet Fuel: JP-1	Floats on water.		

Stop discharge if possible.
Call fire department.
Avoid contact with liquid.
Isolate and remove discharged material
Notify local health and pollution control agencies.

Fire

Combustible.
Extinguish with dry chemical, foam, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID

LIQUID
Irritating to skin and eyes.
Harmful if swallowed.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
DO NOT INDUCE VOMITING.

Water Pollution

Dangerous to aquatic life in high concentrations.
Fouling to shoreline.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Mechanical containment
Should be removed
Chemical and physical treatment

2. LABEL

2.1 **Category:** None
2.2 **Class:** Not pertinent

3. CHEMICAL DESIGNATIONS

3.1 **CG Compatibility Class:** Miscellaneous Hydrocarbon Mixtures
3.2 **Formula:** C_nH_{2n+2}
3.3 **IMO/UN Designation:** 3.3/1223
3.4 **DOT ID No.:** 1223
3.5 **CAS Registry No.:** 8008-20-6

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid
4.2 **Color:** Colorless to light brown
4.3 **Odor:** Characteristic

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Protective gloves; goggles or face shield.
5.2 **Symptoms Following Exposure:** Vapor causes slight irritation of eyes and nose. Liquid irritates stomach; if taken into lungs, causes coughing, distress, and rapidly developing pulmonary edema.
5.3 **Treatment of Exposure:** ASPIRATION: enforce bed rest; administer oxygen; call a doctor. INGESTION: do NOT induce vomiting; call a doctor. EYES: wash with plenty of water. SKIN: wipe off and wash with soap and water.
5.4 **Threshold Limit Value:** 200 ppm
5.5 **Short Term Inhalation Limits:** 2500 mg/m³ for 60 min.
5.6 **Toxicity by Ingestion:** Grade 1; LD_{50} = 5 to 15 g/kg
5.7 **Late Toxicity:** Data not available
5.8 **Vapor (Gas) Irritant Characteristics:** Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.
5.9 **Liquid or Solid Irritant Characteristics:** Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 **Odor Threshold:** 1 ppm
5.11 **IDLH Value:** Data not available

6. FIRE HAZARDS

6.1 **Flash Point:** 100°F (min.)C.C.
6.2 **Flammable Limits in Air:** 0.7%-5%
6.3 **Fire Extinguishing Agents:** Foam, dry chemical, or carbon dioxide
6.4 **Fire Extinguishing Agents Not to be Used:** Water may be ineffective
6.5 **Special Hazards of Combustion Products:** Not pertinent
6.6 **Behavior in Fire:** Not pertinent
6.7 **Ignition Temperature:** 444°F
6.8 **Electrical Hazard:** Not pertinent
6.9 **Burning Rate:** 4 mm/min.
6.10 **Adiabatic Flame Temperature:** Data not available
6.11 **Stoichiometric Air to Fuel Ratio:** Data not available
6.12 **Flame Temperature:** Data not available

7. CHEMICAL REACTIVITY

7.1 **Reactivity With Water:** No reaction
7.2 **Reactivity with Common Materials:** No reaction
7.3 **Stability During Transport:** Stable
7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
7.5 **Polymerization:** Not pertinent
7.6 **Inhibitor of Polymerization:** Not pertinent
7.7 **Molar Ratio (Reactant to Product):** Data not available
7.8 **Reactivity Group:** 33

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** 2990 ppm/24 hr/bluegill/TL_m/fresh water
8.2 **Waterfowl Toxicity:** Data not available
8.3 **Biological Oxygen Demand (BOD):** 53%, 5 days
8.4 **Food Chain Concentration Potential:** None

9. SHIPPING INFORMATION

9.1 **Grades of Purity:** Light hydrocarbon distillate: 100%
9.2 **Storage Temperature:** Ambient
9.3 **Inert Atmosphere:** No requirement
9.4 **Venting:** Open (flame arrester)

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

A-T-U

11. HAZARD CLASSIFICATIONS

11.1 **Code of Federal Regulations:** Combustible liquid
11.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	2
Health	
Vapor Irritant	1
Liquid or Solid Irritant	1
Poisons	1
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	1
Aesthetic Effect	3
Reactivity	
Other Chemicals	0
Water	0
Self Reaction	0

11.3 **NFPA Hazard Classification:**

Category	Classification
Health Hazard (Blue)	0
Flammability (Red)	2
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 **Physical State at 15°C and 1 atm:** Liquid
12.2 **Molecular Weight:** Not pertinent
12.3 **Boiling Point at 1 atm:** 392-500°F = 200—260°C = 473—533°K
12.4 **Freezing Point:** —50°F = —45.6°C = 227.6°K
12.5 **Critical Temperature:** Not pertinent
12.6 **Critical Pressure:** Not pertinent
12.7 **Specific Gravity:** 0.80 at 15°C (liquid)
12.8 **Liquid Surface Tension:** 23-32 dynes/cm = 0.023-0.032 N/m at 20°C
12.9 **Liquid Water Interfacial Tension:** 47-49 dynes/cm = 0.047-0.049 N/m at 20°C
12.10 **Vapor (Gas) Specific Gravity:** Not pertinent
12.11 **Ratio of Specific Heats of Vapor (Gas):** Not pertinent
12.12 **Latent Heat of Vaporization:** 110 Btu/lb = 60 cal/g = 2.5×10^4 J/kg
12.13 **Heat of Combustion:** —18,540 Btu/lb = —10,300 cal/g = -431.24×10^6 J/kg
12.14 **Heat of Decomposition:** Not pertinent
12.15 **Heat of Solution:** Not pertinent
12.16 **Heat of Polymerization:** Not pertinent
12.25 **Heat of Fusion:** Data not available
12.26 **Limiting Value:** Data not available
12.27 **Reid Vapor Pressure:** 0.1 psia

NOTES

OILS, FUEL: 1-D

OOD

Common Synonyms	Oily liquid	Yellow-brown	Lube or fuel oil odor
Diesel oil (light)	Floats on water.		

Stop discharge if possible.
Call fire department.
Avoid contact with liquid.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

Combustible.
Extinguish with dry chemical, foam or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

LIQUID
Irritating to skin and eyes.
Harmful if swallowed.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
DO NOT INDUCE VOMITING.

Water Pollution

Dangerous to aquatic life in high concentrations.
Fouling to shoreline.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)
Mechanical containment
Should be removed
Chemical and physical treatment

2. LABEL

2.1 Category: None
2.2 Class: Not pertinent

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Miscellaneous Hydrocarbon Mixtures
3.2 Formula: Not applicable
3.3 IMO/UN Designation: 3.1/1270
3.4 DOT ID No.: 1270
3.5 CAS Registry No.: Data not available

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Light brown
4.3 Odor: Characteristic

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Protective gloves; goggles or face shield.
5.2 Symptoms Following Exposure: INHALATION causes headache and slight giddiness. INGESTION causes nausea, vomiting, and cramping; depression of central nervous system ranging from mild headache to anesthesia, coma, and death; pulmonary irritation secondary to exhalation of solvent; signs of kidney and liver damage may be delayed. ASPIRATION causes severe lung irritation with coughing, gagging, dyspnea, substernal distress, and rapidly developing pulmonary edema; later, signs of bronchopneumonia and pneumonitis; acute onset of central nervous system excitement followed by depression.
5.3 Treatment of Exposure: INGESTION: do NOT induce vomiting; seek medical attention. ASPIRATION: enforce bed rest; administer oxygen. EYES: wash with copious quantity of water. SKIN: remove solvent by wiping and wash with soap and water.
5.4 Threshold Limit Value: No single value applicable.
5.5 Short Term Inhalation Limits: Data not available
5.6 Toxicity by Ingestion: Grade 1; LD_{50} = 5-15 g/kg
5.7 Late Toxicity: Data not available
5.8 Vapor (Gas) Irritant Characteristics: Slight smarting of eyes or respiratory system if present in high concentrations. The effect is temporary.
5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of skin.
5.10 Odor Threshold: 0.7 ppm
5.11 IDLH Value: Data not available

6. FIRE HAZARDS

6.1 Flash Point: 100°F C.C.
6.2 Flammable Limits in Air: 1.3%-6%
6.3 Fire Extinguishing Agents: Dry chemical, foam, or carbon dioxide
6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective.
6.5 Special Hazards of Combustion Products: Not pertinent
6.6 Behavior in Fire: Not pertinent
6.7 Ignition Temperature: 350—625°F
6.8 Electrical Hazard: Not pertinent
6.9 Burning Rate: 4 mm/min.
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 33

8. WATER POLLUTION

8.1 Aquatic Toxicity: 204 mg/l/24 hr/juvenile American shad/TL_m/salt water
8.2 Waterfowl Toxicity: 20 mg/kg LD_{50} (mallard)
8.3 Biological Oxygen Demand (BOD): Data not available
8.4 Food Chain Concentration Potential: None

9. SHIPPING INFORMATION

9.1 Grades of Purity: Diesel fuel 1-D (ASTM)
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Open (flame arrester)

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)
A-T-U

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Combustible liquid
11.2 NAS Hazard Rating for Bulk Water Transportation: Not listed
11.3 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue)	0
Flammability (Red)	2
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 15°C and 1 atm: Liquid
12.2 Molecular Weight: Not pertinent
12.3 Boiling Point at 1 atm: 350—560°F = 193—293°C = 466—566°K
12.4 Freezing Point: —30°F = —34°C = 240°K
12.5 Critical Temperature: Not pertinent
12.6 Critical Pressure: Not pertinent
12.7 Specific Gravity: 0.81—0.85 at 15°C (liquid)
12.8 Liquid Surface Tension: 23—32 dynes/cm = 0.023—0.032 N/m at 20°C
12.9 Liquid Water Interfacial Tension: 47—49 dynes/cm = 0.047—0.049 N/m at 20°C
12.10 Vapor (Gas) Specific Gravity: Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
12.12 Latent Heat of Vaporization: 110 Btu/lb = 60 cal/g = 2.5×10^5 J/kg
12.13 Heat of Combustion: —18,540 Btu/lb = —10,300 cal/g = -431.24×10^5 J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: Data not available
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: Data not available

NOTES

OILS, FUEL: 2-D

OTD

Common Synonyms	Oily liquid	Yellow-brown	Lube or fuel oil odor
Diesel oil, medium	Floats on water.		

Stop discharge if possible.
Call fire department.
Avoid contact with liquid.
Isolate and remove discharged material
Notify local health and pollution control agencies.

Fire

Combustible.
Extinguish with dry chemical, foam, carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

LIQUID
Irritating to skin and eyes.
Harmful if swallowed.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED, and victim is CONSCIOUS, have victim drink water or milk.
DO NOT INDUCE VOMITING.

Water Pollution

Dangerous to aquatic life in high concentrations.
Fouling to shoreline.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Mechanical containment
Should be removed
Chemical and physical treatment

2. LABEL

2.1 Category: None
2.2 Class: Not pertinent

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Miscellaneous Hydrocarbon Mixtures
3.2 Formula: Not applicable
3.3 IMO/UN Designation: 3.1/1270
3.4 DOT ID No.: 1270
3.5 CAS Registry No.: Data not available

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Light brown
4.3 Odor: Characteristic

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Protective gloves; goggles or face shield.
5.2 Symptoms Following Exposure: INGESTION causes nausea, vomiting, and cramping; depression of central nervous system ranging from mild headache to anesthesia, coma, and death; pulmonary irritation secondary to exhalation of solvent; signs of kidney and liver damage may be delayed. ASPIRATION causes severe lung irritation with coughing, gagging, dyspnea, substernal distress, and rapidly developing pulmonary edema; later, signs of bronchopneumonia and pneumonitis; acute onset of central nervous system excitement followed by depression.
5.3 Treatment of Exposure: INGESTION: do NOT induce vomiting. ASPIRATION: enforce bed rest; administer oxygen; seek medical attention. EYES: wash with copious quantity of water. SKIN: remove solvent by wiping and wash with soap and water.
5.4 Threshold Limit Value: No single TLV applicable.
5.5 Short Term Inhalation Limits: Data not available
5.6 Toxicity by Ingestion: Grade 1; LD_{50} = 5-15 g/kg
5.7 Late Toxicity: Data not available
5.8 Vapor (Gas) Irritant Characteristics: Slight smarting of eyes or respiratory system if present in high concentrations. The effect is temporary.
5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of skin.
5.10 Odor Threshold: Data not available
5.11 IDLH Value: Data not available

6. FIRE HAZARDS

6.1 Flash Point: 125°F C.C.
6.2 Flammable Limits in Air: 1.3%-6.0%
6.3 Fire Extinguishing Agents: Dry chemical, foam, or carbon dioxide
6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective
6.5 Special Hazards of Combustion Products: Not pertinent
6.6 Behavior in Fire: Not pertinent
6.7 Ignition Temperature: 490—545°F
6.8 Electrical Hazard: Not pertinent
6.9 Burning Rate: 4 mm/min.
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 33

8. WATER POLLUTION

8.1 Aquatic Toxicity: 204 mg/l/24 hr/juvenile American shad/TL_m/salt water
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): Data not available
8.4 Food Chain Concentration Potential: None

9. SHIPPING INFORMATION

9.1 Grades of Purity: Diesel fuel 2-D (ASTM)
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Open (flame arrester)

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

A-T-U

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Combustible liquid
11.2 NAS Hazard Rating for Bulk Water Transportation: Not listed
11.3 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue)	0
Flammability (Red)	2
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 15°C and 1 atm: Liquid
12.2 Molecular Weight: Not pertinent
12.3 Boiling Point at 1 atm: 540—640°F = 282—336°C = 555—611°K
12.4 Freezing Point: 0°F = 18°C = 255°K
12.5 Critical Temperature: Not pertinent
12.6 Critical Pressure: Not pertinent
12.7 Specific Gravity: 0.87—0.90 at 20°C (liquid)
12.8 Liquid Surface Tension: Data not available
12.9 Liquid Water Interfacial Tension: Data not available
12.10 Vapor (Gas) Specific Gravity: Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
12.12 Latent Heat of Vaporization: Not pertinent
12.13 Heat of Combustion: —19,440 Btu/lb = —10,800 cal/g = —452.17 X 10^5 J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: Data not available
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: Data not available

NOTES

POLYCHLORINATED BIPHENYL

PCB

Common Synonyms	Oily liquid to solid powder	Light yellow liquid, or white powder	Weak odor
PCB Chlorinated biphenyl Arochlor Halogenated waxes Polychloropolyphenyls	Sinks in water.		

Stop discharge if possible. Keep people away.
Avoid contact with liquid and solid.
Call fire department.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

Combustible.
Extinguish with water, foam, dry chemical, or carbon dioxide.

Exposure

CALL FOR MEDICAL AID.

LIQUID OR SOLID
Irritating to skin and eyes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.

Water Pollution

HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Issue warning-water contaminant
Should be removed
Chemical and physical treatment

2. LABEL

2.1 Category: None
2.2 Class: Not pertinent

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Not listed
3.2 Formula: $(C_{12}H_{10-n}Cl_n$
3.3 IMO/UN Designation: Not listed
3.4 DOT ID No.: 2315
3.5 CAS Registry No.: 1336-36-3

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid or solid
4.2 Color: Pale yellow (liquid); colorless (solid)
4.3 Odor: Practically odorless

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Gloves and protective garments.
5.2 Symptoms Following Exposure: Acne from skin contact.
5.3 Treatment of Exposure: SKIN: wash with soap and water.
5.4 Threshold Limit Value: 0.5 to 1.0 mg/m³
5.5 Short Term Inhalation Limits: Data not available
5.6 Toxicity by Ingestion: Grade 2; oral rat LD_{50} = 3980 mg/kg
5.7 Late Toxicity: Causes chromosomal abnormalities in rats, birth defects in birds
5.8 Vapor (Gas) Irritant Characteristics: Vapors cause severe irritation of eyes and throat and cause eye and lung injury. They cannot be tolerated even at low concentrations.
5.9 Liquid or Solid Irritant Characteristics: Contact with skin may cause irritation.
5.10 Odor Threshold: Data not available
5.11 IDLH Value: 5 to 10 mg/m³

6. FIRE HAZARDS

6.1 Flash Point: > 266°F
6.2 Flammable Limits in Air: Data not available
6.3 Fire Extinguishing Agents: Water, foam, dry chemical, or carbon dioxide
6.4 Fire Extinguishing Agents Not to be Used: Not pertinent
6.5 Special Hazards of Combustion Products: Irritating gases are generated in fires.
6.6 Behavior in Fire: Not pertinent
6.7 Ignition Temperature: Data not available
6.8 Electrical Hazard: Not pertinent
6.9 Burning Rate: Data not available
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: Data not available

8. WATER POLLUTION

8.1 Aquatic Toxicity: 0.278 ppm/96 hr/bluegill/TL_m/fresh water
0.005 ppm/336-1080 hr/pinfish/TL_m/salt water
8.2 Waterfowl Toxicity: LD_{50} 2000 ppm (mallard duck)
8.3 Biological Oxygen Demand (BOD): Very low
8.4 Food Chain Concentration Potential: High

9. SHIPPING INFORMATION

9.1 Grades of Purity: 11 grades (some liquid, some solids) which differ primarily in their chlorine content (20%-68% by weight)
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Open

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

II

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: ORM-E
11.2 NAS Hazard Rating for Bulk Water Transportation: Not listed
11.3 NFPA Hazard Classification: Not listed

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 15°C and 1 atm: Solid
12.2 Molecular Weight: Not pertinent
12.3 Boiling Point at 1 atm: Very high
12.4 Freezing Point: Not pertinent
12.5 Critical Temperature: Not pertinent
12.6 Critical Pressure: Not pertinent
12.7 Specific Gravity: 1.3—1.8 at 20°C (liquid)
12.8 Liquid Surface Tension: Not pertinent
12.9 Liquid Water Interfacial Tension: Not pertinent
12.10 Vapor (Gas) Specific Gravity: Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
12.12 Latent Heat of Vaporization: Not pertinent
12.13 Heat of Combustion: Not pertinent
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: Data not available
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: Data not available

NOTES

APPENDIX 2

Resumes

JOHN P. CUMMINGS, PH.D., R.E.A., R.E.P., J.D.

Education

B.S. - Chemistry, Saint Michael's College, Winooski, Vermont

M.C.E. - Environmental Engineering, University of Toledo, Toledo, Ohio

Ph.D. - Chemistry - University of Texas, Austin, Texas

J.D. - Law - University of Toledo, Toledo, Ohio

GRADUATE - Industrial College of the Armed Forces, Washington, D.C.

Affiliations

Sigma XI - RESA
American Chemical Society
American Society for Testing Materials
Governmental Refuse, Collection and Disposal Association.
National Solid Waste Management Association
American Bar Association
Phi Alpha Delta

Registrations and Certifications

Ohio Registered Attorney
California Registered Environmental Assessor
EPA Certified Asbestos Inspector and Management Planner
U.S. Board of Military Appeals Attorney
U.S. Department of Defense Certified Fallout Shelter Analyst
U.S. District Court Registered Attorney
40 Hour EPA Approved Hazardous Waste Operations Training
Registered Environmental Professional

Professional Experience

Mr. Cummings brings to SCS over thirty years of experience, project management, planning, regulatory affairs, implementation of legislative programs and policies. He has a strong background in hazardous/toxic waste management, pollution abatement implementation, solid waste management, resource recovery and recycling, legal aspects of OSHA and EPA litigation as well as product liability. He also has an extensive technical background in chemistry, ceramic, paper, and plastic materials. He is a patentee.

JOHN P. CUMMINGS (Continued)

Other experience includes:

- Legal counsel for several small businesses for environmental legal matters including permitting, completion of abatement orders, and determination of compliance with federal, state, and local environmental regulation.

- Manager, Environmental Affairs - Responsible for company environmental matters, permitting, recycling, resource recovery, hazardous solid waste management. Prime contact with customers and governmental agencies.

- Legal Counsel, Owens-Illinois, Inc. - Responsible for all OSHA and EPA Compliance and Litigation.

- Engineered, built, managed, and evaluated the first resource recovery from Municipal Solid Waste Plant for the EPA.

- Developed hazardous material reduction programs for several production operations.

- Performed recycling audits, system analysis, and source reduction programs for 15 facilities.

- Director of analytical services for Owens-Illinois, Inc.

- Consulting on resource recovery or recycling, utilization of waste products, hazardous waste plans, handling, packaging, transportation and disposal of solid, hazardous and toxic materials, legal counsel to several small firms, environmental audits.

- Risk Management - Assess risks, claims, asbestos risks, approved settlement payments, organized insurance treaties.

- Produced the County Hazardous Waste Management Plans for six Northern California counties.

- Developed the Environmental Impact Report for four Northern California county Hazardous Waste Management Plans.

- Developed risk assessment programs for two major industries.

- Completed over 100 environmental assessments and developed remediation actions when required.

- Reviewed disposal procedure for five San Francisco peninsula hospitals of medical (red bag) water.

JOHN P. CUMMINGS (Continued)

- Directed the preparation of Lake County Hazardous Waste Management Plan which included land disposal of medical waste in a sanitary landfill.

- Reviewed possible use of Susanville incineration facility for medical waste disposal.

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JOHN N. ALT, C.E.G.

Education

B.A. - San Jose State University 1971
Geology/Natural Resources

Graduate Studies - San Jose State University 1971-1974
30 units in Engineering Geology

Professional Licenses

Registered Geologist - California
Certified Engineering Geologist - California

Professional Experience

Mr. Alt has over eighteen years of experience in hydro-geology and engineering geology investigations. Over the past five years, many of these investigations have been directed toward the assessment and mitigation of soil and groundwater contamination. Selected examples of his experience are summarized below:

- Project Manager for Preliminary Assessment and Site Characterization Investigations of a site located in Mountain View, California and included on the State Superfund List. The project involved defining the lateral and vertical extent of several plumes of industrial solvents and required the installation of monitoring, test, and extraction wells screened in various aquifers underlying the site. Soil gas surveys were used to help define the extent of off-site migration of the shallow plume. A part of the project involved evaluating the contribution of up-gradient sources, to the groundwater contamination below the site. Preliminary Feasibility Studies were also carried out to assess cleanup alternatives for both contaminated soil and groundwater.

- Involved in a Feasibility Study of a site in Sunnyvale, California that contained shallow groundwater contaminated with various solvents. The project involved the layout of extraction wells and the technical and economic review of various cleanup technologies. Two were selected for pilot testing.

- Involved in a project to review the use of oils and solvents and help design procedures for recycling at the Subic Bay Naval Base in the Philippines.

- Served as engineering geologist for the preparation of a groundwater SWAT report for a landfill site in Monterey County.

- Directed the installation of numerous vadose and groundwater monitoring wells. Collected soil and groundwater samples following quality control protocol in the collection and handling of the samples.

- Carried out numerous environmental site assessments related to the conversion of agricultural or industrial property to residential and/or commercial use. Assessments included review of historical records, interpretation of aerial photographs, interview, field reconnaissance, and sampling.

- Directed numerous geologic and active fault studies for residential development.

- Project Manager for investigations and mitigation of seismic, volcanic and slope stability hazards at large hydroelectric sites in Ecuador, Chile, Columbia, Costa Rica, and Venezuela.

- Carried out active fault studies for the Aswan High Dam in Egypt and proposed nuclear power plant sites in Southern Iran.

J. DON McCLENAGAN

Education

B.A. - Rice University, Houston, Texas
National Merit Scholar
1981 Geology
Emphasis on Field Mapping and Structural Analysis

Certification

Completion of 40 hour Hazardous Waste Site Operation Training Program - May 12, 1989.
Completion of 8 hour Hazardous Waste Management Program - May 18, 1990.
Completion of 16 hour Underground Storage Tank Installation Program - Sept. 15, 1989.

Affiliations

Member of National Water Well Association.

Professional Experience

Mr. McClenagan brings to SCS Engineers exceptional writing ability and is experienced at technical writing and editing.

Mr. McClenagan adds to the SCS staff considerable experience in field reconnaissance and mapping. He has conducted detailed field mapping, accurately pinpointing particular features.

Mr. McClenagan has conducted numerous preliminary site assessments in their entirety; tasks ranged from off-site research and on-site survey to meaningful information analysis and final report.

He has supervised underground storage tank removals, associated sampling, and subsequent contamination-extent investigations.

Mr. McClenagan is responsible for and has completed subsurface site contamination studies consisting of research, trenching, permitting, regulatory review, soil boring, and monitoring well installation and sampling. He is adept at economical and accurate determination of contamination extent.

Mr. McClenagan designs, installs, and field fits remediation systems including: groundwater extraction/treatment, vapor extraction, bioremediation, and land farming.

He is familiar with federal, state, and local regulations and practices pertaining to hazardous waste.

NELS R. JOHNSON

Education

B.S. - University of California, at Davis
1984 Civil Engineering
Emphasis - Structural

Affiliations

American Society of Civil Engineers

Registration

California Registered Professional Engineer

Professional Experience

Mr. Johnson brings to SCS Engineers over five years of Project Management and engineering experience on various facility and industrial projects. His duties included; civil/structural design, specification and proposal writing, construction cost estimating and in-house checking.

Mr. Johnson adds to the SCS staff considerable technical experience regarding seismic analysis of structures and equipment.

He has a strong background of the Local, State and Federal standards and code requirements regarding building construction.

Mr. Johnson has conducted numerous preliminary site assessments in their entirety; tasks ranged from off-site research and on-site survey to information analysis and final report.

He has designed numerous shoring systems for underground storage tank removals.

Mr. Johnson headed the production of a Trade Fair Seminar on the seismic considerations of Plastic Tanks.

He has developed "Double Containment" systems for trenching, sumps and bulk storage tanks in new and retrofit conditions.

VIORICA-ADRIANA CONSTANTINESCU

Education

M.S. - Geology and Geophysics,
College of Geology, Bucharest, Romania, 1980
M.S. - Mathematics,
College of Mathematics, Bucharest, Romania, 1988

Education Continuation

Fortran Programming, 1980
Statistic Analysis of Geological and Geophysical data, 1984

Professional Experience

Ms. Constantinescu brings to SCS considerable experience in Geological Studies of raw materials and groundwater bearing strata. She has performed studies of fluid movement and transport of dissolved substances in a subsurface environment, and analyses of groundwater contaminant transport problems and aquifer restoration designs. She also has an extensive background in mathematics, in the field of Operational Researches, Model Analysis and Data Processing.

Some of the projects in which she has been involved with include:

- Project Manager for Groundwater Detection, using geological and geoelectrical methods, and contamination studies in the oil fields.
- Conducted site surveys for determination of optimum location of nuclear power plants in Romania.
- Coordinated monitoring program for geological wells to locate anthracite in coal fields.
- Conducted geological surveys for determination of water influence in location of bauxite lenses.

Ms. Constantinescu has developed proposals, designed and implemented vadose and groundwater sampling/monitoring plans for the evaluation of potential impact of contaminants upon subsurface environmental systems.

Ms. Constantinescu has completed subsurface site contamination studies consisting of research, trenching, permitting, regulatory review, soil borings, and monitoring well installation and sampling.

APPENDIX 3

Statement of Qualifications
(under separate cover)

Environmental Consultants

SCS ENGINEERS

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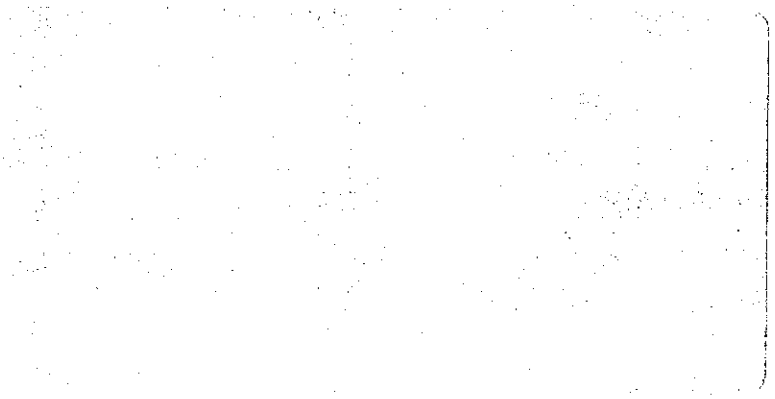

STATEMENT OF QUALIFICATIONS
SITE ASSESSMENTS FOR HAZARDOUS OR TOXIC MATERIALS IN REAL ESTATE TRANSACTIONS OR DEVELOPMENT PROJECTS

Prepared by:

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September 1990

CONTENTS

SECTION 1

INTRODUCTION

SCS Engineers (SCS) is a consulting engineering firm specializing in the design, development, and evaluation of systems for the management of hazardous waste, solid waste, and wastewater. Since its inception in 1970, approximately 90 percent of the firm's work has been in these specialty fields.

SCS was founded to provide comprehensive engineering services with emphasis on environmental quality control. The firm is committed to excellence in professional services to public and private clients. The varied experience and special knowledge of the firm's principals and technical staff enable us to solve problems of a widely diversified nature.

The firm of SCS Engineers is comprised of approximately 250 staff including registered engineers, geologists, chemists and other scientific, technical and support staff. The founders and principals of the firm are registered in nearly all states and in many engineering and geological disciplines.

The following sections describe SCS's corporate experience and personnel capabilities in greater detail.

We welcome the opportunity to apply our multi-disciplinary talents to solving both common and unusual environmental problems.

SECTION 2

CORPORATE EXPERIENCE AND QUALIFICATIONS

SCS is comprised of engineers, scientists, economists, urban planners, and other professionals with wide experience in environmental, civil, mechanical, chemical, cost, and systems engineering. The company's expertise is devoted to solving environmental quality and pollution control problems that affect us today, and to preventing their occurrence in the future.

Routine services offered by the firm include the following:

- Toxic and hazardous waste assessments related to real estate transactions
- Real Estate site audits
- Asbestos inspection and management
- Asbestos abatement plans
- Underground storage tank site assessments and precision testing
- Hazardous waste inventory and management programs from origin to disposal
- Hydrogeologic evaluations of hazardous & toxic waste sites
- Closure plans, permitting and closure construction monitoring, post-closure monitoring
- Municipal and industrial solid waste management
- Municipal & industrial wastewater treatment and disposal, including sludges
- Resource recovery from waste materials
- Physical and chemical sampling, testing, and analysis
- Broad-based environmental data management
- Economic analysis
- Environmental impact assessment
- Nationally scoped investigations, surveys, & monitoring

SCS specializes in projects requiring engineering and scientific expertise in all aspects of pollution control, including sampling, characterization, treatment, reuse/recovery, and disposal. In addition, SCS has significant experience in predicting and assessing the potential impacts of pollution problems on human health and the environment.

SCS has performed numerous projects to determine the presence of hazardous or toxic materials on developed industrial and commercial property or undeveloped properties. This qualifications package provides summary descriptions of our experience and capabilities in the following areas:

- Hazardous waste site assessments
- Underground storage tank assessment and design

Hazardous Waste Site Assessments

Most buyers and many lenders are currently requiring environmental audits on properties prior to loan approval to minimize risk to their investments. SCS has been performing chemical, hazardous waste and asbestos site assessments for these transactions for over 10 years. We have performed environmental site assessments for private industry, local, state, and federal government, and others. These site assessments were developed using such methods as records searches, questionnaires, telephone surveys, air photo review, field investigations, drilling and sampling, and chemical laboratory analyses. In a typical project, after the initial data gathering phase is completed, the information is reviewed to determine if additional investigations are necessary at the site. In some cases, contaminants are found to exist and remedial measures such as ground water treatment, soil excavation and removal, and free product recovery are recommended and implemented.

Selected SCS hazardous waste site assessment projects related to real estate transactions are shown on Table 1.

Storage Tank Assessment and Design

SCS has worked on leaking underground storage tank (UST) problems for the past several years, well before state and national attention began to focus on the issue. In 1983, SCS was assigned by the Environmental Protection Agency (EPA) to document the causes of underground tank leaks due to environmental conditions. We are presently working with EPA to compile a large data base on the environmental impacts of both underground and aboveground leaking tanks. This and other SCS work will contribute to the formulation of national regulations regarding hazardous materials stored in underground tanks.

SCS has performed site assessments where abandoned underground tanks have been discovered. In many cases, these tanks are emptied and are removed from the site as quickly as possible to reduce construction delays or close of escrow complications. Where possible, the extent of contamination from leaking tanks is determined at the time of removal. Very often, however, soil and groundwater are affected far from the initial source of product or waste leakage.

In addition to site assessments utilizing the methods described above, SCS Engineers also conducts tank integrity testing with the Petro Tite and Horner EZY-Chek System. We have testing technicians with experience in nearly all types of tank testing, tank construction and monitoring system retrofitting. Our engineers have designed fuel systems ranging from single below ground tanks to complex above and below-ground systems for a wide range of fuel products.

Table 2 briefly describes selected projects related to the storage of chemicals in underground tanks.

SECTION 3

PERSONNEL QUALIFICATIONS

SCS staff professionals include environmental, mechanical, industrial, chemical, electrical, civil & systems engineers; economists & cost analysts; chemists, physicists, soil scientists, biologists, and environmental scientists; geologists/hydrogeologists; computer scientists; policy analysts; and specialists in other disciplines. Many of our professionals have interdisciplinary backgrounds, as well as multidisciplinary training and experience.

From its professional staff of qualified specialists, SCS has developed a project team with the appropriate experience and educational background to successfully perform hazardous waste site assessments.

Qualifications of key SCS personnel with regard to hazardous site assessment and underground storage of hazardous chemicals are summarized below.

John P. Cummings, Office Director, is a California Registered Environmental Assessor, a National Registered Environmental Professional, and an EPA certified Asbestos Inspector and Management Planner. He has performed site assessments (with complete asbestos, PCB, toxic and hazardous materials characterizations) for several major law firms, real property brokers and national financial institutions.

Dr. Cummings is qualified by over thirty years of experience in project management. He has a strong background in hazardous/toxic waste management, pollution abatement implementation, solid waste management, resource recovery and recycling, and the legal aspects of OSHA and EPA litigation. Besides holding a Ph.D. in chemistry, he is an attorney and has practiced environmental law. Dr. Cummings has recently been involved in the preparation of County Hazardous Waste Management Plans for five Northern California counties.

Lisa A. Polos, Project Scientist, is a California Registered Environmental Assessor and has over nine years of experience in chemical testing and project management. She has assisted many clients on the type of chemical test program that will provide the information needed. She has been involved in property surveys, asbestos and PCB surveys, and characterization of hazardous waste sites. Ms. Polos recently was Project Manager for all laboratory and industrial hygiene work at an abandoned landfill that is now a high-rise office park. She currently is involved in several site assessments for a major lender on industrial properties.

Thomas Dong, Senior Project Engineer, provides SCS with technical and engineering skills in hazardous solid and liquid waste management, environmental engineering and chemistry, and laboratory analysis.

Mr. Dong has participated in many projects related to storage of hazardous materials in underground tanks. He was involved in initiating an underground tank leak detection program for a major paint company. He has also been involved in determining the extent of gasoline contamination from underground storage tanks at a southern California construction site. For the EPA, he was responsible for providing cost estimates for leak detection and secondary containment for new and retrofit underground storage tanks. Mr. Dong currently serves as a special advisor to several industrial development companies in California. He is routinely called on to evaluate site environmental conditions based on historical evidence and on-site exploration and chemical analyses.

In addition to the lead staff shown, SCS can draw on the talents of the remainder of the technical and support staff from throughout the country. Where projects are from a client's headquarters, we have successfully supported them through our regional office locations. Each SCS office has the skill required to perform site assessments related to underground storage tanks.

SECTION 4

SCS COMPANY FACILITIES

OFFICE FACILITIES

Since its formation in 1970, SCS Engineers has grown to a staff of approximately 150 employees located in eight offices nationwide. This growth reflects the firm's ability to successfully provide quality professional services demanded by clients in government, the military, and private industry. A table of office locations and key staff are shown in Table 3.

ENVIRONMENTAL MONITORING EQUIPMENT

SCS possesses equipment necessary for real estate site assessments and other waste management facilities. Included are the following:

- TIP Vapor Analyzer (Photovac)
- Foxboro Organic Vapor Analyzer (OVA)
- TEI Organic Vapor Monitor (OVM)
- Noncontaminating sample pumps and collection apparatus, personal sampling pumps, dosimeters
- Toxic gas detector, (absorbent) colormetric tubes
- Combustible gas meters, vacuum/pressure gauges, ground water detection meters
- Groundwater submersible pumps, bladder pumps, bailers
- Water quality test equipment including conductance, temperature, pH test devices
- Additional equipment for field sampling of surface water, ground water, sludges, soils, plants, sediments (fresh water and marine), hazardous wastes, and wastewaters.
- Water level measurement devices, remote data logging and monitoring equipment with computer interface.

CHEMICAL LABORATORY

The SCS Laboratory is located in Long Beach, California. This facility houses several chromatographs including Varian models 2700 and 2400, a Perkin-Elmer 280 Atomic Absorption Spectrophotometer, and various other spectrophotometric equipment in an area isolated from the main wet chemistry laboratory. In addition to these instruments, the laboratory is well equipped to perform analyses on water, wastewater, sludges, soils, plants, leachates, and other types of samples. The lab is state approved to perform organic analyses common in site assessment evaluations. Laboratory capabilities include:

- Gas chromatography (ECD, FID, TCD, PID, Hall Detector - packed and capillary columns interfaced to a Nelson 2600 software system running on a Compaq PC
- Atomic absorption and emission spectroscopy
- Total organic carbon (TOC)
- Flameless AA analysis
- Laboratory-scale treatment feasibility studies
- Landfill gas analysis including H_2, He, CO_2, N_2, O_2, CH_4 and other hydrocarbons.

The lab is California State-approved for various hazardous waste analyses.

LIBRARY

The main SCS technical library is located in our Long Beach office. This library currently contains approximately 25,000 volumes and is growing at the rate of over 250 titles per month (primarily on microfiche). In lieu of a traditional card catalog, the SCS library uses a proprietary, computerized library catalog system, called SCS-Autolib. Autolib allows the library and the project staff to access library holdings by key words, title, author, corporate author, sponsor, and EPA, organization or NTIS number, via computer terminals in the library and throughout the SCS offices.

PRODUCTION FACILITIES

SCS has a modern Production Department staffed with well-trained production personnel. Significant equipment includes many IBM compatible microcomputers, laser printers, and up-to-date drafting equipment. We maintain company-wide report formats and drafting standards to ensure a quality reporting style.

TABLE 1 - SCS SITE ASSESSMENT PROJECTS

CLIENT	PROJECT TITLE	PROJECT DESCRIPTION
Union Bank	Confidential Site	Site reconnaissance, historical records search, air photo review for large industrial parcel.
Confidential	Source identification and water discharge mitigation measures	Investigate sources of gasoline in groundwater being pumped from an excavation prior to construction of a high-rise office building. Interface with regulatory agencies and design water treatment system so that construction can proceed without interruption.
Levitz Furniture	Investigation of subsurface contamination due to gasoline leak into pump pit	Drill 3 on-site borings to determine level of contamination in soil and groundwater. Analyze samplings and provide detail report.
Marriott Corporation	Hazardous substance investigation for site of new Marriott Hotel	Perform field investigation including test pits, magnetometer survey, sampling, and laboratory analysis to define the extent of contamination at the old sumpsite. Assess the degree of hazard and risk and recommend solution for developing a hotel on the site.

CLIENT	PROJECT TITLE	PROJECT DESCRIPTION
Spieker Partners	Confidential Site - Livermore, California	Perform site soil gas survey, drill monitoring well, review aerial photos, conduct regulatory agency records search.
Trammel Crow Company	Subsurface soils investigation for 17.2 acre parcel at the Kraft-Humko Plant	Perform drilling, sampling, and analyses of soils retrieved from the site to determine the presence of hazardous contaminants.
The Koll Company	Confidential Site	Prepare preliminary site assessment for hazardous/toxic substances at an industrial site.
The Irvine Company	Baseline environmental audit of soil and water quality	Perform soils and hydrogeological investigation of selected properties slated for development as an industrial and commercial office park. Information obtained will form a data base concerning background environmental quality as exists prior to development. Assess the environmental impacts of adjacent industrial land uses on the client's property.

CLIENT	PROJECT TITLE	PROJECT DESCRIPTION
Milne Truck Lines	Site assessment and remedial actions prior to sale of properties	Conduct complete site evaluations for the presence of leaks or spills for underground tanks. The work has included tank testing, new fuel system design and installation, removal and remedial actions at leaking tank sites, tank monitoring system design and installation.
State of California, Department of General Services, Office of the State Architect	PCB Consulting Services - Northern California	Investigate electrical equipment at various state agencies to identify equipment items containing PCB and PCB-contaminated dielectric fluids. Assess institutional reporting and recordkeeping. Where necessary, take samples of dielectric fluids for analysis.
Schurgin Development	Environmental audit of proposed shopping center	Perform drilling, logging, and sampling of ten on-site borings. Perform laboratory analyses of soil samples to verify that hazardous materials do not exist on the site. Prepare written report for submittal to Chase Manhattan Bank for approval.
White, Swallow and Co.	Hazardous Waste Investigation	Sample subsurface soils and analyze for hazardous waste components.

CLIENT	PROJECT TITLE	PROJECT DESCRIPTION
Torrance Industrial Redevelopment Agency	Preliminary assessment of groundwater contamination	Conduct on-site investigation to determine possible sources of groundwater contamination. Drill four on-site borings to monitor groundwater depth, flow, and level of contamination.
EnviroGroup Stonestown Mall	Environmental assessment at two sites in Stonestown Mall	Conduct test boring, chemical testing and contamination assessment at former auto dealership.
Trammel-Crow Company	Preliminary site assessment of oil well property	Perform site investigation to determine the extent of surface and subsurface contamination from petroleum hydrocarbons that may have leaked from the well into surrounding soils.
Sand Dollar Development	Hazardous Waste Investigation	Perform preliminary hydrogeological assessment to determine the presence and/or extent of hazardous waste constituents.

CLIENT	PROJECT TITLE	PROJECT DESCRIPTION
MKB Industries	Design of Air Injection System, Ramada Inn Hotel facilities	Prepare construction documents including plans and specifications for an air injection system to protect Ramada Inn Hotel facilities from landfill gas migration from adjacent former organic refuse disposal site. Following design observe construction, perform initial start-up and balancing, and certification of system construction.
Trammel-Crow Company	Landfill Gas Control Design and Construction	Design, construct, and operate an air injection system to protect a new industrial building in Commerce, California, from methane migration from an adjacent inactive landfill. The system is to consist of 30 injection wells, blowers, and monitoring, automated detection and alarm facilities.
Duke, Gerstel, Shearer & Bregante	Interior Gas Investigation of 13 houses	Conduct a survey of the interiors of 13 houses to determine hydrocarbon levels. The houses are located in an area reported to overlay fill soils containing decomposing organic materials.

CLIENT	PROJECT TITLE	PROJECT DESCRIPTION
John Alexander Company	Preliminary site investigation at Fry Steel site	Drill 4 on-site borings to 20 feet. Retrieve soil samples to determine if the site contains any hazardous materials.

TABLE 2 - SELECTED SCS PROJECTS RELATED TO UNDERGROUND STORAGE TANK ASSESSMENT AND DESIGN

CLIENT	PROJECT TITLE	PROJECT DESCRIPTION
Kraft, Inc.	Environmental Support Services	Assist client with underground storage tank problems at several prospective new purchase sites.
Crumpler and Kruger Commercial Real Estate	Fuel Tank Area Contamination Investigation	Conduct subsurface soil investigation and chemical analyses as required for preliminary assessment of contamination from underground tanks.
Monterey County	Precision Tank Testing	Perform Horner EZY-Chek tests on 30 fuel and oil tanks in Monterey County.
Trammel - Crow Company	Preliminary Site Investigation to determine the presence of fuel-related contaminants in soils from underground storage tanks.	Perform drilling of 8 exploration holes; retrieve soil samples and analyze for fuel and related constituents.
U.S. Environmental Protection Agency, Office of Solid Waste, Economic and Policy Analysis Branch	Analysis of Hazardous Waste Storage in Underground Tanks	Develop and apply risk & cost models to support regulatory impact analyses for pending federal regulations of underground tank storage for hazardous waste.

CLIENT	PROJECT TITLE	PROJECT DESCRIPTION
Gelco Leasing, Inc.	Site assessment prior to purchase - Freight Terminal	Perform subsurface investigation to detect possible site contamination, tank precision testing.
Department of the Navy, Public Works Department, Pacific Missile Test Center, Point Mugu, CA	Testing of underground fuel tanks on San Nicolas Island	Test six underground fuel storage tanks for leakage.
Research Consultant Consortium	Comments on proposed underground tank monitoring regulations	Research and prepare comments on underground tank monitoring regulations proposed by the California Water Resources Control Board.
Buchalter, Nemer, Fields, Chrystie & Younger	Underground tank inspection program	Prepare master plan to investigate potentially leaking underground storage tanks. Obtain plot plans, determine exact tank locations and propose drilling and sampling plan for approval by Regional Water Quality Control Board.
Merced County	Conduct remedial design investigation at leaking UST site.	Drill and sample several test borings and wells at a leaking gasoline tank site; prepare site remedial design, support County in implementation.

CLIENT	PROJECT TITLE	PROJECT DESCRIPTION
Golden Grain Macaroni Company	Manteca Bean Company - Warehouse Fuel Tank Assessment	Following removal of three underground tanks, fuel was identified beneath a gasoline tank, remedial action investigations are on-going, sale of property is planned pending cleanup.
U.S. Environmental Protection Agency, Industrial Environmental Research Lab (for the Office of Solid Waste, Hazardous and Industrial Waste Div. - Washington, DC)	Assessment of the Technical, Environmental and Safety Aspects of storage of hazardous waste in underground tanks	Evaluate the use of underground tanks for storage of hazardous waste, including characterization of tanks, assessment of current storage practices, review of existing studies regarding damage and spill events, and current management practices comparison of safety aspects to environmental considerations, evaluation of current leak testing methods, and preparation of potential management alternatives.
Bureau of Engraving and Printing	Design of Hazardous Materials Product Storage Area	Provide consulting services for site investigation and design of hazardous product storage area and dispensing facilities. Includes study of alternatives for storage methods, fire protection, lighting, and security systems.

CLIENT	PROJECT TITLE	PROJECT DESCRIPTION
Kraft, Inc.	Site Assessment - Chehalis, Washington	Evaluate potential environmental liability of abandoned underground storage tanks: - obtain brief history of site - obtain preliminary geology information to determine depth to groundwater - selectively place borings and take soil samples - analyze samples for fuel-related constituents - assess data and make recommendations.
Petroleum Contractors	Underground Tank Investigation at Flying Tiger Terminal	Perform geological and hydrogeological investigations into a leaking underground gasoline tank.

STATEMENT OF QUALIFICATIONS

UNDERGROUND STORAGE TANKS

Prepared By:

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February 1990

SECTION 1

INTRODUCTION

This statement of qualifications is presented to demonstrate SCS Engineers (SCS) capabilities in the planning, engineering and implementation of underground storage tank programs.

SCS was founded in 1970, and has grown to a staff of over 100 environmental professionals. The corporate headquarters is located in Long Beach, California. Additional offices are located in the Bay Area at Dublin, California; Seattle, Washington; Covington, Kentucky; and Reston, Virginia in the Washington, D.C. area; Phoenix, Arizona; Tampa, Florida; and Upper Nyack, New York.

SCS is staffed with engineers, geologists, scientists, economists, urban planners and other professionals with wide ranging experience in environmental, civil, mechanical, chemical, geological, geotechnical, cost and systems engineering. The company's expertise is devoted to solving those environmental quality and pollution control problems that affect us today and to prevent their occurrence in the future.

SCS support services include an extensive research library, reproduction capabilities, laboratory (chemical and soils) facilities, and data processing equipment necessary to complete our diverse waste management and underground storage tank assignments.

SECTION 2

SCS EXPERIENCE AND QUALIFICATIONS

INTRODUCTION

Routine services offered by the firm include:

- underground tank system audits, site evaluations
- tank monitoring plans formulated and submitted to regulatory agencies
- design and installation of monitoring devices including wells, sensors, leak preventors, etc.
- precision tank testing
- preparation of operation and maintenance manuals for monitoring systems
- tank closure plan preparation, supervision and coordination of removal and replacement, removal only or retrofit projects
- site cleanup and remedial action
- regulatory compliance and permitting aspects of waste management
- air pollution abatement
- hydrogeologic investigations
- environmental impact assessment
- wastewater/water pollution abatement
- prototype pollution abatement equipment design and evaluation.
- physical and chemical sampling, testing, and analysis.

SCS specializes in projects requiring expertise in all aspects of pollution control and process residuals monitoring, sampling, characterization, storage, treatment, reuse/recovery, and disposal. A key element in the implementation of waste management plans in these projects is an assessment of the associated costs.

UNDERGROUND STORAGE TANK INVESTIGATIONS

SCS Engineers is currently engaged in both national and local underground storage tank investigations encompassing a diverse variety of scientific disciplines. The staff of professionals at SCS has exceptional knowledge and experience with respect to tank storage of hazardous materials. This expertise is broad, extending from design of tank storage facilities to assessments of hazardous waste storage practices and state-of-the-art subsurface monitoring methods. The firm is nationally recognized for its work on underground storage of hazardous materials, such as tank facilities design, development and implementation of leak detection programs for such facilities, site investigation, underground contamination characterization and assessment, and design of remedial action programs. This specialized experience is combined with our thorough knowledge of existing and proposed underground tank regulations. The following brief presentation describes our level of involvement in these studies.

National Level

SCS Engineers has been an active participant in projects which address potential problems involving underground storage tank system leaks on a nationwide level for clients such as the U.S. EPA, Department of the Navy, and Department of the Army.

The SCS offices in Reston, Virginia, and Long Beach, California, are currently involved with the LUST survey which was originated by the EPA Office of Solid Waste. This project emphasizes the documentation of underground storage tank leaks. It is SCS's responsibility to systematically compile, verify, and assess documents related to any underground storage tank system releases of hazardous liquids within a 25-state area.

The agencies and scientists working on this survey have gathered considerable information regarding potential problems when hazardous substances are stored underground. In addition, we are continually gaining expertise in the selection of mitigation and soil and water decontamination measures.

Local Level

The Dublin and Long Beach Offices are presently under contract for projects with private clients who have hundreds of underground storage tanks. These tanks range in capacity from 500 to 40,000 gallons, and are fabricated from a variety of materials including fiberglass and steel. Our scientists, engineers, and geologists are involved in virtually every phase of the investigative process. The discussion below presents factual examples of our overall involvement in these studies.

Preparation of Work Plans

Each separate client's needs are best served by a specific work plan addressing the number of underground tanks, their respective location, tank contents, local and site-specific geology, and governing state, county, and/or city regulations. Thorough work plans are developed and discussed with the cognizant regulatory offices prior to implementation.

Tank Integrity Testing

Three types of tank integrity testing are typically approved by local authorities: Petro-Tite, Horner EZY-Chek, and Hunter Leak Lokator. We have experience with all three. Each has its own advantages and disadvantages including ease of use, compatibility with tank contents, accuracy, and cost. We currently operate the Horner System in-house, but routinely apply other devices where appropriate. Occasionally, due to site design uncertainties or operational failures, tank isolation is necessary to identify a "failing" test rate or to clarify inconclusive test results. We routinely arrange for these services through pre-qualified subcontractor firms.

Site Geology and Hydrogeology

Prior to most investigations, preliminary geological information is gathered and assessed. Such initial data include general types of sediments/deposits, approximate depth to known aquifers and perched water tables, general direction of ground water flow, soil types and other geotechnical information.

Drilling

SCS Engineers has worked with many drilling companies in California and across the United States, and is very knowledgeable about the types of rigs available and their selected uses. We have worked with bucket augers, air and mud rotary, diamond core, hollow stem augers, etc. Most of the underground tank work has been with hollow stem (8-and 10-inch) augers to facilitate taking undisturbed soil samples for geological evaluation and chemical analysis. We have used conventional vertical test borings as well as slant drilling techniques.

Well Placement/Development

The installation of monitoring wells is a common occurrence in any underground tank program, specifically vadose zone or backfill monitoring well installations and ground water monitoring wells. SCS is a leading company in vadose zone monitoring techniques. While the use of vadose zone monitoring may seem to be unproven with respect to underground tanks, it is a technology that we have employed over the past

15 years in ongoing projects at sanitary landfills for methane gas sensing and migration control. Groundwater and vadose wells are placed such that leaks from tanks will be detected early, thereby negating massive cleanup problems at a later date.

Design and Implementation of Monitoring System

Depending on local regulations and the client's specific needs at a site, a long term monitoring system is designed and installed. Some monitoring techniques we have recommended and implemented include:

- vadose zone monitoring with vapor sensors or periodic sampling and analysis
- groundwater monitoring well installation, periodic sampling and analysis
- in-tank fluid level sensor with controller and printer for inventory control
- daily inventory reconciliation (SCS provides training and program review typically to site staff)
- periodic tank integrity testing
- pipeline leak detectors

Tank Closure and Removal

Where tanks clearly leak, cannot be repaired, or where various factors such as age, marginal use or non-use make them candidates for removal, SCS has initiated many closure and removal projects for clients. Specific tasks are required by law to remove tanks including:

- closure plan preparation
- tank neutralizing
- tank and piping excavation
- backfill and compaction of excavation, repaving
- soil sampling and chemical testing
- coordination and tracking of tank, backfill and soil disposal
- closure report preparation and notification to regulatory agency.

Occasionally, local regulations allow for in-place filling of tanks where removal is either dangerous, extremely expensive or where no possible environmental harm can occur.

Specific California UST projects performed by SCS Engineers are presented in Appendix A.

SECTION 3

PERSONNEL QUALIFICATIONS

SCS Engineers staff exhibits a broad range of expertise in the physical and engineering sciences necessary to address the issues associated with product or waste releases from tank systems.

SCS staff professionals include environmental, mechanical, industrial, chemical, process, electrical, civil, and systems engineers; economists and cost analysts; chemists; physicists; biologists; and environmental scientists. Through a combination of training and experience, many of SCS's staff members have acquired the multidisciplinary backgrounds which are so valuable in environmental assessment work.

Presented below are capsule resumes of key personnel involved in underground storage tank work.

John P. Cummings, Ph.D., R.E.A., R.E.P., Project Director operates the Dublin office of SCS Engineers serving the needs of our central and northern California clients. He has conducted monitoring efforts throughout California and the mid-west, and is familiar with soil and groundwater conditions in virtually all portions of the Western States. In addition Dr. Cummings maintains contact with numerous key state and local regulatory agencies in order to stay current on the application of specific tank monitoring requirements, tank removals, and remediation in each part of the state and across the country. Dr. Cummings is thoroughly familiar with remedial action technology, having applied cleanup measures on numerous sites contaminated by fuel, hydrocarbons, solvents and other hazardous substances.

In Dr. Cummings 30 plus years of experience, he has been involved in groundwater-related studies and hazardous waste studies throughout the United States and extensively in California, Texas, Ohio, and Michigan. For the past several years he has been involved in underground storage tank efforts at approximately 150 different locations for petroleum/chemical companies, oil companies, freight firms, laundry services, chemical manufacturers, and other tank owners.

Kent A. Madenwald, P.E., R.E.A., R.E.P., Senior Project Engineer, is a Professional Engineer with over 30 years experience in the geological and engineering fields. For SCS, Mr. Madenwald is the Project Manager for several clients overseeing the planning and implementation of monitoring programs and annual testing compliance for as many as 200 underground storage tanks in the State of California.

Previous experience includes groundwater and pollution studies in oil field operations resulting in brine collection and injection wells for a pressure maintenance program, installation of a gas transmission and storage system including three compressor stations and seven underground storage wells, and land reclamation studies for lignite mines resulting in land reforestation and reduced leaching of soils into the groundwater supply.

Kenneth V. LaConde, Project Director, has served as Project Director of major underground tank investigation programs in Southern California. In addition, he is the Director of the SCS Analytical Laboratory located in a separate facility in Long Beach, California. Mr. LaConde established the SCS laboratory in Long Beach in 1975. He is currently leading the efforts on several projects involving leaking underground solvent and gasoline tanks, both of which have resulted in highly contaminated soils and groundwater. Carbon absorption treatment and air stripping are being employed as remedial action measures.

Mr. LaConde's experience includes research and bench-scale testing regarding the use of powdered and granulated activated carbon (PAC) for removal of selected organics from leather tannery wastewaters; evaluating the effects of biodegradation on chemical preservatives used in fresh packing operations in the apple industry; removal of toxic organo-tin from drydock wastewaters at Naval shipyards; and assessment of the degree of hazard of surface impoundments for explosives.

Thomas Dong, Senior Project Engineer, provides SCS with technical and practical experience in environmental chemistry and hazardous waste management. He has been involved in many SCS projects related to hazardous waste characterization and management. In addition, Mr. Dong is well versed in laboratory procedures and instrumental analysis. His background in this field includes atomic absorption spectrophotometry, gas chromatography, total organic carbon, infrared and UV/VIS spectrophotometry.

Mr. Dong is currently working on several projects dealing with the problem of underground storage tank leaks. He is evaluating the extent of lateral and vertical contamination at a construction site. He is well acquainted with groundwater and soil sampling techniques as well as air quality surveying using organic vapor monitors. In addition, Mr. Dong is participating in an EPA-funded project to determine the extent of local government intervention for regulating underground tanks. All 50 states plus U.S. territories will be surveyed to determine the number of actual cases in each state.

Christopher G. Ward, Geologist/Tank Specialist, is a geologist with an extensive background in the identification and control of fuel leaks from underground tanks. He has conducted field investigations at fuel leaks and spills where extensive contamination exists. He is very familiar with available remedial action technologies. Mr. Ward is also a Certified Tank Tester using the Petro-Tite system and has supervised large and small tank integrity testing programs.

Krishan K. Saigal, P.E., Chief Design Engineer, has more than 20 years of experience in the design of waste management facilities. He is responsible for preparation, development, coordination, and drafting of engineering and financial studies, reports, plans, and specifications.

Mr. Saigal has designed numerous chemical, fuel, and wastewater underground storage tanks for waste treatment facilities. His responsibilities on these projects also included preparation of the associated specifications, cost estimates, and O and M manuals. For the U.S. Navy, Mr. Saigal is presently involved in testing existing underground fuel storage tanks for leakage.

In addition, he was responsible for the preliminary design and engineering study of a hazardous waste treatment facility for Beale Air Force Base, California; and design of hazardous waste storage and disposal facilities for the Environmental Protection Corp. in Bakersfield, California.

Lori T. Tagawa, Field Geologist, has a diverse background in geology and environmental hydrogeology. She has experience in designing and implementing risk management assessments, including comprehensive geologic and hydrologic site characterizations, ground water monitoring systems, and recovery programs. As a geologist in Redondo Beach, California, Ms. Tagawa directed field studies assessing the aerial extent and degree of ground water contamination from leaking underground storage tanks in several southern California locations.

Anne S. Childress, Geologist, has been involved in the preparation of monitoring work plans for underground storage tanks. She has been involved in the removal, closure and clean-up of a waste oil tank in Gardens, California. She has prepared cost estimates for various clean-up programs.

Detailed resumes of the key personnel can be found in Appendix B.

SECTION 4

SCS SUPPORT FACILITIES

CHEMICAL LABORATORY

The chemical laboratory is located in a separate facility in Signal Hill, California. This facility houses Varian 2700 and 2400 Gas Chromatographs, a Perkin-Elmer 280 Atomic Absorption Spectrophotometer, and various other spectrophotometric equipment in an area isolated from the main wet chemistry laboratory. In addition to these instruments, the laboratory is well equipped to perform analyses on water, wastewater, sludges, soils, plants, leachates, and other types of samples. Laboratory capabilities include:

- Gas chromatography ECD-, FID-, TCD-packed and capillary columns interfaced with a HP 2900A Integrator
- Atomic absorption and emission spectroscopy
- Total organic carbon (TOC)
- Flameless AA analysis
- Spectrophotometric methods
- Complete water quality analysis
- Automated COD analysis
- EPA and California CAM hazardous and toxic waste extractions/analysis
- Food research and analysis
- Physical and chemical soil analysis
- Solid, liquid, and air sampling
- Laboratory-scale treatment feasibility studies
- Landfill gas analysis including H_2, He, CO_2, N_2, O_2, CH_4 and other hydrocarbons.

The SCS Laboratory is directed by Mr. Ken LaConde, is approved by the California Regional Water Quality Board, and is a State of California certified Hazardous Waste Laboratory.

ENVIRONMENTAL MONITORING EQUIPMENT

SCS possesses most of the equipment necessary for site assessments at tank facilities. Included are:

- o Foxboro Organic Vapor Analyzer (OVA)
- o PhotoVac "TIP" organic vapor analyzer
- o HNN 101 organic vapor analyzer
- o Noncontaminating sample pumps and collection apparatus, personal sampling pumps, dosimeters
- o Toxic gas detector, (absorbent) colormetric tubes
- o Combustible gas meters, vacuum/pressure gauges, ground water detection meters
- o Mobile gas chromatograph

FIELD EXPLORATION AND TESTING EQUIPMENT

- o Mobile Minuteman portable drill rig, capable of 30- foot, 3-inch-diameter boring in areas inaccessible to larger drilling equipment
- o Various pumping, soil and water sampling equipment
  - ISCO bladder pump with Teflon or poly lines
  - submersible pump (4" wells) stainless steel, 1/2 HP
  - Tri-Loc hand pump
  - various trash, centrifugal pumps
  - teflon, PVC, acrylic bailers
  - "steam" cleaner with water tank and trailer
  - water level sensors
  - pH, conductivity, temperature probes
  - Honda 110 or 220 volt portable generator

- various portable storage tanks, controls and pumps
- hand auger equipment

COMPUTER, LIBRARY AND PRODUCTION FACILITIES

Each SCS office maintains a computer center with equipment ranging from micro computers to HP 3000 minicomputers with ancillary devices. The computer systems support multilevel security, which is based on organizational structure of accounts, groups and files. Data is stored for complete integrity and privacy of client information.

Each SCS office has access to the main technical library located in Long Beach which contains over 30,000 volumes (along with its own in-house library). Additionally, the offices have unlimited use of the fine technical university libraries located in their area.

All SCS offices are equipped with a modern production department staffed with well-trained personnel.

APPENDIX A

UNDERGROUND STORAGE TANKS PROJECTS
IN CALIFORNIA 1987-89

CLIENT	PROJECT TITLE	PROJECT DESCRIPTION
STATE OF CALIFORNIA, DEPARTMENT OF CORRECTIONS SACRAMENTO, CA SUBCONTRACTOR TO: ERNST AND YOUNG SACRAMENTO, CA	HAZARDOUS MATERIALS PRACTICES EVAULUATION (0189283)	EVALUATE HAZARDOUS MATERIALS STORAGE AND HANDLING PRACTICES AT DEPARTMENT OF CORRECTIONS STATE PRISON FACILITIES. GATHER INFORMATION THROUGH SITE VISITS AND QUESTIONNAIRES. IDENTIFY AREAS OF NON-COMPLIANCE WITH REGULATIONS AND STANDARD PRACTICES AND RECOMMEND IMPROVEMENTS.
COUNTY OF MERCED, PUBLIC WORKS DEPARTMENT MERCED, CA	UNDERGROUND TANK INVESTIGATION (0387001)	REVIEW EXISTING DATA AND GATHER SOIL AND GROUNDWATER DATA. PREPARE WORK PLAN FOR THREE SITES WHERE UNDERGROUND TANKS HAVE BEEN PREVIOUSLY PULLED. CONDUCT TEST PIT WORK, HAND AUGER HOLE(S), TEST BORINGS, INSTALL MONITORING WELLS, ANALYZE SOIL AND WATER SAMPLES AND PREPARE ENGINEERING REPORT. PREPARE CLEAN-UP PLANS.
COUNTY OF MERCED, DEPARTMENT OF PUBLIC WORKS MERCED, CA	MERCED COUNTY - TASK 58 (0387001-02)	PERFORM FEASIBILITY STUDY AND DESIGN OF A REMEDIATION PROGRAM FOR FUEL RELEASE PROBLEM AT THE CENTRAL FIRE STATION.
COUNTY OF MONTEREY SALINAS, CA	TANK TESTING - MONTEREY COUNTY, CALIFORNIA (0387005)	PERFORM PRECISION TANK TEST OF 33 TANKS FOR THE PARK, PUBLIC WORKS AND BUILDING AND GROUNDS DEPARTMENTS.
WINTERS COMPANY SAN JOSE, CA	WINTERS COMPANY - DALY CITY (0387009)	PERFORM SAMPLING AND ANALYSIS OF ONE VADOSE WELL THREE TIMES PER YEAR FOR THE WASTE OIL TANK AT THE DALY CITY FACILITY.
VIKING FREIGHT SYSTEM SAN JOSE CA #P	VIKING FREIGHT - MONIORING (0387010)	PERFORM SAMPLING AND ANALYSES OF GROUNDWATER MONITORING WELLS ON A QUARTERLY OR SEMI-ANNUAL BASIS AT VARIOUS SITES.
VIKING FREIGHT SYSTEM SAN JOSE, CA	UNDERGROUND TANK INVESTIGATION - SALINAS, CALIFORNIA (0387010-01)	DEVELOP AN UNDERGROUND TANK MONITORING WORKPLAN AND SUBMIT TO MONTEREY COUNTY.
VIKING FREIGHT SYSTEM SAN JOSE, CA	VIKING - SAN LEANDRO (0387010-02)	DEVELOP AN UNDERGROUND TANK MONITORING PLAN AND SUBMIT TO ALAMEDA COUNTY.
VIKING FREIGHT SYSTEM SAN JOSE, CA	GROUNDWATER MONITORING - EUREKA, CALIFORNIA (0387010-30)	PERFORM SEMI-ANNUAL SAMPLING AND ANALYSIS OF TWO GROUNDWATER MONITORING WELLS.
VIKING FREIGHT SYSTEM SAN JOSE, CA	ANNUAL TANK TEST - GARDENA, CALIFORNIA (0387010-33)	PERFORM ANNUAL PRECISION TANK TEST ON TWO UNDERGROUND TANKS AT THE GARDENA SITE. REPORT RESULTS TO CLIENT.
VIKING FREIGHT SYSTEM SAN JOSE, CA	VIKING - PETALUMA, CALIFORNIA (0387010-42)	PROVIDE SEMIANNUAL WATER SAMPLING AND ANALYSIS OF SEVEN GROUNDWATER MONITORING WELLS.

UNDERGROUND STORAGE TANKS PROJECTS
IN CALIFORNIA 1987-89

CLIENT	PROJECT TITLE	PROJECT DESCRIPTION
GOLDEN GRAIN FOODS SAN LEANDRO, CA	ODOR/SHEEN TESTS - SAN LEANDRO, CALIFORNIA (0387011)	PERFORM WEEKLY ODOR/SHEEN TESTS AND RECORD WATER LEVELS ON THREE GROUNDWATER MONITORING WELLS.
YELLOW FREIGHT SYSTEM OVERLAND PARK, KS	YELLOW FREIGHT - OAKLAND, CALIFORNIA (0387012-01)	PERFORM WELL SAMPLING, CHEMICAL ANALYSIS AND TANK TESTING AT THE OAKLAND FACILITY. MAY LEAD TO BORINGS AND CLOSURE OF ONE TANK. COMPLETE CONTAMINATION REMEDIATION PROGRAM.
YELLOW FREIGHT SYSTEM OVERLAND PARK, KS	YELLOW FREIGHT - SOUTH SAN FRANCISCO (0387012-02)	SEMI-ANNUAL WATER SAMPLING, ANALYSIS AND REPORT ON THREE GROUNDWATER MONITORING WELLS.
YELLOW FREIGHT SYSTEM OVERLAND PARK, KS	YELLOW FREIGHT - SUNNYVALE (0387012-08)	CONDUCT A SITE INVESTIGATION, PRECISION TEST TWO TANKS, AND PERFORM REMEDIAL ACTIONS, IF NECESSARY.
YELLOW FREIGHT SYSTEM OVERLAND PARK, KS	YELLOW FREIGHT - SACRAMENTO (0387012-44)	PROVIDE ANNUAL TANK TESTING.
YELLOW FREIGHT SYSTEM OVERLAND PARK, KS	YELLOW FREIGHT - BARSTOW (0387012-45)	PROVIDE ANNUAL TANK TESTING.
YELLOW FREIGHT SYSTEM OVERLAND PARK, KS	YELLOW FREIGHT - FRESNO (0387012-47)	PROVIDE ANNUAL TANK TESTING.
YELLOW FREIGHT SYSTEM OVERLAND PARK, KS	YELLOW FREIGHT - FONTANA (0387012-48)	PROVIDE ANNUAL TANK TESTING.
YELLOW FREIGHT SYSTEM OVERLAND PARK, KS	YELLOW FREIGHT - GARDENA (0387012-49)	PROVIDE ANNUAL TANK TESTING.
YELLOW FREIGHT SYSTEM OVERLAND PARK, KS	YELLOW FREIGHT - ORANGE (0387012-54)	PROVIDE ANNUAL PRECISION TANK TEST.
YELLOW FREIGHT SYSTEM OVERLAND PARK, KS	YELLOW FREIGHT - SALINAS (0387012-58)	PERFORM ANNUAL PRECISION TANK TESTING.
ENVIROGROUP LAFAYETTE, CA	UNDERGROUND STORAGE TANK ASSESSMENT - SAN FRANCISCO (0387016)	CONDUCT SITE ASSESSMENT AT UNDERGROUND TANK SITE PRIOR TO SITE SALE OR RELEASING BY OWNER. DRILL 3 TEST BORINGS TO AN ESTIMATED 30 FEET, PERFORM CHEMICAL TESTING, AND EVALUATE EXTENT OF SUBSURFACE CONTAMINATION.
VERL'S CONSTRUCTION CASTRO VALLEY, CA	VERL'S CONSTRUCTION (0387017)	COLLECT SOIL SAMPLES AND HAVE ANALYSES PERFORMED AFTER TANK REMOVALS AT VARIOUS BAY AREA SITES.
VARIOUS CLIENTS DUBLIN, CA	MISCELLANEOUS TANK TEST PROJECTS (0387099)	PERFORM ONE-TIME TANK TEST EFFORTS FOR VARIOUS CLIENTS IN CALIFORNIA.
ENVIROGROUP LAFAYETTE, CA	GAS STATION (0388002)	SAMPLE AND ANALYZE SOIL AT SITE TO DETERMINE EXTENT OF CONTAMINATION.

UNDERGROUND STORAGE TANKS PROJECTS
IN CALIFORNIA 1987-89

CLIENT	PROJECT TITLE	PROJECT DESCRIPTION
COUNTY OF NEVADA NEVADA CITY, CA	UNDERGROUND STORAGE TANK SERVICES (0388035)	EVALUATE TEN UNDERGROUND STORAGE TANKS. PERFORM ONSITE EVALUATION AND PRECISION TESTING. PREPARE REPORT OUTLINING RECOMMENDATIONS FOR REMEDIATION AND LONGTERM MONITORING PLANS.
VERL'S CONSTRUCTION HAYWARD, CA	VERL'S CONSTRUCTION, INC. (0388038)	GENERAL UST AT VARIOUS SITES.
VERL'S CONSTRUCTION HAYWARD, CA	UNDERGROUND TANK REMOVALS (0388038-01)	PROVIDE SITE SUPERVISION AT VARIOUS SITES, INCLUDING SAMPLE COLLECTION AND ANALYSES AND PREPARATION OF REPORTS.
LABORERS TRAINING CENTER SAN RAMON, CA	FUEL OIL SPILL, SAN RAMON, CALIFORNIA (0388043)	INVESTIGATE AND REMEDIATE 200-GALLON DIESEL FUEL SPILL.
PROCESS CONSTRUCTION HAYWARD, CA	UNDERGROUND GAS TANK LEAKAGE (0388044)	PERFORM EXPLORATION AND REMEDIATION OF CONTAMINATION RELATED TO UNDERGROUND GAS TANK LEAKAGE.
PURE GRO COMPANY SACRAMENTO, CA	REMOVAL OF HAZARDOUS MATERIAL STORAGE TANKS - VISALIA, CALIFORNIA (0388048)	WRITE INSTRUCTIONS FOR DESTROYING THREE SODIUM CHLORATE TANKS. OBTAIN AND ANALYZE THREE SAMPLES FOR PRODUCT IDENTIFICATION.
LANDMARK DEVELOPMENT CUPERTINO, CA	KENYON PLACE UNDERGROUND TANK REMOVAL - SANTA CLARA, CALIFORNIA (0389061-01)	DESIGN UNDERGROUND STORAGE TANK REMOVAL. TAKE SAMPLES FROM BENEATH TANK AS REQUIRED BY CITY/COUNTY ORDINANCES. HAVE SOIL ANALYZED FOR DIESEL. PREPARE REPORT WITH FINDINGS, SUMMARY AND RECOMMENDATIONS FOR REMEDIATION, IF REQUIRED.
I. C. F. STUDIO CITY, CA	LABORATORY SERVICES (0688018)	PERFORM MISCELLANEOUS ANALYSES ON WATER SAMPLES.
HANEY COMPANY SIGNAL HILL	UNDERGROUND STORAGE TANK INVESTIGATION (0688022)	SUPERVISE REMOVAL OF UNDERGROUND TANKS AND PERFORM LABORATORY ANALYSES AS REQUIRED.

UNDERGROUND STORAGE TANKS PROJECTS
IN CALIFORNIA 1987-89

CLIENT	PROJECT TITLE	PROJECT DESCRIPTION
LABORERS TRAINING CENTER SAN RAMON CA	LABORERS TRAINING CENTER (0388005)	OBTAIN PERMIT TO REMOVE 560-GAL GASOLINE TANK. COLLECT SAMPLE FROM TANK AREA. ANALYZE SAMPLE. DISPOSE OF TANK. REPORT RESULTS.
WEST COAST TANK CAMPBELL, CA	WEST COAST TANK - TAXI-TAXI (0388019-01)	OBTAIN EIGHT SOIL SAMPLES FROM EXCAVATION UNDER FOUR TANKS. ANALYZE FOR GASOLINE, LEAD AND WASTE OIL. REPORT RESULTS TO CLIENT POSSIBLY RESULTING IN INSTALLTION OF GROUND WATER WELLS.
PURE GRO COMPANY WEST SACRAMENTO, CA	PUREGRO CO - TRACY (0388022)	SUPERVISE THE REMOVAL OF A 550-GAL UNDERGROUND STORAGE TANK AT THE TRACY FACILITY. COLLECT SOIL SAMPLE FROM EXCAVATION, ANALYZE AND REPORT RESULTS TO CLIENT.
LADBROOK RACING, INC. LIVONIA, MI	GOLDEN GATE FIELD PHASE II; ALBANY,CALIFORNIA (0388023-01)	TEST THREE UNDERGROUND STORAGE TANKS. REVIEW BORINGS AND WELL ANALYSIS FOR CONTAMINANTS IN THE LOCAL AREA. COMPLETE A SOIL GAS SURVEY OF THE INSTALLATION. REMOVE LEAKING TANKS IF FOUND.
DEPARTMENT OF THE ARMY, SACRAMENTO DISTRICT, CORPS OF ENGINEERS SACRAMENTO, CA	UNDERGROUND STORAGE TANK REPLACEMENT, REMOVAL, SITE REMEDIATION - OAKLAND ARMY BASE (0388028)	PERFORM UNDERGROUND TANK TESTING, DESIGN TANK REPLACEMENT, PREPARE SPECIFICATIONS FOR TANK REMOVAL AND DISPOSAL, COLLECT AND ANALYZE SAMPLES, BACKFILL, DESIGN CONTINUOUS INVENTORY SYSTEM, AND DEFINE REMEDIATION REQUIREMENTS.
DEPARTMENT OF THE ARMY, SACRAMENTO DISTRICT, CORPS OF ENGINEERS SACRAMENTO, CA	SOIL SAMPLING AND REMEDIATION AND RESTORATION PLAN - OAKLAND ARMY BASE (0388028-01)	CONDUCT SOIL BORINGS, COLLECT AND ANALYZE SOIL AND/OR WATER SAMPLES, PROVIDE PRELIMINARY REMEDIATION PLAN AND RECOMMEND REMEDIAL ACTIONS.
CALIFORNIA OFFICE OF THE STATE ARCHITECT SACRAMENTO, CA SUBCONTRACTOR TO: YEI ENGINEERS HAYWARD, CA	OPEN END UNDERGROUND STORAGE TANK SERVICES - NORTHERN CALIFORNIA (0388029)	PREPARE DESIGN DOCUMENTS. PERFORM DESIGN-RELATED SURVEY AND INVESTIGATIONS AT ACTIVE AND ABANDONED UNDERGROUND TANK SITES ON STATE PROPERTY IN NORTHERN CALIFORNIA.
HERTZ PENSKE READING, PA	UNDERGROUND TANK REMOVAL (0388034)	SUPERVISE REMOVAL OF UNDERGROUND TANKS AT TWO SITES: SAN LEANDRO AND SOUTH SAN FRANCISCO. COLLECT SAMPLES AND ANALYZE. PREPARE REPORT OF FINDINGS AND PROVIDE ANY RECOMMENDATIONS.
HERTZ PENSKE READING, PA	UNDERGROUND TANK REMOVAL - SAN LEANDRO, CALIFORNIA (0388034-01)	SUPERVISE REMOVAL OF UNDERGROUND TANKS. COLLECT SAMPLES AND ANALYZE. PREPARE REPORT OF FINDINGS AND RECOMMENDATIONS.

APPENDIX B

Education

B.S. - Central Michigan University, Mt. Pleasant, 1981
Geology

M.S. - University of Kentucky, Lexington, 1985
Geology

Post-Graduate - California State University, Los Angeles, 1986
Hydrogeology

Professional Licenses

Registered Geologist - California

Affiliations

National Water Well Association
Association for Women Geoscientists
South Coast Geological Society

Professional Experience

Ms. Childress has been involved in numerous SCS projects related to hazardous waste characterization and management. Some of the projects she has participated in are summarized below:

- Designed and implemented comprehensive (geologic and hydrologic) site characterizations, ground water monitoring systems, and recovery programs.
- Directed field studies assessing the areal extent of gasoline plumes and degree of ground water contamination from leaking underground storage tanks (LUST). These studies involved retrieval and analysis of soil and water samples to further define contamination sources.
- Directed site assessment studies including site inspection and drilling programs to identify potential on-site hazardous waste conditions.
- Directed installation and development of well systems for monitoring of ground water and emissions of gaseous vapors.
- Involved in the coordination and implementation of cleanup and disposal of contaminated soil and ground water at various hazardous waste sites.

- Produced cost estimates for various site assessment and cleanup programs regarding underground tanks.
- Developed and implemented on-site soil treatment systems for contaminated soil including vapor extraction.
- Produced and implemented work plans for SWAT characterization of southern California solid waste facilities.
- Directed and implemented large-scale underground tank investigations at various airport facilities.

Ms. Childress has participated in certified health and safety programs in compliance with OSHA Standard 29 CFR 1910.120. She is knowledgeable in incident response operations, team functions, personnel safety, and field equipment. Ms. Childress is able to recognize and evaluate potential chemical and physical hazards and associated risks in field operations; discuss and use of personnel protective equipment such as respiratory protection and protective clothing; use and interpret direct-reading instruments; and examine and establish Standard Operating Safety Guidelines to ensure safe and effective response operations.

JOHN P. CUMMINGS, PH.D., R.E.A.

Education

B.S. - Chemistry, Saint Michael's College, Winooski, Vermont

M.C.E. - Environmental Engineering, University of Toledo, Toledo, Ohio

Ph.D. - Chemistry - University of Texas, Austin, Texas

J.D. - Law - University of Toledo, Toledo, Ohio

GRADUATE - Industrial College of the Armed Forces, Washington, D.C.

Affiliations

Sigma XI - RESA
American Chemical Society
American Society for Testing Materials
Governmental Refuse, Collection and Disposal Association.
National Solid Waste Management Association
American Bar Association
Phi Alpha Delta

Registrations and Certifications

Ohio Registered Attorney
California Registered Environmental Assessor
EPA Certified Asbestos Inspector and Management Planner
U.S. Board of Military Appeals Attorney
U.S. Department of Defense Certified Fallout Shelter Analyst
U.S. District Court Registered Attorney
40 Hour EPA Approved Hazardous Waste Operations Training

Professional Experience

Mr. Cummings brings to SCS over thirty years of experience, project management, planning, regulatory affairs, implementation of legislative programs and policies. He has a strong background in hazardous/toxic waste management, pollution abatement implementation, solid waste management, resource recovery and recycling, legal aspects of OSHA and EPA litigation as well as product liability. He also has an extensive technical background in chemistry, ceramic, paper, and plastic materials. He is a patentee.

JOHN P. CUMMINGS (Continued)

Other experience includes:

- Legal counsel for several small businesses for environmental legal matters including permitting, completion of abatement orders, and determination of compliance with federal, state, and local environmental regulation.
- Manager, Environmental Affairs - Responsible for company environmental matters, permitting, recycling, resource recovery, hazardous solid waste management. Prime contact with customers and governmental agencies.
- Legal Counsel, Owens-Illinois, Inc. - Responsible for all OSHA and EPA Compliance and Litigation.
- Engineered, built, managed, and evaluated the first resource recovery from Municipal Solid Waste Plant for the EPA.
- Developed hazardous material reduction programs for several production operations.
- Performed recycling audits, system analysis, and source reduction programs for 15 facilities.
- Director of analytical services for Owens-Illinois, Inc.
- Consulting on resource recovery or recycling, utilization of waste products, hazardous waste plans, handling, packaging, transportation and disposal of solid, hazardous and toxic materials, legal counsel to several small firms, environmental audits.
- Risk Management - Assess risks, claims, asbestos risks, approved settlement payments, organized insurance treaties.
- Produced the County Hazardous Waste Management Plans for six Northern California counties.
- Developed the Environmental Impact Report for four Northern California county Hazardous Waste Management Plans.
- Developed risk assessment programs for two major industries.
- Completed over 50 site environmental assessments and developed remediation actions when required.

THOMAS DONG

Education

B.S. - California State University, Long Beach, 1976
Zoology

M.S. - University of Southern California, 1979
Environmental Engineering

Affiliations

American Society of Limnology and Oceanography
Institute of Environmental Sciences

Professional Experience

Mr. Dong provides SCS with strong technical skills and practical experience in environmental chemistry; assessment of solid and liquid hazardous waste treatment, disposal, and management; toxicological effects of chemicals used in organic chemical manufacturing industries; and a good working knowledge of regulations pertaining to storage of hazardous materials in underground tanks. Recent projects in which he has participated are shown below.

- Determining the extent of gasoline contamination at a construction site located in the San Fernando Valley. Soil and water samples were retrieved from eight on-site wells to locate the source and volume of the gasoline plume. A portable OVA and draeger tubes were used to determine levels of hydrocarbons being emitted into the atmosphere. Recommendations for cleanup and/or removal of contaminated soils/water have been submitted.

- For a major southern California paint company, he was involved in initiating a leak detection program for underground tanks containing acetone and methyl ethyl ketone (MEK). Drilling and sampling are currently being accomplished to determine the extent of contamination at the plant. Data will be submitted to the local Regional Water Quality Control Board for review and recommendations.

- For EPA, he was involved in providing cost estimates for leak detection and secondary containment for new and retrofit applications regarding underground storage tanks. This recent report is currently being used as a basis for evaluating the economic criteria associated with upgrading current installations.

- Participation in a nationwide EPA-funded project to determine the extent of local government intervention for regulating underground storage tanks. All 50 states plus U.S. territories were surveyed to determine the number of actual cases in each state.

5/85/UT

- Hazardous waste characterization of host tenants at Vandenberg Air Force Base, including an on-site interview with personnel to determine quantities and management practices.

- Collection, storage, and transfer of PCBs and PCB-contaminated materials from more than 75 state institutions in California; study recommended the best management and cleanup procedures.

- Performing an industrial survey of users, manufacturers, and generators of hazardous materials in the San Fernando Valley, California. Best management practices were formulated to protect ground water sources within the community.

- Identifying potential synthetic lining materials that could be used for upgrading utility waste disposal sites.

- Developing closure/post-closure plans for an Army munitions factory located in Pine Bluff, Arkansas.

- Team member for NEESA's NACIP study at Miramar Naval Air Station, and Marine Corps Base Camp Pendleton. He was responsible for gathering information regarding past hazardous waste storage, transfer, and processing operations.

KENNETH V. LACONDE, VICE PRESIDENT

Education

B.S. - St. Mary's College, 1964
Chemistry

Affiliations

Institute of Food Technology
American Chemical Society

Registrations

California Registered Environmental Assessor (REA-01106)

Professional Experience

Mr. LaConde joined SCS Engineers in 1974 with 14 years of experience in private industry. Mr. LaConde provides SCS with proven technical expertise in organic and inorganic chemistry. He has extensive experience in solid and hazardous waste management, project management and administration, municipal and industrial sludge management, chemical sampling and analysis, industrial waste treatment and disposal, quality assurance systems, and product development. Mr. LaConde currently manages most of SCS's projects related to the management of leaking underground storage tanks, and is responsible for SCS's analytical laboratory.

Mr. LaConde has led several SCS investigations of leaking underground storage tanks. For one project, the client encountered gasoline in ground water while excavating for a major high rise project. Mr. LaConde directed efforts to identify the spill sources, and developed remedial actions including ground water treatment with air stripping and activated charcoal. This work was based on his earlier research using powdered activated carbon to remove organic tin from drydock wastewater and organic pesticides from apple wash water.

On another project, Mr. LaConde led investigations to establish the extent of MEK, acetone, and lacquer thinner in soils and ground water due to leaking tanks at a manufacturing facility. Remedial actions were also devised under his direction.

Mr. LaConde has served as Project Manager on many multimillion dollar research efforts including studies of wastewater effluent from the Canned and Preserved Fruits and Vegetables Industry and the Miscellaneous Foods and Beverages Industry.

He has also served as Project Manager for an EPA study of municipal wastewater treatment sludge utilization and land treatment practices. During this project, over 100 municipally operated sewage treatment plants and 48 state offices handling solid waste matters were contacted to locate nine

study sites. Working closely with EPA and three nationally and internationally known soil scientists, the project team sampled sludges, soils, and plants at each site for physical, chemical, bacteriological, parasitological, and viral examination. Over 8,000 data points were statistically assessed in terms of perceived and measured environmental impacts. Recommendations for proper soil and sludge management practices were provided.

For the Tanners Council of America, Mr. LaConde directed a 5-year demonstration project to evaluate the environmental effects of disposing of tannery sludges by land treatment.

As Laboratory Director, Mr. LaConde currently supervises a modern facility equipped with three gas chromatographs, a TOC analyzer, and an atomic absorption spectrophotometer. The laboratory is currently engaged in many research projects and investigations of site conditions at hazardous waste disposal sites. Under Mr. LaConde's direction, the SCS laboratory conducts EP toxicity tests per RCRA procedures, hazardous waste analyses per the California Assessment Manual (CAM), and the identification and quantification of contaminants in soils and ground water.

Presentations and Publications

LaConde, K. V., and C. J. Schmidt. In-plant Control Technology for the Fruits and Vegetables Processing Industry. Presented at the 7th Annual Food Waste Symposium, Atlanta, Georgia, April 1976.

Clements, E. V., C. J. Schmidt, and K. V. LaConde. Wastewater Characterization and Treatment Alternatives for the Fruit and Vegetable Processing Industry. Presented at the 30th Purdue Industrial Waste Conference, May 8, 1975.

Otte, A. D., and K. V. LaConde. Environmental Assessment of Municipal Sludge Utilization at Nine Locations in the United States. Presented at the 9th Annual Conference on Food, Fertilizer, and Agricultural Residues, April 28, 1978.

LaConde, K. V., C. L. Eaker, R. J. Lofy, and R. P. Stearns. A Preliminary Assessment of Cadmium Addition to Agricultural Lands Via Commercial Phosphate Fertilizers. Contract No. 68-01-4625, EPA Office of Solid Waste, SW-708, September 1978.

LaConde, K. V., R. J. Lofy, and R. P. Stearns. Municipal Sludge Agricultural Utilization Practices - An Environmental Assessment. Contract No. 68-01-3265, EPA Office of Solid Waste, SW-709, September 1978.

LaConde, K. V. Study of Rum Distilling Waste Treatment and By-Product Recovery Technologies. SCS Engineers, January 1979.

KENT A. MADENWALD, P.E., R.E.A.

Education

B.S. - Lamar University, 1957
Geology/Mechanical Engineering

M.S. - University of North Dakota, 1962
Geological Engineering

Professional Licenses

Professional Engineer - Wisconsin
Registered Environmental Assessor - California
40 Hour EPA Approved Hazardous Waste Operations Training

Professional Experience

Mr. Madenwald brings to SCS over thirty years of experience in the geological and engineering disciplines. Professional highlights include:

- Project Manager for underground tank removal, remedial action and site closure for Milne Truck Lines throughout the western United States. Site contamination remediated in Reno, Nevada area terminal and ongoing ground water monitoring implemented; major aeration completed at Phoenix, Arizona terminal.

- Project Manager for underground tank monitoring and remedial actions for Yellow Freight System at 16 terminals in the western United States. Tank removals, repairs, retrofitting, tank integrity testing and large scale soil and groundwater remedial actions have been performed.

- Project Manager for various site assessments including a horse race track, city redevelopment agency, chemical companies, lending institutions, and oil field operations.

- Directed design and construction of various projects in Mobil refinery in St. Louis, Missouri. Included were: redesign of coker heater; redesign of river barge unloading and transmission system; rehabilitation of three - 100,000 barrel storage tanks; acted as Chief Engineer on as needed basis.

- Regional Geologist for Pure Oil Company in Western Canada doing wide area stratigraphic studies, prospect evaluation, and wellsite supervision.

KENT A. MADENWALD (Continued)

- Ground water and pollution studies in oil field operations in North Dakota and Canada, resulting in brine collection and injection wells for pressure maintenance program. Gas studies to develop gas collection system and gas plant for sulfur scrubbing.

- Developed soil stabilization plan for commercial development. Included housing septic tank drainage study and design. Resulted in sanitary sewer and small treatment plant installation.

- Slope studies of Missouri River for development of Lake Sacacawea in North Dakota.

- Land reclamation studies for lignite mines, resulting in land reforestation and reduced leaching of soils into ground water supply.

- Project Manager for $42,000,000 gas transmission and storage system for Mississippi River Gas Transmission Company. Resulted in increased throughput and eliminating flow upsets. Included were three compressor stations and seven underground storage wells. System was put on-line within budget and one week from expected completion.

- Directed design and construction of new filter cellars, ruh cellars, fermenting cellars, and government cellars for Jos. Schlitz brewery in California. Also designed and installed new C02 collection and purification system.

  Plant Engineer for Miller Brewing Company, Azuza facility. Project Manager for Design and Construction of Utilities area for new Miller Brewery at Irwindale, California. Project Manager for $10 million dollar N.I.C. budget.

- Design and installation of wastewater treatment systems for major industrial laundry firm, consisted of DAF, inclined plate settlers and ultrafiltration systems.

- Plant layout, industrial engineering consultant for various corporate clients.

- Chief Engineer for American Cryogenics, Inc. Designed and fabricated large (100 ton +) air separation plants. Designed and fabricated first high pressure (10,000 p.s.i.) trailers for NASA.

KRISHAN K. SAIGAL, VICE PRESIDENT

Education

B.E. - Gujarat University, India, 1956
Civil Engineering

M.S. - Case Institute of Technology, Cleveland, Ohio, 1959
Civil Engineering

Professional Licenses

Professional Engineer - New York, Ohio, California, and Arizona

Affiliations

Water Pollution Control Federation

Professional Experience

Mr. Saigal provides SCS with an extensive background in waste management, sewage collection and treatment, and water pollution control. His professional experience includes preparation of plans and specifications for sewage collection systems, sewage treatment plants, water and sewerage facilities, activated sludge plants, and pump stations.

Prior to joining SCS, Mr. Saigal served as Project Manager/Department Head at VTN Consolidated, Inc., Irvine, California. During his 2 years at VTN, he was responsible for the following projects:

- Coordination of field and office work for the construction of a water pollution control center for Aliso Water Management Agency (AWMA).
- Preparation of a revenue program for the city of Vacaville, California.
- Preparation of a cost allocation study for AWMA.
- Preparation of an operation and maintenance manual for AWMA coastal treatment plant.
- Preparation of plans and specifications for 18 small sewage treatment plants in Saudi Arabia.

Other projects which are representative of Mr. Saigal's 22 years of experience include the following:

- Project Manager responsible for the design and preparation of plans and specifications for a low-pressure sewer system for the towns of Camberia, Pendleton, and Wheatfield, New York.

KRISHAN K. SAIGAL (continued)

- Project Manager responsible for coordinating field and office work for the construction of a water pollution control center in Niagara County, New York.
- Plans and specifications for a 14-mgd activated sludge plant, including tertiary treatment, sludge thickeners, thermal sludge conditioning, vacuum filtration, and incineration for Niagara County Sewer District No. 1, New York.
- Plans and specifications for an interceptor and sewage treatment plant for the village of Geneva-on-the-Lake, Ohio.
- Plans and specifications for interceptors, force mains, and pump stations for both Erie County Sewer District No. 4 and the town of Grand Island, New York.
- Engineering report on the expansion of Easterly Sewage Treatment Plant, Cleveland, Ohio.
- Preliminary engineering report on sanitary sewerage system improvements for the city of Troy, Ohio.
- Preliminary engineering report for sewage collection and treatment facilities at Conneaut, Ohio.
- Preliminary report on advanced waste treatment facilities for Southerly Wastewater Pollution Control Center, Cleveland, Ohio.
- Design of photographic wastewater treatment facilities.
- Design and preparation of plans and specifications for landfill gas recovery and migration control systems for numerous landfills in California, Washington, and Maryland.
- Design and preparation of plans and specifications for landfill gas collection and utilization to produce electric power at Oxon Cove Landfill, Oxon Hill, Maryland.
- Design and preparation of plans and specifications for four vehicle wash facilities including sand-oil separators, water recycling, and oil recovery at Fort Irwin, California.

LORI T. TAGAWA

Education

B.A., University of Colorado, Boulder, 1982
Geology

M.S., California State University, Long Beach
Geology (in progress)

Affiliations

Geological Society of America
Association of Women Geoscientists
National Water Well Association

Professional Experience

Ms. Tagawa brings to SCS a background in hydrogeology and geology; project management; subsurface site and remedial investigations; solid waste assessment test (SWAT) proposal preparation and implementation, and final report preparation; aquifer characterization; secondary recovery of free-floating petroleum products atop water table.

Ms. Tagawa has 5 years of experience in ground water hydrology, aquifer characterization, and geochemical evaluations of hydraulic systems, with specialization in the assessment of ground water systems beneath inactive landfills, development and implementation of ground water monitoring plans, including identification and remediation of leachate plumes. She is experienced in the assessment and abatement of underground fuel and solvent leaks including secondary product recovery, soil and ground water analysis, and contaminated soil and ground water treatment and mitigation.

Specific project work includes the following:

- Project Manager/Hydrogeologist for Water SWAT in Riverside, California. Project involved evaluation of existing ground water and surface water conditions, recommendations for revised ground water monitoring well network, and assessment of potential for leachate generation at a recently closed landfill. Work included implementation of a recommended ground water monitoring network, including drilling and completing 20 monitoring wells, ground and surface water sampling, hydrogeologic analyses, and report preparation.

- Project Manager/Hydrogeologist for two Water SWATs in Oceanside, California. Evaluated existing hydrogeologic data, field monitoring of water levels and water quality to identify existing ground water conditions and flow regime, and recommended sites and designs for new ground water monitoring plan; assisted in development of closure plan for this recently closed landfill. Work also involved field reconnaissance to evaluate the local structural geology.

LORI T. TAGAWA (continued)

- Project Manager/Hydrogeologist for Water SWAT in Carson, California. Evaluated local geology and review hydrogeologic data obtained during previous investigations at this closed landfill situated next to an abandoned petroleum refinery. Evaluation of existing ground water monitoring system, delineation of petroleum product plume, and development of remediation program.

- Project Manager/Hydrogeologist involving an emergency investigation of a JP-5 pipeline leak that spilled over 10,000 gallons of product to the subsurface. Responsibilities included conducting all field activities, interfacing with appropriate regulatory personnel, and developing environmental impact assessment reports based upon geologic and hydrogeologic parameters in compliance with local, county, and state regulations.

- Project Manager/Hydrogeologist for several (10) underground storage tank compliance programs, Long Beach, California. Preparation and implementation of leak detection programs, tank monitoring programs, and remedial action plans. Preparation of site investigation report for local and state agencies for the insurance of proper permits for the storage of hazardous material underground.

- Project Hydrogeologist initiating underground hazardous material storage permitting requirements for a major corporation in Los Angeles County. Work included definition of site geology and hydrology, supervision of drilling and precision tank testing procedures, soil and ground water collection, and installation of water and vapor monitoring systems.

- Project Manager for preconveyance audits for many facilities in southern California. Assessment was conducted as part of land acquisition procedures to assess facilities. Work involved facility walk through, drilling and sampling of borings, water sampling, and final report preparation. Final report was used by clients to reconsider purchase of properties.

- Project Geologist involved in initiating leak detection programs for several chemical companies in the Los Angeles area with underground storage tanks containing acetone, methyl ethyl ketone (MEK), napth spirit, isobutanol, special hi-flash napth, wash thinner, toluol, butyl cellosolve (EB), etc. Drilling and soil sampling was done to determine the areal extent of contamination.

- Hydrogeologist in recovery/pollution abatement project involving recovery of free product (gasoline) on the water table and cleanup of associated contaminated aquifer, Orange County, California. Work included defining the extent and dynamics of the hydrocarbon plume, installing abatement system, monitoring the effectiveness of the system through water level and product thickness measurements,

LORI T. TAGAWA (continued)

ground water sampling and analyses, and maintaining contact with all regulatory agencies. Preparation of monthly status reports for the EPA and RWQCB.

- Hydrogeologist on other recovery/pollution abatement projects (including soils mitigation) in Los Angeles, Orange, Riverside, and San Diego Counties.

- Hydrogeologist investigating a site in Hollywood, California, that was contaminated with petroleum hydrocarbons from a service station's leaking underground storage tanks. Work included installation of 40 vapor and ground water monitoring wells, obtaining soil samples and water samples, ambient air monitoring, permitting, and communication with county and state regulatory agencies. Also involved in the design of recovery and abatement system using dual pumping and carbon adsorption techniques.

- Implemented a hazardous waste inventory and compliance assessment for the Nevada Department of Transportation. Determined type and amount of hazardous waste generated for 15 field maintenance stations. Current management and ultimate disposition of the sites were also determined and recommendations were made according to state and federal regulations.

- Geologist in charge of drilling, logging, and completion of 15 landfill gas wells for the purpose of monitoring landfill gas levels in overlying and surrounding properties in accordance with state and local ordinances.

- Sampling and inventorying electrical equipment for the presence of PCBs and PCB-contaminated materials from several state-owned institutions in California. Managed and processed data about physical and chemical conditions at over 1,500 locations and recommended appropriate PCB management and cleanup measures.

Ms. Tagawa has participated in a certified health and safety program in compliance with OSHA Standard 29 CFR 1910.120. She is knowledgeable in incident response operations, team functions, personnel safety, and field equipment. Ms. Tagawa is able to recognize and evaluate potential chemical and physical hazards and associated risks in field operations; discuss and use personnel protective equipment such as respiratory protection and protective clothing; use and interpret direct-reading instruments; and examine and establish Standard Operating Safety Guidelines to ensure safe and effective response operations.

Publications

Tagawa, L. T. Standard Handbook of Hazardous Waste Treatment and Disposal. (In Press.)

CHRISTOPHER G. WARD

Education

B.A. - New England College, 1981, Geology

Professional Licenses

Professional/Certified Geologist, Arkansas, Florida, Virginia (pending)
Certified Petro-Tite Tank Integrity Tester
Commonwealth of Virginia, Building Inspector (Residential and General)

Professional Experience

Mr. Ward has a solid background in geology and soils, hazardous waste investigations, geotechnical investigations, materials testing and inspection, environmental site assessments (ESAs), underground tank testing, and corrective action design and construction for soil and ground-water contamination.

Typical project experience includes:

- Turn-key approach to an underground storage tank (UST) leak. The project encompassed the testing of two 10,000-gallon fuel oil tanks and the identification of the leakage source, performance of a site assessment, and development of a corrective action plan. Oversight was provided for the installation of a ground-water treatment and oil recovery system, including weekly monitoring of the system.

- Management of more than 300 Environmental Site Assessments for public and private clients in five East Coast states, including primary client contact, cost proposals, supervision of site assessments, soil borings, ground-water monitoring well installations, and interpretation of laboratory analyses.

- Investigation of an UST leak for the Fairfax County (VA) school system including installation of monitoring wells, interpretation of hydrogeologic data, design and implementation of a product recovery system, and monthly monitoring reports.

- Primary author of SCS's underground storage tank qualifications package and lecture series for business and property owners.

- Management of a polychlorinated biphenol (PCB) survey at a military installation in Virginia including development of procedures and safety guidelines for conducting the survey, sampling of transformers, development of a data base for final results, and a training procedures manual for use by other military installations and SCS offices nationwide.

- Management of Spill, Prevention, Control, and Countermeasure (SPCC) plans for businesses in the Greater Washington (DC) metropolitan area.

- Performance of a site risk and remediation assessment and development of a corrective action plan for a product line leak at a service station in Harrisonburg, VA. The project included installation and monitoring of a free-product recovery system as part of the initial abatement procedures.

- Permeability testing to include drilling test holes, performing slug tests, determining soil permeability, and predicting migration rates for contingency plan petroleum spills.

- Permeability testing and monitoring well installation at a hazardous waste spill site including rock coring and pressure permeability packer tests to depths of 500 feet to locate permeable zones for monitoring well design, and the installation of monitoring well clusters.

- Performance of ESAs including geophysical surveys, installation of test and monitoring wells, and the performance of borehole geophysics and aquifer testing for the evaluation of hydrogeologic parameters.

- Management of an asbestos monitoring project including development of personal protection equipment and quidelines for onsite workers at a construction site in northern Virginia where naturally-occurring asbestos was encountered. Property boundaries and personnel were monitored for asbestos as part of a health and safety program to meet county, state, and OSHA requirements.

- Provision of engineering oversight for numerous UST removals including bidding assistance to retain contractors for clients, onsite contractor supervision, sample collection (soils and ground water), analytical testing including field screening and laboratory analyses, and closure reports.

QUALIFICATIONS OF SCS ENGINEERS

IN LANDFILL AND SOLID WASTE

MANAGEMENT SERVICES

SCS ENGINEERS
6761 Sierra Court, Suite D
Dublin, California 94568
(415) 829-0661

With Offices In:

Long Beach, California
Seattle, Washington
Covington, Kentucky
Kansas City, Missouri
Phoenix, Arizona
Reston, Virginia
Tampa, Florida
Columbus, Ohio
Norfolk, Virginia
Upper Nyack, New York

March 1990

CONTENTS

SECTION 1

INTRODUCTION

BACKGROUND

SCS Engineers (SCS) is a consulting engineering firm specializing in the design, development, and evaluation of solid waste management systems. Since 1970, 70 percent of our work has been in the solid and hazardous waste field. The firm's founders, Robert P. Stearns and E.T. Conrad, are landfill experts and professional engineers registered in most states. Support staff include civil, mechanical, chemical and environmental engineers, hydrogeologists, geologists, chemists, biologists, environmental attorneys, and computer specialists.

Solid waste management and landfill services offered by SCS include:

- Solid waste management planning for municipalities, counties, regional governments, and states.
- Landfill siting, permitting, design, expansion, and closure.
- Leachate and landfill gas migration monitoring and control.
- Regulatory compliance, including California Subchapter 15 requirements, air and water solid waste assessment tests (SWATs), California Assembly Bill 2448 (Eastin) closure and post-closure requirements, California Assembly Bill 939 (Sher) Intergrated Waste Management Act of 1989, and EPA Subtitles C and D.
- Transfer versus direct haul economic analysis.
- Refuse collection productivity and cost assessments.
- Waste transfer and resource recovery feasibility studies and design of facilities.
- Waste collection routing optimization.
- Market surveys for resource recovery and energy sales.
- Solid waste quantity and composition assessments.
- Landfill gas recovery and emission control.

- Permitting, review, and design of facilities for waste disposal and treatment.
- Development of methods to reduce the amount of hazardous waste in municipal solid waste landfills.
- Design of modular incinerator installations.
- Market surveys for energy and materials recovered from municipal refuse.
- Development and implementation of recycling and source separation programs.

The specific objectives of our assignments vary depending on the needs of a particular client. SCS has conducted over 1700 solid waste design and study projects for private and governmental clients since 1970. This work has established SCS's prominence in the field.

A construction support company, a division of SCS Engineers, called SCS Field Services was formed in 1985 to support the growing demand to assist our clients in the implementation of landfill gas and other solid and hazardous waste related construction projects.

SCS solid waste management capabilities are described in greater detail in Section 2.

SECTION 2

CORPORATE EXPERIENCE

A description of SCS's solid waste management capabilities is presented below. A list of selected Solid Waste Management projects is provided in Table 2-1. Table 2-2 presents a partial list of cities where SCS has conducted solid waste collection projects.

SOLID WASTE MANAGEMENT PLANNING

SCS has been responsible for the preparation of many solid waste management plans for cities, counties, regional governmental associations, and states. Such plans typically include the following elements:

- Identification of quantity and type of solid wastes generated.
- Projecting the nature and amount of solid waste to be generated in the future.
- Inventorying existing facilities and methods used to handle solid waste in a given jurisdiction.
- Identifying current and projected laws and regulations that relate to waste management practices.
- Defining the region's criteria and needs for future waste management systems in light of local physical conditions, regulations, and wastes to be handled.
- Identifying alternative waste management methodologies, including source separation, recycling, waste-to- energy, composting, and lined landfills.
- Evaluating the alternatives in terms of technical effectiveness, reliability, cost, probability of public acceptance, and other factors.
- Developing recommendations for implementation, including associated schedules and financing needs.

SCS recently worked with the California Department of Conservation to estimate the current recycling rate of aluminum, glass, and plastic beverage containers, so that the effectiveness of the California Bottle Bill program can be measured in future years. We have recently conducted waste characterization studies in Burbank, Glendale, Santa Barbara, and Pasadena, among many other such projects in the United States. One goal of such studies is to determine the amount of household hazardous waste in municipal solid wastes.

LANDFILL ENGINEERING

SCS has an excellent landfill engineering team which has successfully engineered over 100 landfills since 1970. SCS's landfill engineering assignments typically involve many elements, including:

- Siting of new landfills.
- Design (including leachate and LFG migration and emission control).
- Operations plans.
- Preparation of permitting application packages and negotiations with regulatory officials.
- Environmental impact assessment and preparation of Environmental Impact Reports (EIRs).
- Closure/post-closure plans.
- Remedial action investigations and designs.

A major portion of SCS's solid waste work involves sanitary landfill engineering. Within the past several years, SCS has worked on prospective new landfills and expansions to existing landfills in many California municipalities.

Virtually all our landfill projects entail evaluation and/or design of liner systems, leachate and gas collection networks, and closure planning. Thus, we are very familiar with current regulations and regularly deal with representatives of the local Regional Water Quality Control Boards and Air Pollution Control Districts, the California Waste Management Board, and local enforcement agencies throughout California.

On the basis of this extensive "hands-on" experience, SCS has often been retained to prepare design and operations manuals and to present training sessions. This exposure has led to SCS's participation on industry and government committees charged with developing and/or commenting on new state and federal regulations that control landfill siting, design, and operations. SCS professionals are frequently called on to provide expert testimony on legal proceedings that relate to landfill issues.

SOLID WASTE COLLECTION ANALYSIS

SCS is nationally recognized for its refuse collection productivity assessments. The firm has evaluated collection systems and equipment in virtually every state. This work

includes the following types of services:

- o Evaluation of refuse collection operations.
- o Cost comparisons of alternative collection systems.
- o Development and evaluation of collection alternatives, such as:
  - Conversion from backyard to curbside collection;
  - Reduction in collection frequency;
  - Reductions in crew size.
- o Evaluation of private versus municipal collection systems.
- o Recommendations to increase productivity.

SCS has performed waste collection, storage, transfer, and transportation projects for a variety of municipal, regional, military, and private clients. Based on the experience gained in the course of numerous waste collection projects, SCS has developed computer models (PROCOL and COSTCOL) to aid in the allocation of resources (vehicles, personnel, time) and routing of collection vehicles. These computer models enable us to:

- o Identify the optimal route length (number of stops).
- o Balance workloads for collection crews.
- o Select the optimal collection vehicle capacity.
- o Compare/quantify savings possible by modifying service levels, changing crew size, vehicles, etc.
- o Estimate resources (crews/equipment) and support costs necessary to service a community or service area.

The models form the cornerstone for an analysis technique developed and successfully used by SCS at many locations throughout the United States.

TRANSFER STATION STUDIES AND DESIGN

SCS has conducted many projects involving transfer stations and other waste processing facilities. Projects have ranged from preliminary designs and cost estimates to final plans and specifications.

In a project for the Metropolitan Service District (MSD) of Portland, Oregon, SCS developed a computer model to analyze alternative locations for transfer stations, and minimize total haul distances. Total waste management costs were computed and compared to those of the existing and alternative systems.

WASTE PRETREATMENT

Increasingly stringent discharge regulations have made it necessary to deal with pollutants at the source. Waste treatment generally involves a process or processes whereby the volume or toxicity is reduced, or the state (liquid, solid, or gas) is changed. The treated waste can then be reused or disposed in a safer or more cost-effective manner than the untreated waste.

SCS has designed waste treatment facilities, and is well qualified to evaluate unit processes in all areas of physical/ chemical wastewater treatment; including piping, pumping, clarification, storage, and recovery. Our experience includes chemical, physical, and biological treatment processes as well as incineration.

RESOURCE RECOVERY/RECYCLING

An increasing portion of SCS work has been in resource recovery. Work in this area includes the following:

- Economic analysis of resource recovery systems.
- Development of source separation programs.
- Design of recycling facilities and systems.
- Cost comparisons among alternative resource recovery systems.
- Market surveys for materials and energy sales.
- Waste characterization and quantity estimates.

LANDFILL GAS ENGINEERING

To date, SCS has performed over 900 landfill gas (LFG) projects which can be grouped into the following general topic areas:

- Air quality and odor investigations/control.

- o LFG emission and migration investigation/control system design.
- o LFG recovery feasibility investigations.
- o Recovery facilities design.
- o Calderon air SWATs.

SCS is a leader in both research/development and design/construction efforts aimed at controlling and recovering LFG, and has developed several innovative gas detection methods and designs to control subsurface gas movement. Over $400 million worth of property is protected by LFG control systems recommended and designed by SCS.

SCS has hands-on experience in the containment and control of landfill fires. SCS provides engineering, management and turn- key services. Typical tasks performed include the following:

- o On-site investigation and identification of landfill fire.
- o Plan and perform thermographic aerial surveys.
- o Plan and perform on-site thermographic surveys.
- o Analysis and interpretation of thermographic data.
- o Assess potential regulatory impacts (air, water quality, etc.).
- o Develop and implement boring and monitoring program.
- o Preparation and submittal of fire mitigation plan.
- o Implementation of mitigation plans including:
  - Injection of appropriate inert gases (CO_2, N_2);
  - Excavation and exposing of buried refuse;
  - Installation of fire breaks;
  - Addition of cover soil;
  - Surface and subsurface flooding of impacted areas.
- o Ongoing monitoring and regulatory reporting.
- o Repair and regrading of site surface and affected subsurface area.

CALDERON - SWAT PROGRAMS

From the time these regulations were being developed through implementation, SCS has assisted clients in meeting the technical requirements imposed by these laws. Working with Regional Water Quality Control Boards and Air Pollution Control Districts across the State of California, SCS has achieved air and groundwater SWAT compliance for numerous sites throughout California. Air and water samples are tested in the SCS Laboratory under very strict California Air Resources Board and State Water Resources Control Board/California Department of Health Services guidelines.

PERSONNEL QUALIFICATIONS

SCS employs a staff of engineers, geologists, hydrogeologists, chemists, and other professionals who are versed in the practical aspects of solid waste management. These personnel provide SCS with multidisciplinary teams which can respond to specific project requirements. Whether field investigations or research efforts, SCS Engineers has the right staff to fulfill the needs of the project.

Resumes of key personnel are presented in Appendix A.

TABLE 2.1

Selected Solid Waste Management Projects in California and the Western United States

CLIENT	PROJECT DESCRIPTION
County of Sacramento, Dept. of Public Works, Solid Waste Management Division, Sacramento, CA.	**EVALUATION OF SOLID WASTE DISPOSAL AND TRANSFER STATION OPERATIONS** Evaluate Sacramento County's refuse transfer stations and landfill operations, including short and long-term recommendations for improved lower cost performance.
City of Redding, County of Shasta, CA.	**JOINT SOLID WASTE MANAGEMENT STUDY/ ENVIRONMENTAL IMPACT REPORT** Joint city/county landfill siting study, including geotechnical analysis, selection of a new site, preliminary design, and EIR preparation.
County of San Luis Obispo, San Luis Obispo, CA.	**ENGINEERING AND OPERATING PLANS FOR LANDFILLS** Hydrogeological studies at three landfill sites, and preparation of operational plans for three 3-ton per day (tpd) landfills.
California Waste Management Board Sacramento, CA.	**SOLID WASTE COMPOSITION SURVEY - SAN FRANCISCO AREA** Characterized the solid waste in four major San Francisco Bay Area waste sheds. Involved both quantity and composition estimation, as well as quantifying seasonal variation, determining per capita waste generation rates (residential), and quantifying solid wastes by source.

TABLE 2.1 - (Continued)

Selected Solid Waste Management Projects

CLIENT	PROJECT DESCRIPTION
U.S. Environmental Protection Agency, Solid and Hazardous Waste Research Division, Cincinnati, OH. Subcontractor to: Tanners' Council of America	**LAND TREATMENT OF TANNERY SLUDGE - A FIELD DEMONSTRATION PROJECT, SANTA CRUZ, CA** Evaluate potential use of tannery sludges as a soil amendment on marginal soil for revegetation. Assess potential adverse impacts of tannery sludge land treatment. Design sampling program and perform laboratory analysis.
Electric Power Research Institute, Inc., Palo Alto, CA.	**DISPOSAL OF POLYCHLORINATED BIPHENYLS (PCBS) AND PCB-CONTAMINATED MATERIALS** Prepare a PCB disposal manual by documenting available PCB incineration and landfill technologies. Evaluation and assessment of PCB production, geographic distribution, storage facilities, and disposal facilities and requirements were included.
Southeast Regional Commission, Fresno County, CA.	**ASSISTANCE IN PROCUREMENT OF FULL-SERVICE RESOURCE RECOVERY FACILITY SERVICES** Evaluation of technical proposals from competing firms for a 420-tpd waste-to-energy facility. Negotiation with the selected firm on an agreement for waste flow guarantees in exchange for revenue sharing.

TABLE 2.1 - (Continued)

Selected Solid Waste Management Projects

CLIENT	PROJECT DESCRIPTION
California Waste Management Board, Sacramento, CA. Subcontractor to: Arthur Young & Company	**INVESTIGATION OF MARKET FACTORS LIMITING RECYCLING AND RESOURCE RECOVERY** Literature review on factors which inhibit the demand for secondary materials for three major commoditities (secondary fibers, glass, and ferrous metals) and three minor commodities (plastics, tires and organics). Utilize findings to develop a secondary materials market profile and to identify actions to be taken by state agencies that will increase the demand for these materials.
City of San Diego, San Diego, CA.	**NORTH CHOLLAS SANITARY LANDFILL PROJECT** Prepare final design plans and specifications, assist client in obtaining all required permits/approvals for 1,000-tpd landfill.
County of San Bernardino, San Bernardino, CA.	**DESIGN PLANS FOR SANITARY LANDFILL** Engineering services for new 50-tpd sanitary landfill, including geotechnical investigations, access road, site improvements, drainage, and plan for staged landfill construction.
County of San Diego, San Diego, CA.	**DESIGN PLANS FOR BONSALL SANITARY LANDFILL** Engineering services for 500-tpd sanitary landfill, including subsurface investigations, access road, site improvement, drainage, and plans for staged landfill construction. Assistance in permitting provided.

TABLE 2.1 - (Continued)

Selected Solid Waste Management Projects

CLIENT	PROJECT DESCRIPTION
Ventura Regional County Sanitation District, Ventura, CA.	**SOLID WASTE MANAGEMENT CONSULTING SERVICES** Assistance in implementation of a county-wide solid waste management plan, encompassing sanitary landfill site selection, preliminary design, and system financing.
County of Riverside, Riverside, CA.	**EVALUATION OF ALTERNATE SOLID WASTE DISPOSAL SITES AND TRANSFER STATIONS/EIR** Study of potential solid waste disposal sites, including environmental impact assessment, citizen participation, economic feasibility.
County of Kern, Bakersfield, CA.	**LANDFILL SITE SELECTION AND DESIGN** Perform geotechnical investigations of five alternative sites and select one site. Prepare plans and specifications for new 1,000-tpd landfill.
City of Industry, Industry, CA.	**LANDFILL GAS CONTROL AND RECOVERY SYSTEM (ASCE Outstanding Civil Engineering Achievement of 1981)** Subsurface gas investigation, feasibility and economic studies for gas control and recovery system to serve an industrial conference and exhibit center and 27-hole golf course complex on a 500-acre landfill. Design, specifications, and construction inspection provided for gas extraction/recovery system to recover 400 cubic feet per minute (cfm) of landfill gas to provide space heating and hot water.

TABLE 2.1 - (Continued)

Selected Solid Waste Management Projects

CLIENT	PROJECT DESCRIPTION
City of Oceanside, Engineering Division, Oceanside, CA.	**LANDFILL GAS MIGRATION CONTROL SYSTEM** Provide complete plans and specifications to install a landfill gas migration control system. Project accomplished in three phases: - Field investigation and preliminary design, - Final design and permitting, - Installation and start-up.
Watson Energy Systems, Los Angeles, CA.	**LANDFILL GAS EXTRACTION SYSTEM** Extraction and testing of landfill gas to ascertain economic feasibility of full-scale recovery. Design of landfill gas extraction system including 26 wells, 800 cfm compressor, and gas-cleaning facilities for gas recovery and transport to adjacent oil refinery.
Syufy Enterprises, San Francisco, CA.	**SIX-PLEX DRIVE-IN THEATRE, LANDFILL GAS CONTROL SYSTEM** Subsurface monitoring at completed landfill to identify need for gas controls for drive-in theatre development. Designed forced gas extraction system consisting of gas extraction wells, membranes, barriers, and vents. Investigated feasibility of medium-BTU gas utilization for electrical generation. Performed design of gas extraction and utilization system. Performed routine LFG control system operations and maintenance.

TABLE 2.1 - (Continued)

Selected Solid Waste Management Projects

CLIENT	PROJECT DESCRIPTION
City of Big Bear Lake, Big Bear Lake, CA.	**BIG BEAR VALLEY SOLID WASTE MANAGEMENT PLAN & ENVIRONMENTAL IMPACT REPORT.** Assist in the development of a 15 year plan for handling solid waste. Investigate existing practices, develop cost estimates for alternative waste handling systems and recommend an action plan. Identify and evaluate alternatives for financing considering possibilities of public or private ownership of facilities. As part of a public participation program, prepare news releases and organize public meetings to discuss the plan's elements.
MacDermid, Inc., Los Angeles, CA.	**PERMITTING ASSISTANCE** Assist chemical manufacturer/formulator with permits for construction of a recycling facility for reclamation of copper.
Department of Air Force, Headquarters, Space Division Los Angeles, CA.	**HAZARDOUS WASTE INVENTORY FOR VANDENBERG AIR FORCE BASE, CA, AND ITS TENANTS** Compile hazardous waste inventory (solid and liquid wastes) for 18 facilities at VAFB for both normal and contingency conditions, assign EPA and California Department of Health definitions to each waste, combine hazardous waste inventory for the host base with those for all tenants.

TABLE 2.1 - (Continued)

Selected Solid Waste Management Projects

CLIENT	PROJECT DESCRIPTION
Department of the Navy, Construction Battalion Center, Civil Engineering Lab, Port Hueneme, CA.	**FACILITY REVIEW OF OPERATING NAVAL MODULAR STARVED-AIR HEAT RECOVERY INCINERATOR SYSTEMS** Verify and augment findings of earlier Civil Engineering Laboratory research on heat recovery incinerators applicable to military installation solid waste.
City of Long Beach, Long Beach, CA.	**COST ESTIMATION FOR REFUSE HAULING AND TRANSFER OPTIONS** Evaluate the economics of alternative methods for transferring solid waste from Long Beach to available disposal sites.
U.S. Environmental Protection Agency, Office of Solid Waste, Washington, D.C.	**TECHNICAL ASSISTANCE** Assisted 15 state and local agencies in in development and implementing optimum solid waste transfer and disposal practices; e.g., in Nye County, Nevada, SCS recommended alternative waste disposal options, including transfer and landfill facilities.
City of Beverly Hills, Beverly Hills, CA.	**ENGINEERING SERVICES FOR REFUSE TRANSFER STATION** Prepared design, working drawings, and specifications, and provided services for a 250-tpd compaction type transfer station.

TABLE 2.1 - (Continued)

Selected Solid Waste Management Projects

CLIENT	PROJECT DESCRIPTION
South Bay Disposal Service, Torrance, CA.	**RESOURCE RECOVERY AND REFUSE TRANSFER STATION ANALYSIS** Assist in evaluating transfer station locations and cost estimates for site preparation. Consideration of alternatives for transfer station layout to optimize truck traffic and station efficiency. Assist in presentations before agencies responsible for permitting new transfer station.
Mesa Sand and Gravel, Inc., Boulder, CO.	**DESIGN OF SANITARY LANDFILL IN BOULDER, COLORADO** Prepare plans and specifications and permit applications for proposed 80-acre sanitary landfill to receive 600-tpd of waste.
City of Santa Fe, Santa Fe, NM.	**SOLID WASTE DISPOSAL SITE INVESTIGATIONS** Evaluation of alternative sites for a new sanitary landfill. Evaluation included assessments of hydrology, geology, soil conditions, potential environmental impacts, proximity to waste shed, and costs.
Midway Sand & Gravel Co., Seattle, WA.	**LANDFILL CLOSURE** Engineering/technical assistance for the finalization of closure plans for former City of Seattle landfill (1,500-tpd).

TABLE 2.2

Partial List of Cities Where SCS Has Conducted Solid Waste Collection Projects

Municipality	Economic Analyses	Operating Condition Assessments	Time/Motion Studies
Albuquerque, NM		X	X
Atlanta, GA		X	X
Bedford, MA	X	X	X
Boston, MA	X	X	X
Bowie, MO	X		X
Brunswick, ME	X	X	X
Cincinnati, OH	X	X	X
Chicago, IL		X	X
Claremont, NH	X	X	X
Clear Lake, IA		X	X
Dallas, TX	X	X	X
Fairfax County, VA	X	X	X
Ft. Worth, TX	X	X	X
Greenbelt, MD	X		X
Long Beach, CA		X	X
Los Angeles, CA		X	X
Louisville, KY		X	
Madison, WI	X	X	X
Manhattan Beach, CA	X	X	X
Medford, OR	X	X	X
Memphis, TN	X	X	X
Miami, FL	X	X	X
Modesto, CA	X	X	X
Newport Beach, CA	X	X	X
New York, NY		X	X
Palo Alto, CA		X	
Phoenix, AZ	X	X	X
Reston, VA	X		X
Riverside, CA	X		
San Antonio, TX	X		
San Diego, CA	X	X	X
San Luis Obispo, CA	X	X	X
Santa Monica, CA		X	X
San Francisco, CA	X	X	X
Scottsdale, AZ	X	X	X

TABLE 2.2 - (Continued)

Partial List of Cities Where SCS Has Conducted Solid Waste Collection Projects

Municipality	Economic Analyses	Operating Condition Assessments	Time/Motion Studies
Seattle, WA	X	X	X
Springfield, MA		X	X
St. Petersburg, FL		X	X
Tucson, AZ			X
University Park, TX	X	X	X
Washington, D.C.	X	X	X
West Hartford, CT	X	X	X

SECTION 4

COMPANY FACILITIES

Office Facilities

Since its formation in 1970, SCS Engineers has grown to a staff of over 250 people located in eleven offices nationwide: Dublin and Long Beach, California; Reston and Norfolk, Virginia; Bellevue, Washington; Covington, Kentucky; Phoenix, Arizona; Tampa, Florida; Columbus, Ohio; Upper Nyack, New York; and Kansas City, Missouri. This growth reflects the firm's ability to successfully provide quality professional services demanded by our private and governmental clients.

Chemical Laboratory

The SCS Laboratory is located in Long Beach, California. The laboratory is state certified and well equipped to perform analyses on water, wastewater, sludges, soils, plants, leachates, and specific wastes. Laboratory capabilities include:

- Gas chromatography.
- Atomic absorption and emission spectroscopy.
- Flameless AA analysis.
- Visible spectrophotometry and colorimetry.
- Determination of classical water and waste parameters such as pH, turbidity, COD, TS, TDS, TSS, SS, DO, O&G, etc.
- Physical and structural testing of soils - particle size distribution, cohesion, compactibility, dry compressive strength, permeability, optimum moisture content, and wetted compressive strength.
- Leaching studies - RCRA extraction procedure, TEP procedure, 5-day shake test.
- Field sampling and analysis capabilities, including groundwater, sludges, soils, plants, sediments, (fresh water and marine), hazardous wastes, and priority pollutants.
- Analyses upon request, such as biodegradability, reducing sugars, petroleum waste products, bacteriological analyses, and bench-scale evaluations of water and wastewater treatment unit operations.

Computer Facilities

SCS maintains computer centers in two of its offices. In Long Beach, we have an Hewlett-Packard (HP) 3000 Series 33 System. The system has 512 kilobytes (kb) of memory, 120 million characters of on-line storage, tape processing, and a time- sharing environment. Remote job entry capabilities are present.

An HP 3000 Series III System is in use in the Reston, Virginia office. Capabilities of that system include 256 kb of main memory and 120 megabytes of disc storage.

Our computer centers support a variety of systems tailored specifically to the needs of the waste management industry. For example, the firm developed SCS-AEGIS, a massive data base which identifies the nature, quantities, and location of hazardous waste and wastewater generators nationwide. Waste management firms routinely use SCS-AEGIS to determine their existing market share, and to develop strategies for increasing it.

Library

The main SCS technical library is located in our Long Beach office. This library currently contains approximately 20,000 volumes. The library has recently converted from a traditional card catalog to an on-line data system. This conversion allows the library and the project staff to access library holdings by key words, title, author, corporate author, sponsor, or NTIS number. Use is made of the information retrieval systems available through NTIS, EPA's Solid Waste Information Retrieval System (SWIRS), a private subscription service, and EPA Information Retrieval Systems, such as STORET.

Graphics Facilities

Because of the importance of clear portrayal of information in the engineering disciplines SCS houses a fully equipped Graphics Design Department. Where technical analyses must be communicated to lay personnel or governmental officials (e.g., during a public hearing), use of graphics materials has proven to be especially helpful.

SECTION 5

REFERENCES

SCS Engineers welcomes inquiries of the following references who are familiar with solid waste management work of the firm and its key personnel:

1. Mr. Ed Haskins
   Refuse Disposal Division Manager
   County of Sonoma
   Santa Rosa, California
   (707) 527-2231

2. Mr. David Myers
   Monterey Regional Waste Management District
   Marina, California
   (408) 384-5313

3. Mr. Carl Arness
   Director of Public Works
   City of Redding
   Redding, California
   (916) 246-1151

4. Mr. Arthur Krieger
   Director of Public Works
   City of Pasadena
   Pasadena, California
   (213) 577-4087

5. Mr. Robert Alpern
   Senior Sanitary Engineer
   Bureau of Sanitation
   City of Los Angeles
   Los Angeles, California
   (213) 485-5347

APPENDIX A

Resumes of Key Personnel

MARK B. BEIZER, PROJECT DIRECTOR

Education

B.S. - University of California, Los Angeles, 1969
Engineering

Professional License

Registered Civil Engineer - California (C 22879), Texas (60507)

Affiliations

American Society of Civil Engineers
Air Pollution Control Association
Governmental Refuse Collection and Disposal Association
American Public Works Association
National Society of Professional Engineers

Professional Experience

Mr. Beizer has 18 years of experience in civil and environmental engineering, the last 9 of which have been in the waste management field, with particular emphasis in land disposal engineering. He currently directs all landfill and landfill gas (LFG) projects out of the SCS Long Beach office.

Mr. Beizer's experience ranges from hands-on participation in field and design work to direction of large solid waste management projects. This work has included literally hundreds of projects in the landfill and LFG fields, involving landfill siting, permitting, design and operations planning, and the design, field testing, and operation of LFG migration control, collection, and recovery systems. He has also provided expert testimony on landfill-related litigation, and regularly makes presentations at public hearings and before regulatory agencies.

Landfill project work has included:

Landfill and Transfer Station Siting--

- Siting studies for the cities of Phoenix and Yuma, Arizona, and the counties of San Diego, Kern (Bakersfield), and Shasta, California. These projects involved comprehensive surveys of potential sites, analyzing topographic, hydrogeologic, and land use information. Economic comparisons and environmental assessments were performed in order to prepare numerical and subjective site rankings.

- Transfer station siting and design for the cities of Los Angeles, Beverly Hills, and Newport Beach, California.

- Conduct of seminars in disposal site selection and permitting procedures at locations throughout the state for the California Waste Management Board.

- Preparation of Environmental Impact Reports (EIRs) for new or expanded landfills in the City of Los Angeles (Potrero Canyon), Fresno (American Avenue), Burbank, and Ventura County, California.

Landfill Design and Operations--

- Design and operations plan preparation for 1,400-tpd Sacramento County Landfill.

- Design, operations plan, and permit acquisition for San Diego North Chollas Sanitary Landfill. Project involved design of storm drain under site to serve as spillway for upstream reservoir. Plans included site preparation, leachate collection, access roads, and gatehouse facilities. Permits received from Regional Water Quality Control Board and California Waste Management Board.

- Design of 600-tpd landfill in Boulder, Colorado.

- Design of new 200-tpd landfill in Thurston County, Washington, and design of closure plan for adjacent site.

- Conceptual designs for landfills in San Bernardino County, Whittier, Orange County (Santiago Canyon), and Clovis, California.

Landfill Closure--

- Closure plans for landfills in San Diego (South Miramar), Los Angeles (Harbor), Oceanside, and Fontana, California.

- Development of final cover designs and ground water monitoring systems for landfills in Riverside (Tequesquite), Oceanside, and Los Angeles, California.

- Design and construction management of excavation and redisposal of 400,000-cu-yd Avondale Landfill (Phoenix, Arizona); included design of double liner and leachate collection system.

- Remedial action (waste removal and/or site closure) for nine uncontrolled landfills in Phoenix, Arizona.

LFG Projects--

- Direction of over 200 projects related to the control or recovery of LFG in California and throughout the western United States.

- Design, construction oversight, and ongoing operation of LFG collection/flaring systems at sites in Los Angeles, San Diego, San Bernardino, Oceanside, and Carson, California.

- Implementation of LFG control via air injection systems in Modesto, San Diego, Long Beach, Burbank, and Commerce, California.

- LFG extraction testing programs at over 20 landfills.

Solid Waste Assessment Tests (SWATs)--

- Calderon and Rule 1150.1 monitoring programs in Burbank, Oceanside, and Riverside, California; and landfill odor/toxic emissions monitoring and control projects in Chicago, Illinois, and at the BKK Hazardous Waste Landfill in California.

- Water Quality SWATs in Riverside, Oceanside, and Norwalk, California.

Prior to joining SCS, Mr. Beizer spent 8 years with the Los Angeles County Flood Control District, the last 4 as a Supervising Civil Engineer and Project Manager. He managed the District's involvement in the $25,000,000 Pan Pacific Park and Retention Basin, overseeing design, right-of-way negotiations, community and political liaison, and preparation and processing of the EIR. Other projects included flood control channels and storm drains, debris basins, debris disposal areas, and the District's emergency response during the heavy storms of 1977-1978.

Mr. Beizer has substantial expertise in PERT/CPM scheduling systems and resource planning. He also has extensive public relations experience, having served as the District's spokesman to local communities and government entities on several projects and programs. He also served as an engineer in the District's Operation and Maintenance Division, performing engineering design, cost estimates, and construction inspection on numerous force account projects.

E. T. CONRAD, PE, PRINCIPAL

Education

B.S. - University of California, 1958, Engineering

Professional Licenses

Registered Civil Engineer - California
Registered Professional Engineer - Connecticut, Delaware, District of Columbia, Florida, Louisiana, Maryland, Massachusetts, Missouri, Maine, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, Wisconsin

Affiliations

American Society of Civil Engineers
National Society of Professional Engineers
American Public Works Association
Government Refuse Collection and Disposal Association
National Solid Waste Management Association

Professional Experience

As the managing principal of the Reston, Virginia office, Mr. Conrad is responsible for directing the firm's East Coast operation. He has 24 years experience in environmental engineering and management and 30 years experience in civil engineering and construction.

The majority of the environmental engineering experience has been in land disposal of solid and hazardous wastes and landfill gas control and recovery. He has been active in professional societies and citizen organizations. He has managed or directed more than 200 landfill and hazardous waste projects, ranging from site investigations and site selection studies to design, operations plans, corrective actions, closure plans and post-closure care practices, contingency plans, cost analyses, O&M manuals, design manuals, and research. Representative projects include:

- Design of and permitting for a landfill to dispose resource recovery facility residue and municipal solid waste bypass in Hudson County, NJ.
- Site selection study and design for a new debris landfill and a new sanitary landfill in Prince William County, VA.
- Development of leachate management, operating, closure, and end-use plans for three major landfills in the City of New York.
- Design and permitting of a regional landfill in Charles City County, VA.

- Design and preparation of plans and specifications for clean-up of the Krysowaty Farm Superfund Site in New Jersey, under contract to the U.S. Corps of Engineers.

- Remedial Investigation/Feasibility Study for the Fulbright and Sac River Landfills in Springfield, MO, under contract to the primary responsible parties.

- For the U.S. Environmental Protection Agency (USEPA), provided technical and cost estimating support for development of regulations regarding landfills, surface impoundments, gas emissions, gas migration, and underground and aboveground storage tanks.

- Co-author of manuals for the USEPA:

  - Closure and Post-Closure Care of Hazardous Waste Disposal Sites Closed as Landfills;
  - Sanitary Landfill Design and Operation;
  - Sludge Landfill Practices; and
  - Closing and Upgrading Open Dumps.

- Consulting to the Town of Salem, NH, the Town of North Hempstead, NY, and the City of New York, NY, to control and extinguish subsurface fires in landfills.

Mr. Conrad has directed or managed more than 100 landfill gas (LFG) control and recovery projects throughout the south and east. Services have ranged from monitoring to investigations, feasibility studies, designs, construction, and startup operations. Projects include:

- Consulting regarding gaseous emissions from the Port Washington Landfill (a Superfund site). Activities have involved field testing and monitoring, LFG control facilities, a fume incinerator to control odors and destroy volatile organic emissions, literature research, expert testimony, negotiations with regulatory agencies and intervenor groups, and consulting in regard to the site's Superfund status.

- Investigations and designs to protect new and existing structures on and near landfills throughout the East Coast. The value of buildings being protected exceeds $500,000,000.

- LFG recovery feasibility studies, including pump test programs for Hillsborough County, FL; Montgomery County, MD; the District of Columbia; Fairfax County, VA; and LFG developers in Connecticut, Florida, Massachusetts, New York, and North Carolina.

- Odor and LFG control studies and designs for three landfills in Florida.

E.T. CONRAD, PE (continued)

Publications:

"I-66 Landfill Gas Recovery Feasibility Analysis." (co-authored with P. J. Carrico, L.Y. Montague, and E.R. Peterson), Fairfax County Division of Solid Waste, Fairfax, VA, November 1988.

"Landfill Gas Trace Constituents: VOCs versus ROGs." (co-authored with W.G. Vogt), Proceedings, Government Refuse Collection and Disposal Association, Eleventh Annual International Landfill Gas Symposium, Houston, TX, March 22, 1988.

"The Palm Beach County Landfill Gas Program." (co-authored with G. J. Maclean and Leila Nikkhoo), Proceedings, Government Refuse Collection and Disposal Association, Tenth International Landfill Gas Symposium, West Palm Beach, FL, February, 1987.

"The Use of the 'HELP' Model in Evaluating Alternative Leachate Mangement Plans for Three New York City Landfills." (co-authored with R.B. Gardner), Proceedings, National Solid Waste Management Association, Waste Tech '86 Conference, Chicago, IL, October 1986.

"Old Bethpage Landfill Gas Recovery System Analysis." Prepared for Energy Tactics, Inc., Town of Oyster Bay, NY. September 1986.

"Evaluation of the Integrity of the Hillsborough Heights Landfill and Potential Sources of Contamination." (co-authored with R.B. Gardner and Geraghty & Miller, Inc.), Hillsborough County Department of Solid Waste, Tampa, FL, July 1986.

"Hillsborough Heights/Taylor Road Landfill Gas Recovery Program Feasibility Study." (co-authored with F.L. Flood), Hillsborough County Department of Solid Waste, Tampa, FL, June 1986.

"Remedial Actions to Mitigate Against Radon Migration into Structures." (co-authored with R.W. Luce), Presented at National Science Week Regional Symposium, Indoor Radon in the Mid-Atlantic States, George Mason University, Fairfax, VA, May 1986.

"Landfill Gas Migration from the I-66 Landfill; Fire Training Center." (co-authored with F.L. Flood and E.R. Peterson), Fairfax County Division of Solid Waste, Fairfax, VA, April 1986.

"Control of VOC Emissions at a Landfill Site in New York: A Community Perspective." (co-authored with W.G. Vogt and J.J. Walsh), Proceedings, Government Refuse Collection and Disposal Association, 9th International Landfill Gas Symposium, Newport Beach, CA, March 1986.

"Operations Plan Report, Edgemere Landfill." (co-authored with R. B. Gardner), New York City Department of Sanitation, November 1985.

"Landfill Design Report (for each landfill), Edgemere Landfill, Pennsylvania Avenue Landfill, Fountain Avenue Landfill." (co-authored with R.B. Gardner), New York City Department of Sanitation, November 1985.

"Assessment of the Technical, Environmental, and Safety Aspects of Storage of Hazardous Wastes in Underground Tanks." (co-authored with D.H. Bauer), U.S. Environmental Protection Agency, Washington, DC, March 1984.

"Design Criteria for Landfill Gas Recovery Systems." (co-authored with E.R. Bogardus), Presented at the American Society of Mechanical Engineers, Solid Waste Division, Seminar on Landfill Gas Recovery, New York City, NY, March 1983.

"Operations and Management of Sanitary Landfills." Presented at the Government Refuse Collection and Disposal Association, Virginia Chapter Seminar on Sanitary Landfill Management, Charlottesville, VA, January 1983.

"I-95 Sanitary Landfill Gas Recovery and Utilization Feasibility Study." (co-authored with J.J. Walsh, F.L. Flood, and E.R. Bogardus), Government of the District of Columbia, Washington, DC, December 1982.

"Evaluation for Closure and Post-Closure Care Plans for Hazardous Waste Landfills." (co-authored with R.B. Gardner and B. Peterman), U.S. Environmental Protection Agency, Washington, DC, January 1982.

"Remedial Actions for Open Dumps." (co-authored with W.H. Hassett), Journal of the Environmental Engineering Division, American Society of Civil Engineers, p. 1317-1325, December 1981.

"Solid Waste Landfill Design and Operation Practices." (co-authored with J.J. Walsh, J. Atcheson and R.B. Gardner), U.S. Environmental Protection Agency, Washington, DC, April 1981.

"Effects of Hazardous Wastes on Housing and Urban Development and Mitigation of Impacts." (co-authored with K.R. Boyer), U.S. Department of Housing and Urban Development, Washington, DC, October 1980.

"Process Design Manual for Municipal Sludge Landfills." (co-authored with J.J. Walsh and R.P. Stearns), U.S. Environmental Protection Agency, Technology Transfer, Cincinnati, OH, October 1978.

"Availability of Land for Solid Waste Disposal." (co-authored with G.L. Mitchell and J.T. Morgan), American Paper Institute, Washington DC, August 1978.

"Identification, Evaluation, and Comparative Analysis of Onsite Wastewater Treatment and Disposal System," (co-authored with D.H. Bauer), Draft, U.S. Environmental Protection Agency, Cincinnati, OH, August 1978

"Methane Gas Investigation and Controls." (co-authored with J.J. Walsh and C.D. Kepple), Frostburg Industrial Park, Frostburg, MD, May 1978.

E.T. CONRAD, PE (continued)

"A Methodology for Determining Land Value and Associated Benefits Created from Dredged Material Containment," (co-authored with A.J. Pack), U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS, May 1978.

"Oil Spillage." (co-authored with J.J. Walsh and J.R. Lancaster, The Navy Civil Engineer, p. 4-6 and 22-24, Spring 1978.

"Assessment of Industrial Hazardous Waste Management Practices: Leather Tanning and Finishing Industry." (co-authored with G.L. Mitchell and D.H. Bauer), for U.S. Environmental Protection Agency, Washington, DC, November 1976.

"Energy Efficiency Improvement Target in the Textile Mill Products Industry: SIC 22," (co-authored with G.L. Mitchell), Federal Energy Administration, Washington DC, September 1976.

Underground Liquid Waste Disposal, A Task Committee Report," (co-authored with D.L. Warner, et al.), by the Task Committee on Underground Liquid Waste Disposal of the Committee on Ground Water Hydrology of the Hydraulics Division, Journal of the Hydraulics Division, American Society of Civil Engineers, p. 421-435, March 1975.

"Information System for Directing and Evaluating Solid Waste Management Activities." (co-authored with G.L. Mitchell), for the Government of the District of Columbia, July 1974.

"Solid Waste Disposal in Selected Jurisdictions in Metropolitan Washington." (co-authored with C.D. Kepple et al.), a Report by the Task Force of the Environmental Engineering Committee, National Capital Section, American Society of Civil Engineers, Washington DC, May 1973.

"Analysis of Federal Programs Affecting Solid Waste Generation and Recycling." (co-authored with D.E. Ross and R.P. Stearns), U.S. Environmental Protection Agency, Cincinnati, OH, April 1972.

"Standards for Selection of Landfill Equipment." Solid Waste Management Refuse Removal Journal, November 1971.

JOHN P. CUMMINGS, PH.D., R.E.A.

Education

B.S. - Chemistry, Saint Michael's College, Winooski, Vermont

M.C.E. - Environmental Engineering, University of Toledo, Toledo, Ohio

Ph.D. - Chemistry - University of Texas, Austin, Texas

J.D. - Law - University of Toledo, Toledo, Ohio

GRADUATE - Industrial College of the Armed Forces, Washington, D.C.

Affiliations

Sigma XI - RESA
American Chemical Society
American Society for Testing Materials
Governmental Refuse, Collection and Disposal Association.
National Solid Waste Management Association
American Bar Association
Phi Alpha Delta

Registrations and Certifications

Ohio Registered Attorney
California Registered Environmental Assessor
EPA Certified Asbestos Inspector and Management Planner
U.S. Board of Military Appeals Attorney
U.S. Department of Defense Certified Fallout Shelter Analyst
U.S. District Court Registered Attorney
40 Hour EPA Approved Hazardous Waste Operations Training

Professional Experience

Mr. Cummings brings to SCS over thirty years of experience, project management, planning, public affairs, implementation of legislative programs and policies. He has a strong background in hazardous/toxic waste management, pollution abatement implementation, solid waste management, resource recovery and recycling, legal aspects of OSHA and EPA litigation as well as product liability. He also has an extensive technical background in chemistry, ceramic, paper, and plastic materials. He is a patentee.

JOHN P. CUMMINGS (Continued)

Other experience includes:

- Engineered, built, managed, and evaluated the first resource recovery from Municipal Solid Waste Plant for the EPA.
- Developed hazardous material reduction programs for several production operations.
- Performed recycling audits, system analysis, and source reduction programs for 15 facilities.
- Director of analytical services for Owens-Illinois, Inc.
- Consulting on resource recovery or recycling, utilization of waste products, hazardous waste plans, handling, packaging, transportation and disposal of solid, hazardous and toxic materials, legal counsel to several small firms, environmental audits.
- Manager, Environmental Affairs - Responsible for company environmental matters, permitting, recycling, resource recovery, hazardous solid waste management. Prime contact with customers and governmental agencies.
- Legal Counsel - Responsible for all OSHA and EPA Compliance and Litigation.
- Risk Management - Assess risks, claims, asbestos risks, approved settlement payments, organized insurance treaties.
- Produced the County Hazardous Waste Management Plans for six Northern California counties.
- Developed the Environmental Impact Report for four Northern California county Hazardous Waste Management Plans.
- Developed risk assessment programs for two major industries.
- Completed over 50 site environmental assessments and developed remediation actions when required.

RAYMOND L. GRIER, P.E., PROJECT MANAGER

Education

B.E. - University of Southern California, 1954
Engineering

Professional Licenses

Registered Civil Engineer - California
Registered Safety Engineer - California

Affiliations

Governmental Refuse Collection and Disposal Association
Past Member, International Board
Past Co-Chairman, Safety Committee

Professional Experience

Mr. Grier provides SCS with an extensive background in solid waste management and civil engineering design. His professional experience includes siting, permitting, design, and operation of transfer stations and landfills, waste handling equipment specifications, refuse generation and composition studies, and hazardous waste studies.

Projects representative of Mr. Grier's 30 years of experience include the following:

- Studies for siting, permitting, acquisition costs, design, operations, and closure for various transfer stations and landfills throughout California including Southgate Transfer Station, and the Palos Verdes, Mission Canyon, Scholl Canyon, Calabasas, and Spadra landfills. Landfill operations included direction of manpower scheduling, equipment utilization, filling sequence, and on-site construction of roads, drainages, and water distribution systems.

- Preparation of design of final grades for the Scholl Canyon and Palos Verdes landfills for determined end land use. The Palos Verdes landfill is used for the South Coast Botanic Gardens and the Scholl Canyon landfill is used as a tennis complex, clubhouse, restaurant, baseball diamond, and nine-hole golf course. Other aspects of closure planning include drainage design, revegetation, and erosion control measures.

- Management of a major equipment fleet. Responsible for equipment evaluation, selection, purchase, maintenance, and replacement. Evaluated manpower and equipment requirements. Established policy for scheduling major equipment repairs and the economic life cycle of operating equipment.

- Safety Engineer for a large solid waste system including refuse transfer and disposal operations. Responsible for evaluating effect of work practices (including equipment operation and maintenance) on job safety. Also responsible for safety of customers at both transfer and landfill sites.

- Studies of long-term trends in refuse generation rates and refuse composition; included evaluation of methods, equipment, markets, and economics of recycling.

- Establishment of long-term operational plan for a large canyon fill, including sequence of refuse lifts, drainage construction, and location of areas of earth cover excavation and earth stockpiles.

- Prepared total conceptual plans for five operating landfills and sequential (stayed) development plans for two landfills. Total capacity of the landfills in excess of 78×10^6 cubic yards.

- Project Manager for cleanup of a site contaminated with hazardous wastes.

- Determination of refuse composition, generation rates, and collection and haul costs.

- Evaluation of environmental impacts of proposed and ongoing operations and changes in operating parameters.

- Refuse settlement studies of the effects of operating conditions, equipment, earth cover, surcharge, weather, and time on in-place refuse density and settlement rates.

- Landfill designs including drainage, roads, auxiliary structures, water supply and distribution, and weigh scales.

Since joining SCS two years ago, Mr. Grier has been Project Manager on the following projects:

- Developed closure costs for 21 desert and mountain landfills for the County of San Bernardino, California.

- Evaluated system costs of a proposed refuse transfer station.

- Designed final landfill cover systems in California and Washington.

- Conducted studies to determine life cycle costs for landfills and incinerators.

RAYMOND L. GRIER (continued)

- Assisted with closure planning and evaluation of alternative cover designs for the Tequesquite Landfill.
- Directed a refuse characterization study in a three-city area.
- Directed a landfill evaluation study to develop strategies for reducing impacts on the use of adjoining property.
- Evaluated the relative operating characteristics and economics of different types of transfer equipment; prepared specifications for the selected equipment.
- Permitting and design of four transfer stations.
- Conducted a landfill siting study in the northern portion of San Diego County.
- Assisted with startup of the 5,000-tpd Bee Canyon Landfill.

STEVEN M. HAMILTON, R.E.A.

Education

B.S. - Zoology, University of Florida, 1978

M.S. - Environmental Management,
University of San Francisco, (ABT)

Professional License

Registered Environmental Assessor - California (00392)

Affiliations

Governmental Refuse Collection and Disposal Association
Air and Waste Management Association

Professional Experience

Mr. Hamilton has more than 10 years of environmental project experience, the last eight of which have been in the solid waste management field, with particular emphasis on landfill gas (LFG) recovery and migration and emission control. He currently directs solid waste and LFG projects out of SCS's Northern California office in Dublin.

Mr. Hamilton's experience ranges from hands-on participation in field and design work to direction of solid waste management projects. This work has involved over 100 projects on more than 80 sites throughout the United States. His responsibilities have included landfill ground water and LFG monitoring programs, ambient air and meteorological studies, and the testing, design, installation, and operation of LFG recovery and control systems. Mr. Hamilton has also provided liaison with site owners, operators, and regulatory agencies. Some of the projects in which he has been involved include:

- Supervision of California Calderon Air Quality Solid Waste Assessment Tests (Air SWATS) at 43 landfills and hazardous waste sites throughout California.

- Supervision of the design of two LFG emission control facilities in Northern California.

STEVEN M. HAMILTON (Continued)

- Supervision of Water Quality Solid Waste Assessment Test (Water SWAT) activities at three landfills in Northern California
- Operation of two LFG recovery facility wellfields in Northern California.
- Confirmation studies (RI/FS) at two hazardous waste sites in California.
- Design of an LFG mitigation system for a child care center on an inactive landfill in Northern California.
- Design of a methane mitigation system for a hotel built on clean fill over San Francisco Bay marshlands.
- Managing a preliminary industrial hygiene investigation into potential sources of hypersensitive pneumonitis in site employees at a composting facility in Northern California.
- Testing over 20 landfills nationwide to determine economic feasibility of LFG recovery.
- Redesign and repair of a LFG mitigation system in a 12-story office building on an inactive landfill in Northern California.
- Development of a LFG safety program for the construction of a road and a bridge abutment on an inactive landfill in Northern California.
- Permitting for LFG emission control and recovery systems in California.
- Evaluation of LFG migration control systems at landfills in California and New York.
- Design and installation of a LFG migration control system at a landfill in New York.
- Design and installation of a meteorological station for a hazardous waste study in Alaska.
- Managing a methane monitoring program at a water treatment facility in Northern California.
- Conducting LFG surface flux studies at five landfills in Texas, California, Michigan, and New York.

- Technical review of a LFG surface flux testing procedure.
- Coordination, permitting, and management of several mitigatory revegetation projects in Florida.

Safety Training

Health and safety training course following EPA requirements. Included training in physical, chemical, and toxicological properties of hazardous materials; hazard evaluation and control; selection and use of personal protective equipment; sampling and monitoring techniques and equipment; site entrance and decontamination procedures; and safety plan development.

Prior to joining SCS, Mr. Hamilton spent three years with Harding Lawson Associates in Novato, California, managing LFG projects firm-wide. From 1981 to 1985 Mr. Hamilton tested and operated LFG recovery facilities for GSF Energy, Inc. in Signal Hill, California, and from 1979 to 1980 he was a Research Team Leader at the Florida Keys Marine Institute in Key West, Florida.

KENNETH H. LISTER, SENIOR PROJECT GEOLOGIST

Education

B.S. - University of California, Los Angeles, 1967
Geology

M.S. - University of California, Los Angeles, 1970
Geology

Ph.D. - University of Kansas, Lawrence, 1974
Geology

Professional Licenses

Registered Geologist #4338 - California
Certified Petroleum Geologist #2977 - American Association of Petroleum Geologists

Affiliations

American Association of Petroleum Geologists
Geological Society of America
National Water Well Association
Paleontological Association
Paleontological Society
Society of Economic Paleontologists and Mineralogists
South Coast Geological Society

Professional Experience

Dr. Lister has a broad background in geology including extensive experience in the industrial and academic fields. Projects he has been involved with at SCS are:

- Site investigations for proposed new landfills and landfill expansions in Riverside, San Diego, Imperial, and San Bernardino Counties, California, including assessment of potential environmental impacts.

- Solid Waste Assessment Test (SWAT) proposals/investigations at Mission and Maxon Landfills (Oceanside), Tequesquite Landfill (Riverside), Golden Eagle Refinery, Gardena Valley No. 6 Dump (Carson), Peck Road Gravel Pit (Monrovia), Church Dump (Wilmington), Torrance City Landfill, and others.

- Preparation of closure and post-closure maintenance plans for the City of San Diego and Imperial County Sanitation Company.

- Preparation of Initial Study and Negative Declaration for the San Bernardino Valley Municipal Water District.

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- Project management of ground water investigation and remedial design, landfill closure, CEQA initial study, and landfill siting projects.

- Preparation of a manual for landfill leachate monitoring.

- Development of cost estimates for Superfund remediation work for sites in California and Texas.

- Design, implementation, and management of site investigations to identify soil and ground water contamination for Woodtek, Exide, the Henry Company, March Air Force Base, General Dynamics, and others.

- Development of site assessments and remediation programs for the Alhambra Redevelopment Agency, U.S. Army Corps of Engineers, Long Beach Unified School District, and numerous private clients.

Prior to joining SCS, Dr. Lister was District Geologist for Pennzoil Exploration and Production Company. He was in charge of petroleum exploration in eastern Texas, northern Louisiana, Arkansas, Mississippi, Alabama, Florida, and Georgia. Dr. Lister managed a drilling budget which averaged $2 million per year and directed a staff of eight geologists in work involving geological mapping, geophysical data interpretation, regional geologic studies, economic and risk analyses, remote sensing, and the drilling and logging of exploratory wells.

He has also had experience in various aspects of stratigraphy, structural geology, basin analysis, clastic and carbonate sedimentology, reservoir engineering, geochemistry, and tectonics.

Dr. Lister has also been involved in geological and paleontological research and field work in Utah, Nevada, Kansas, New York, British Columbia, Bermuda, the Bahamas, Mexico, and a number of sites in California. Past research has involved stratigraphy, paleoecology, lacustrine systems, computer simulation, and sedimentary depositional systems.

Publications

Lister, K. H., 1971, Micropaleontology of Spittal Pond, Bermuda: Bermuda Biological Station for Research Spec. Publ. No. 9, p. 60-68.

Lister, K. H., 1974, Diversity Changes in a Quaternary Lacustrine Ostracode Community from the Great Salt Lake Basin, Utah: Geol. Soc. America Abstracts, v. 6, No. 2, p. 114.

Kern, J. P., Grimmer, J. C., and Lister, K. H., 1974, A New Fossil Spionid Tube, Pliocene and Pleistocene of California and Baja California: Jour. Paleontology, v. 48, No. 5, p. 978-982.

KENNETH H. LISTER (continued)

Lister, K. H., 1974, The Significance of Temporal Changes in a Lacustrine Ostracode Community from the Great Salt Lake Basin, Utah: Geol. Soc. America-Abstracts, v. 6, No., 7, p. 847-848. (Presented at the Paleontological Society Symposium: Structure and Classification of Ancient Communities.)

Lister, K. H., 1975, Quaternary Freshwater Ostracoda from the Great Salt Lake Basin, Utah: Univ. Kansas Paleont. Contr. Paper 78, 34 p.

Lister, K. H., 1976, The Significance of Temporal Changes in a Pleistocene Lacustrine Ostracode Association from the Great Salt Lake Basin, Utah: In Structure and Classification of Paleocommunities, R. W. Scott and R. West (eds.), Dowden, Hutchinson, and Ross, p. 192-211.

Lister, K. H., 1981, Paleoecology of the Miocene Barstow Formation Insect Fauna, Calico Mountains, California: American Assoc. Petroleum Geologists Bulletin, v. 65, No. 5, p. 949 (abstract).

Lister, K. H., In Preparation, Fresh Water Ostracoda from Rancho La Brea, Los Angeles County, California.

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JOSEPH J. MILLER, P.E., SENIOR PROJECT ENGINEER

Education

B.S. - California Polytechnic State University, San Luis Obispo, 1980
Environmental Engineering

Professional License

Registered Civil Engineer - California (C 042598)

Affiliations

Air Pollution Control Association
Governmental Refuse Collection and Disposal Association

Experience

Mr. Miller provides SCS with a strong background in environmental engineering with emphasis in waste management. Since joining SCS, he has been involved in projects entailing virtually all aspects of the municipal solid waste field, including collection, disposal, transfer, recycling, and resource recovery. His experience in each of the above topic areas is summarized below.

Refuse Collection and Transfer--

Mr. Miller currently manages virtually all of the projects in SCS's Long Beach office relating to municipal waste collection in SCS's Long Beach office. These projects include identifying opportunities for improving collection efficiency, and time-and-motion and rate review studies. Selected projects include:

- Acting as Project Manager during a performance audit of a private collection firm operating in Santa Clara County, California. During this study, SCS reviewed pertinent operations data and observed collection practices on a number of representative residential and commercial routes. Based on the above, recommendations for improving collection efficiency were made.

- Acting as Project Manager for a rate review study in Santa Barbara County, California, which involved collection of time-and-motion data on routes served by five private franchise haulers operating in the County. Data were used to determine the actual costs of collection service provided to area residents and businesses.

- Evaluating the opportunities for a private refuse collection firm in Alameda County, California, to improve collection productivity by reducing crew sizes from three to two men on various routes. The study determined the feasibility of implementing both automated and semiautomated refuse collection throughout the service area.

- Managing a refuse collection study for the City of Colton, California. The purpose of this project was to make recommendations for improving residential and commercial collection service and to compare the levels of service and costs that would result if collection services were to be exclusively provided by private haulers or municipal crews.

- Participation in a refuse collection efficiency study, Pasadena California. This study evaluated collection productivity (via a time-and-motion study), the cost of the city's collection services, and the effectiveness of current personnel and data management practices.

In addition to the above collection studies, Mr. Miller has participated in various refuse transfer projects, including those listed below:

- Assisting in a feasibility study for a proposed waste transfer station, Denver, Colorado. Duties included assessing present and future collection and disposal practices, preparing preliminary design plans and capital cost estimates for 300-, 600-, and 900-tpd transfer facilities, and determining waste haul costs for three proposed site locations.

- Participation in the preliminary design of a 600-tpd refuse transfer station, Palo Alto, California. Duties included assessing materials flow equipment requirements and costs, determining transfer haul costs, and assisting in overall station design and layout.

Landfill/Municipal Waste Disposal--

Mr. Miller has been involved in a number of municipal landfill projects involving site selections and development of closure plans and closure costs. He has also participated in projects relating to alternative methods of waste disposal, including incineration. These projects include:

- Managing a project to determine the estimated costs for: (1) closure of four currently active landfills; and (2) development of a new regional disposal site in Santa Barbara County, California. Capital expenditures and annual operating costs were determined for both landfill closure and development activities based on current regulatory requirements.

- Acting as Project Manager for a study to determine applicable regulatory requirements and estimated costs for excavation/removal and redisposal of a former landfill site in Palm Springs, California. Applicable requirements for both the excavation and preparation of the recipient site were determined.

- Participation in a sanitary landfill site selection, Kern County, California. Responsibilities included preparing capital and refuse haul cost estimates, and environmental/socioeconomic assessments associated with landfill development at three candidate sites.

- Preparing a report containing guidelines for the formal closure of a completed landfill site in San Diego, California. The study evaluated the measures and associated costs required to achieve regulatory compliance with regard to proper surface drainage and ground water protection, and landfill gas migration and emission controls.

- Developing costs for the analysis of alternative refuse disposal technologies available to Yuba and Sutter Counties, California. This study evaluated alternatives such as landfill siting/development, landfill expansion, transfer stations, and implementation of a waste-to-energy facility.

Mr. Miller has also participated in several scoping studies to determine required closure actions for inactive disposal sites in Los Angeles County. These studies typically involved determining items necessary for compliance with California's Subchapter 15 and Water SWAT surface water, ground water and vadose zone monitoring requirements, provisions for placement of final cover, and subsurface landfill gas and air emissions monitoring. In each case, a range of probable costs for the various capital and annual action items was determined.

Environmental Impact Reports (EIRs)--

Mr. Miller has been actively involved in the preparation of various EIRs for proposed landfill development and expansion projects. He has participated in virtually all aspects of these EIR projects, including planning, preparation of technical portions of the text, overall document review, and presentations at the public hearing processes. Selected projects include:

- Acting as Project Manager for the preparation of two EIRs for proposed sanitary landfill expansions in Burbank and Simi Valley, California. Throughout those projects, he functioned as a liaison between government officials, subcontractors, and in-house staff. He also researched and authored several technical sections of those reports, and was active in public hearing presentations.

- Preparing the surface water, air quality, and public health sections of an EIR for the proposed expansion of a sanitary landfill in Fresno, California.

- Assessing potential air quality and subsurface LFG migration impacts as part of the EIR processes for a proposed residential/ commercial development in Ontario, California. The project site was located adjacent to a sanitary landfill.

Recycling/Resource Recovery--

Involvement in various recycling and resource recovery programs has played an important part in Mr. Miller's career in the solid waste management industry. Prior to joining SCS, Mr. Miller was involved as a limited partner with The Paper People, Inc., a private waste paper recycling and consulting firm. He was instrumental in organizing numerous source separation and recycling programs in central California. His work included planning for and implementing a new waste material buyback center in San Luis Obispo, California. His responsibilities also covered business management matters such as personnel management, secondary materials marketing, and analyzing comparative costs for all proposed new ventures.

Since joining SCS, Mr. Miller has continued his active role in the recycling/resource recovery field. Applicable projects with which he has been involved include the following:

- Acting as Project Manager for the development of a field sampling program used to help implement California's unique "Bottle Bill." During this project, field data were obtained to determine the non-recyclable weight fraction of typical loads of used beverage containers. This information was used to calculate payments on a weight basis to those delivering recyclable goods to redemption centers.

- Development of a number of pilot recycling programs for the City of Seattle, Washington. Duties included consulting with both civic leaders and members of the recycling community, and performing cost analyses for various curbside, drop-off, and mandatory recycling programs.

Municipal Waste Characterization Studies--

Proper characterization of municipal solid waste streams is an important part of planning for future waste collection, disposal, and recovery strategies. SCS Engineers is nationally recognized for its past involvement in waste characterization projects, and Mr. Miller has played an integral part in many of these studies. He currently manages all waste characterization studies performed out of the SCS Long Beach office. For example, he has managed a program to determine the quantities and composition of wastes used as fuel in a municipal solid waste incinerator serving the Los Angeles area. The focus of this study was to identify recyclable

and heavy metal materials in the waste stream. Other waste composition studies in which he has participated include:

- Acting as Project Manager for a comprehensive solid waste stream assessment for the cities of Burbank, Glendale, and Pasadena, California. This study involved field sorting and weighing of various categories of residential and commercial solid waste, and preparation of a data base of the composition, quantity, quality, and geographic distribution of those wastes.

- Assisting in the development of a waste management plan for the Veterans Administration Hospital, Long Beach, California. Various alternatives for the disposal of institutional and infectious wastes were evaluated, including on-site incineration. The study also included a waste characterization survey to determine the quantity and heat content of combustible wastes.

Mr. Miller has also managed similar projects in Santa Barbara and Los Angeles Counties, California. One of these projects involved determining the composition of commercial wastes disposed of at the Puente Hills Landfill (the largest sanitary landfill in the western United States). The purpose of this study was to determine strategies for diverting recyclable materials that have historically been landfilled at that site.

Publications

Miller, J. J. "Does Curbside Recycling Make Sense for a Small Community?" Proceedings from the Technical Sessions of the GRCDA 23rd Annual International Seminar, Equipment Services and Systems Show, Denver, Colorado, August 1985.

Beizer, M.B., and J. J. Miller. "Air Quality in Residences Adjacent to an Active Hazardous Waste Disposal Site." Proceedings from the 78th Annual Meeting of the Air Pollution Control Association, Detroit, Michigan, June 1985.

DAVID E. ROSS, PROJECT DIRECTOR

Education

B.S. - University of California, Berkeley, 1967
Civil Engineering

M.S. - University of California, Berkeley, 1968
Civil Engineering

Professional Licenses

Registered Professional Engineer - California
Registered Professional Engineer - Nevada
Registered Environmental Assessor - California

Affiliations

American Society of Civil Engineers - Member
Governmental Refuse Collection and Disposal Association
Member, Editorial Board, Journal of Environmental Science and Health

Professional Experience

Mr. Ross provides SCS Engineers with proven technical and managerial capabilities in the field of environmental pollution control. His entire 19-year professional career has been devoted to the performance of solid and hazardous waste management projects. He is Director of SCS's Long Beach office, a Vice President, and has served on the firm's Board of Directors since 1976.

Mr. Ross began his professional career with the U.S. Public Health Service, Bureau of Solid Waste Management (now part of the Office of Solid Waste, U.S. Environmental Protection Agency), in Cincinnati, Ohio. There, he worked as a Project Officer for many federally funded solid waste demonstration projects covering refuse collection, processing, resource recovery, and refuse disposal.

In 1970, Mr. Ross joined the California Department of Health Services as a civil engineer. His primary assignment was to compile information for the state's first hazardous waste plan. Mr. Ross also worked on the management of used pesticide containers and investigations of improper sanitary landfill operations.

Since joining SCS Engineers in 1971, Mr. Ross has participated in and managed over 400 projects related to solid and hazardous waste management, resource recovery, recycling, environmental impact assessment, and water quality protection. Most projects have involved politically sensitive issues, and many have induced public hearings.

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DAVID E. ROSS (continued)

Selected solid waste projects directed or managed by Mr. Ross are summarized below.

Client	Project Subject
City of Long Beach, California	Compare the estimated costs of hauling refuse to remote landfills via direct haul in collection trucks versus use of a transfer system.
Fresno County, California	Technical support for negotiations between county and private contractor for guaranteed delivery of solid waste to a waste-to-energy incinerator, for associated revenue sharing, and other resource recovery matters.
California Pollution Control Financing Authority Sacramento, California	Review of waste composition/quantity data and supply agreements for North County Resource Recovery Facility in San Diego, California.
County of San Bernardino San Bernardino, California	Estimate future costs to close 18 County landfills in accordance with state regulations.
Pine Bluff Arsenal Pine Bluff, Arkansas	Prepare plans for closure and post-closure monitoring of 31 separate hazardous waste disposal sites on this Army base. Estimate costs for further site investigations and to implement closure actions.
City of Big Bear Lake and County of San Bernardino, California	Develop a 20-year plan for solid waste management (collection, incineration, disposal) for the city and adjacent county areas.
Proprietary Private Client	Project the volumes and types of solid wastes to be generated in Southern California as part of initial planning efforts on a major central waste processing facility.
California Waste Management Board Sacramento, California	Investigation of opportunities for increasing the demand for materials recoverable from municipal solid waste through recycling programs.

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DAVID E. ROSS (continued)

Client	Project Subject
City of San Diego, California	Design of a new landfill with methane gas and leachate controls.
Metropolitan Waste Disposal Montebello, California	Prepare preliminary design of a transfer station; assist in permit application discussions.
California Waste Management Board Sacramento, California	Prepare and present seminar on procedures for siting a new sanitary landfill.
City of Whittier, California	Update of sanitary landfill design, originally prepared by SCS.
Lewis and Roca, Attorneys at Law Phoenix, Arizona	Investigation of refuse collection economics, comparing private with public operations.
City of San Diego, California	Design of methane gas control facilities for a housing complex near a landfill.
U.S. EPA San Francisco, California	Technical Assistance Panels prime contractor, Region IX. Through 1980, 94 separate federally financed solid and hazardous waste projects were performed under this $1.3 million contract to SCS for municipalities in the west.
City of Santa Fe, New Mexico	Evaluation of resource recovery and recycling options, and search for a new sanitary landfill site.
Private Landfill Operator Northern California	Recommendation of methods to control birds at a landfill.
County of Riverside, California; County of Shasta, California	Two separate projects, both entailing location of a new sanitary landfill site, including response to public comments about proposed site locations.
Local Developer Los Angeles, California	Preparation of a preliminary design and an Environmental Impact Report for a proposed sanitary landfill.

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DAVID E. ROSS (continued)

Client	Project Subject
U.S. Navy Pacific Division Pearl Harbor, Hawaii	Preparation of an updated version of Design Manual 5.10 - Solid Waste Disposal.
San Luis Obispo County, California	Comprehensive solid waste management study, including three sanitary landfill designs and development of the city's first source separation program.
Port of Long Beach Long Beach, California	Study of options for ship's garbage disposal.
Ventura County, California	Preparation of an EIR for expansion of a former hazardous waste disposal site to accommodate municipal refuse.
U.S. Navy	Study of unit waste handling operations suitable for use at Navy installations.
State Water Resource Control Board Sacramento, California	Investigation of water quality impacts from solid waste disposal.
Veterans Administration Medical Center Long Beach, California	Investigation of the feasibility of implementing a heat-recovery incinerator in cooperation with adjacent California State University campus.
City of Burbank, California	Preparation of an Environmental Impact Report for expansion of the city's sanitary landfill.

Successful completion of these and many other projects demonstrates Mr. Ross's expertise in solid waste management issues and management of complex projects.

A list of Mr. Ross's many technical publications is available on request. Mr. Ross developed and was principal lecturer for several university courses on solid waste management and resource recovery, and is available for similar speaking and lecturing assignments elsewhere.

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KRISHAN K. SAIGAL, P.E., CHIEF DESIGN ENGINEER

Education

B.E. - Gujarat University, India, 1956
Civil Engineering

M.S. - Case Institute of Technology, Cleveland, Ohio, 1959
Civil Engineering

Professional Licenses

Professional Engineer - New York, Ohio, California, and Arizona

Affiliations

Water Pollution Control Federation

Professional Experience

Mr. Saigal provides SCS with an extensive background in waste management projects. His 25 years of professional experience include engineering studies, design, preparation of plans and specifications, construction cost estimations, construction contract administration, and operation and maintenance manuals for projects related to landfill design; landfill closure plans; landfill gas recovery and migration control; hazardous waste storage and land disposal facilities; and wastewater collection, pumping, and treatment. He has extensive experience in working with the local, state, and federal regulatory agencies responsible for implementation of pollution control projects.

Representative projects include the following:

- Preparation of plans and specifications for the design of an 80-acre landfill in Thurston County, Washington. Project included design of liner system, leachate control and collection facilities, a storm water retention basin, landfill gas migration control systems and a closure plan, and preparation of permit applications for various regulatory agencies.

- Participation in the design and preparation of plans for the landfill in Boulder, Colorado. Project included phased development, diversion of storm water, liner design, leachate control, and access roads.

- Preparation of plans, specifications, and cost estimates for landfill gas migration control systems for Encinitas and Gillespie landfills in the County of San Diego, California; Geer Road landfill in the County of Stanislaus, California; Santa Clara landfill, Oxnard, California; Oceanside landfill and Maxson Street landfill in the City of Oceanside, California; Hawks Prairie landfill,

Thurston County, Olympia, Washington; Milliken landfill, San Bernardino County, California; Sunnyvale landfill, Sunnyvale, California; Sai Sio-Wan landfill, Hong Kong; Golden Eagle Refining Company, Carson, California; South Chollas landfill, San Diego, California; and Kapaa landfill, Honolulu, Hawaii.

- Member of value engineering team for Snohomish County landfill, Snohomish County, Washington. Specific responsibilities included evaluation of liner system, leachate collection and treatment, final cover system, and landfill gas control system.

- Plans and specifications for relocation of Avondale landfill, Avondale, Arizona. Project included design of liner system; leachate control, collection, and detection system; final cover system; permit applications for various regulatory agencies; and landfill gas venting system.

- Design and preparation of conceptual development plans for Sacramento County landfill. Project included excavation plan, fill plan, stage development plan, site closure plan, and site drainage system.

- Design and preparation of landfill closure plans for Mission landfill in Oceanside, California. Project included grading, final cover, site drainage, and landfill gas migration control.

- Plans, specifications, and cost estimates for landfill gas collection and electric power generation at Oxon Cove Landfill, Oxon Hill, Maryland.

- Project Manager responsible for coordinating the field and office work in the construction of landfill gas control projects for the City of Oceanside, California, and Stanislaus County, California.

- Feasibility investigation and preparation of preliminary design for pipeline for landfill gas delivery from the Toyon landfill (Los Angeles) to Glendale Municipal Power Plant.

- Supervision of landfill gas migration field investigations for private residential development in East Los Angeles County, and municipal park/commercial development in San Diego, County.

- Project Manager responsible for the design and preparation of plans and specifications for a low-pressure sewer system for the towns of Camberia, Pendleton, and Wheatfield, New York.

- Plans and specifications for interceptors, force mains, and pump stations for both Erie County Sewer District No. 4 and the town of Grand Island, New York.

- Preliminary report on advanced waste treatment facilities for Southerly Wastewater Pollution Control Center, Cleveland, Ohio.

- Coordination of field and office work for the construction of a water pollution control center for Aliso Water Management Agency (AWMA).

- Preparation of plans, specifications, and cost estimations for five vehicle wash facilities, including treatment and recycle of wash-water at Fort Irwin, California, under contract with the Corps of Engineers, Sacramento District.

- Engineering report on the treatment of photographic process wastewater at Beale Air Force Base, California. Report studied treatment alternatives and prepared conceptual layout and cost estimates, including annual operation and maintenance costs.

- Preparation of plans and specifications and cost estimations for fuel storage and transfer facilities at the U.S. Navy's San Nicolas Island, California.

- Design and preparation of plans and specifications for landfill closure for Golden Eagle Refining Company, Carson, California. Project included final cover system, landfill gas control system, site drainage, and permit applications for various regulatory agencies.

ROBERT P. STEARNS, PRINCIPAL

Education

B.S. - University of Iowa
Civil Engineering

M.S. - University of California at Los Angeles
Engineering Management

Professional Licenses

Registered Civil Engineer - California
Registered Professional Engineer - Virginia, Oregon, Oklahoma, and Washington

Affiliations

American Society of Civil Engineers (ASCE)
- Past Chairman of Solid Waste Management Committee
- Past Chairman of Standards of Practice Committee
- President-Elect, Los Angeles Section

Southern California Waste Management Forum
- Past Chairman

Governmental Refuse Collection and Disposal Association
- Past Member, International Board and Corporate Director

American Public Works Association
- Member of Institute for Solid Wastes

National Solid Waste Management Association
- Member, Professional Services Council

Professional Experience

Mr. Stearns has more than 25 years of experience in the study and design of solid and hazardous waste management systems. He began his professional career with the City of Los Angeles, Bureau of Sanitation, in 1960. For the City, he participated in solid waste collection analyses; sanitary landfill acquisition and design studies; and feasibility studies of resource recovery from solid wastes. He was a major contributor in the design and implementation of a computerized management information system for the collection, equipment maintenance, and waste disposal divisions of the Bureau.

In 1967, Mr. Stearns joined a Los Angeles-area environmental consulting firm for which he managed many solid waste projects for private and governmental clients. Notable projects included preparation of comprehensive solid waste management plans for three California counties; comparative performance and cost evaluations for refuse collection crews; analyses of refuse collection problems in several communities; preparation of landfill operating and development plans for municipal and private clients; and design of refuse collection routes for Washington, D.C.

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ROBERT P. STEARNS (continued)

Mr. Stearns was a co-founder of SCS Engineers in 1970, and has directed or served in a review capacity on the firm's solid waste management-related assignments. He currently serves as the firm's President and CEO. Under his leadership, SCS has assisted clients with virtually every aspect of the management of municipal, commercial, and industrial solid wastes. More than a dozen new sanitary landfills have been sited and designed under his direction. Detailed performance and cost evaluations of municipal and private solid waste collection operations have been completed in a number of cities, including Washington, D.C.; Seattle, Washington; and Phoenix, Arizona.

Mr. Stearns has been nationally recognized for his work on refuse collection productivity assessments. He has participated in evaluations of collection systems in virtually every state. This work includes the following types of services:

- Evaluation of refuse collection operations.
- Cost comparisons of alternative collection systems.
- Development and evaluation of collection alternatives, such as:
  - Conversion from backyard to curbside collection.
  - Reduction in collection frequency.
  - Reductions in crew size.
- Evaluation of private versus municipal collection systems.
- Recommendations to increase productivity.

He has led waste collection, storage, transfer, and transportation projects for a variety of municipal, regional, military, and private clients. Based on the experience gained in the course of numerous waste collection projects, he developed computer models (PROCOL and COSTCOL) to aid in the allocation of resources (vehicles, personnel, time) and routing of collection vehicles. These computer models enable SCS to identify the optimal route length (number of stops); balance workloads for collection crews; select the optimal collection vehicle capacity; compare/quantify savings possible by modifying service levels, changing crew size, vehicles, etc.; and estimate resources (crews/equipment) and support costs necessary to service a community or service area. The models form the cornerstone for an analysis technique developed and successfully used at many locations throughout the United States.

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ROBERT P. STEARNS, PRINCIPAL

Publications and Presentations

Stearns, R. P. A Checklist for Refuse Collection Equipment Purchases. Presented at Third Annual Seminar of Governmental Refuse Collection Disposal Association, Oakland, California, 1965.

Stearns, R. P. Technology and the Professional Engineer. Presented at Pacific Southwest Regional Conference, Anaheim, California, April 1965.

Stearns, R. P., and J. M. Betz. Discussion on Simulation and Analysis of a Refuse Collection System. Journal of the Sanitary Engineering Division, American Society of Civil Engineers, 147(SA3):4830, June 1966.

Stearns, R. P., et al. One-Man Collection and the Status Quo. Presented at American Public Works Association, Western Regional Conference and Equipment Show, May 1968.

Stearns, R. P., et al. Comparing the One-Man Crew with Multi-Man Crew for Refuse Collection. Unpublished Report, July 1968.

Stearns, R. P. Structure of the Associate Member Forum, Los Angeles Section of ASCE. Presented to 1968 Associate Member Forum Conference, Los Angeles, California, October 1968.

Stearns, R. P., et al. Our Place in the Community We Serve. Presented at Sixth Annual Seminar of Governmental Refuse Collection and Disposal Association, November 1968.

Stearns, R. P., et al. Survey of U.S. Refuse Collection Practices. Civil Engineering, April 1969.

Stearns, R. P., et al. For More Efficient Refuse Collection, Try Analyzing Your System with a Mathematical Model. The American City, May 1969.

Stearns, R. P., et al. National Data on Cities Using Refuse Bags. Unpublished Survey Report, August 1969.

Stearns, R. P. The Union and the Professional Engineer. Presented to Seventh Annual Associate Forum Conference, American Society of Civil Engineers, Sacramento, California, November 1969.

Stearns, R. P. Queueing Analysis at Scales at Waste Disposal Sites. Unpublished Paper Presented as Partial Fulfillment for Master's Degree in Engineering Management at University of California, Los Angeles, February 1970.

Stearns, R. P. Optimal Routing of Refuse Collection Vehicles Discussion. Journal of the Sanitary Engineering Division, American Society of Civil Engineers, 96(SA6):1469-1470, December 1970.

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SUMMARY OF QUALIFICATIONS
HAZARDOUS WASTE AND SUPERFUND SERVICES

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SUMMARY OF QUALIFICATIONS
HAZARDOUS WASTE AND SUPERFUND SERVICES

CONTENTS

INTRODUCTION

SCS Representatives

SCS Engineers is pleased to have this opportunity to present this summary of its qualifications to provide Hazardous Waste and Superfund Services. The reader may contact any of the following SCS representatives regarding our professional practice:

- Michael W. McLaughlin, a Project Director and Attorney based in SCS's Reston, Virginia office, and a Director and Vice President of the firm.
- Kenneth V. LaConde, a Project Director in SCS's Long Beach, California office, a Director of the firm, and the firm's Vice President for Laboratory Services.
- David E. Roberson, a Project Manager in SCS's Bellevue, Washington office.
- James J. Walsh, PE, a Project Director in SCS's Covington, Kentucky office, and a Vice President of the firm.
- John Cummings; Project Director and Attorney in SCS's Dublin, California office;
- John D. Wright, a Project Director in SCS's Kansas City, Missouri office, and a Director and Vice President of the firm.
- A.J. (Chuck) Gordon, a Senior Project Geologist in SCS's Phoenix, Arizona, office.
- Bruce B. Clark, a Senior Project Geologist in SCS's Tampa, Florida office.

Corporate Overview

SCS Engineers is an environmental and civil engineering consulting firm with offices nationwide. The firm specializes in solving hazardous and solid waste management problems; since 1970, more than 80% of the firm's work has been in these areas. SCS's professional practice is organized in the following eight practice groups:

- Hazardous Waste Engineering
- Underground Storage Tanks
- Hazardous Waste Studies
- Landfill Engineering
- Landfill Gas Control and Recovery
- Public Works Engineering
- Solid Waste Management and Resource Recovery
- Laboratory and Data Processing Support Services

SCS provides engineering and consulting services to private industry, military installations, and government agencies. Services provided by SCS range from investigations, problem assessments and conceptual designs to final engineering design, construction or construction management, and long term monitoring. The firm is proud of its innovative design capability; an SCS Engineers-designed landfill gas recovery system at the City of Industry, California received the American Society of Civil Engineers' Outstanding Civil Engineering Achievement Award.

The firm designs all types of hazardous waste treatment, storage, and disposal facilities, including landfills, incinerators, drum storage areas, bulk storage tanks, land treatment facilities, and waste treatment works. In addition, SCS provides Superfund-related consulting services, including conduct of remedial investigation and feasibility studies, design of remedial measures, and construction or construction management.

Other Corporate Highlights

- Professional staff include environmental, civil, mechanical, electrical, and chemical engineers; geologists and hydrogeologists; public health specialists; chemists, biologists and other natural scientists; planners; systems analysts; computer scientists; and management analysts.
- Fully-equipped analytical laboratory
- Underground tank precision test equipment
- State-of-the-art computer data processing equipment
- Proven record of on-time and on-budget project performance
- Professional Corporation licensed to provide professional engineering services in most states
- Wholly-owned subsidiary provides construction services and design-build capabilities for subsurface gas control and remedial actions.

Unique Qualifications

Subsurface Gas. SCS Engineers is one of a small handful of national consulting firms qualified to assist in the assessment and control of air emissions and subsurface gas migration from land disposal facilities. The firm has performed more than 800 projects in this highly specialized area, including a number at listed Superfund sites.

In-Situ Stripping of Volatile Organic Compounds. As a natural extension of the firm's work in subsurface gas control and recovery, SCS has designed vadose (unsaturated) zone monitoring and treatment facilities at contaminated sites. Owners often find such soil vapor extraction systems to be a cost-effective way to monitor and clean up a site.

Remedial Actions at Sanitary Landfill Facilities. A growing number of sanitary (municipal) waste facilities are being identified as hazardous waste sites under the Superfund program. SCS's broad background in sanitary landfill engineering provides the firm with an understanding of the usual kinds of contamination found at such landfills, as compared with hazardous substances from industrial sources. In addition, the firm is experienced in the design of control facilities which reflect the special conditions (e.g. differential settlement) found at most landfills.

Tank and Container Storage. Senior professionals at SCS have unparalleled knowledge and experience in tank storage of hazardous materials. This experience is broad, ranging from preparation of spill prevention, control and countermeasure (SPCC) plans to design of tank farm storage facilities. The firm is nationally recognized for its work with respect to underground storage of hazardous materials, and for development and implementation of leak detection and cleanup programs for leaking underground storage tanks.

PCB Management. SCS is one of a few national consulting firms with extensive expertise in management of PCB materials and related chemicals (e.g. pentachlorophenols, dibenzofurans, and dioxins). SCS's PCB experience includes preparation of spill cleanup plans and specifications, manuals for the proper handling and disposal of PCB materials, and research into the fate and chemistry of degradation products (such as dioxins) formed upon combustion of PCBs.

Oil and Solvent Waste Management. SCS has conducted oil and solvent waste management projects at more than 100 locations in the last 10 years. Services provided in this area include preparation of of plans and specifications for oil and solvent waste collection, storage, and disposal facilities (including land treatment facilities), development of used oil and solvent management programs, design of secondary containment and spill cleanup facilities, and preparation of permit applications.

CORPORATE EXPERIENCE

Uncontrolled Hazardous Waste Site (Superfund) Experience

Proper management of an uncontrolled hazardous waste site requires that the problem be identified, its implications assessed, alternatives considered, and appropriate action selected. SCS Engineers is one of a few national consulting firms which is qualified to assist in all phases of managing uncontrolled sites, including: Preliminary Assessment, Remedial Investigation, Remedial Action Selection, Facility Design, Cost Estimating, and Construction Management

Preliminary Assessment. During the last four years, SCS has conducted preliminary assessments to identify past hazardous waste management practices and possible environmental contamination at a number of military installations, including ten Naval installations in the western United States.

In addition, SCS has performed preliminary assessment and subsequent Hazard Ranking System analysis for a variety of private sector clients in a dozen states. Where the scope of a preliminary assessment justifies their use, SCS has available computer facilities to assist in analyzing site data. In addition, on-line data bases covering toxic material management can be used to broaden investigations of potentially responsible parties. Such information can be useful to officials in government and industry alike who are seeking to apportion financial responsibility for remedial measures at a Superfund site.

Remedial Investigation. SCS geologists and hydrogeologists have been used on projects throughout the country to identify likely subsurface conditions, sometimes based on minimal amounts of data. The firm's geologists are often used to specify locations for groundwater wells and subsequently to interpret results to determine the extent of contaminant movement.

The firm has installed most of the groundwater fate and transport models accepted by EPA on SCS's in-house computer systems. These include USGS2d, USGS3d, USGSMOC, FE3dGW, FEMWASTE, Random Walk, and PATHS (groundwater transport); USGS2d and FEMWASTE WATEQF and PHREEQE (chemical equilibrium); PAL, TSDF, ISCST, and ISCLT (air emission release rates); HWD (dike stability); and HEC-1 and HEC-2 (surface water hydrology). In addition, professionals at SCS are familiar with and routinely use other standard computer models to evaluate remedial alternatives (e.g., EPA's HELP model to evaluate alternative site cover designs).

SCS has collected surface water, groundwater, soil, plant, and air samples for more than 400 projects. These activities have been performed for industrial and military clients in more than 35 states. Typically, quality assurance plans are developed in advance of sample collection to ensure that collection and analysis are performed in accordance with standard methods approved by regulatory officials.

Following sampling and laboratory analysis, SCS scientists apply risk assessment techniques to determine whether site contamination warrants remedial action. SCS is experienced in estimating exposure via ground water, surface water, air, soil (ingestion and inhalation), and food chain pathways.

Remedial Action Selection. Based upon results of the preliminary assessment and investigation, SCS assists clients in the selection of a cost-effective approach to site remediation. In many cases, selection of a remedial action must consider not only the technical aspects of the site problem, but legal and other institutional aspects as well. SCS has worked on several widely-publicized Superfund sites, including:

- Fulbright and Sac River Landfills, Springfield, Missouri (remedial investigation and feasibility study and remedial design performed for potentially responsible parties)

- Del Norte Pesticide Site, Crescent City, California (remedial investigation; design of pilot treatment; preparation of plans and specifications for groundwater pump and treat; assistance during construction)
- Riverfront Park Landfill, Kansas City, Missouri (field investigation and endangerment assessment performed for municipal site owner)
- Odessa Chromium I Site, Odessa, Texas (review of EPA remedial design, evaluation of alternative technologies and expert testimony)
- Krysowaty Farm, New Jersey (preparation of plans and specifications for excavation and disposal; assistance during construction)
- Lee's Lane Landfill, Kentucky (design of emission control facilities, assistance during construction)
- United Chrome Products, Corvallis, Oregon (evaluation of alternative groundwater pump-and-treat technologies)
- Kin-Buc Site, New Jersey (expert testimony and consulting regarding alternative designs for capping the landfill, surface water protection, and post-closure care)
- Port Washington Landfill, New York (regulatory support; design and construction supervision for emission control system (fume incinerator); system start-up; monitoring)
- Jamaica Bay Landfills, New York (operation and closure plans for Fountain Avenue, Edgemere, and Pennsylvania Avenue Landfills; leachate evaluation; emission controls)
- Matousek Landfill, Garfield Heights, Ohio (design and construction of explosive gas control treatment system)
- BKK Landfill, West Covina, California (offsite health and safety monitoring for airborne toxics)
- Industrial Exxcess Landfill, Uniontown, Ohio (investigation, design and construction of landfill gas collection and treatment system)

SCS clients at these and other sites benefitted from the firm's credibility regarding selection of cost-effective remedial actions. SCS's approach to these problems is based on finding practical solutions. SCS professionals appreciate the sensitive nature of remedial action selection given intense citizen involvement and legal considerations, and are experienced in identifying options which are practical in both a technical and institutional sense.

Facility Design, Cost Estimating, and Construction. SCS has designed formal remedial actions at dozens of waste disposal sites over the last 18 years. At least five of the projects (Del Norte Pesticide Site in California, Industrial Excess Landfill in Ohio, Krysowaty Farm in New Jersey, Lee's Lane Landfill in Kentucky and Port Washington Landfill in New York) involved sites listed on EPA's National Priorities List.

SCS has prepared plans and specifications for remedial measures at several military installations including Naval Air Station, Miramar, California; Casco Bay Naval Fuel Annex, Brunswick Naval Air Station, Maine; Fort Belvoir, Virginia; Naval Surface Warfare Center, Dahlgren, Virginia; Pine Bluff Arsenal, Pine Bluff, Arkansas; and Lone Star Army Ammunition Depot, Texarkana, Texas.

At several sites, SCS designs for remedial actions have enabled the sites to be beneficially used for non-waste management activities. For example, a developer retained SCS to design measures for an arsenic-contaminated site formerly used for cleaning railroad tank cars. After careful evaluation of the nature and extent of contamination, SCS designed a seal and drainage system which isolated the arsenic. Local and state

regulatory officials permitted construction of a townhouse development at the site based on SCS's design. A similar project performed for a hotel developer enabled a former dump site to be used for a major hotel development.

Hazardous Waste (RCRA) Experience

SCS Engineers was performing hazardous waste management projects before the Federal and most state hazardous waste programs were developed. As a consequence, the firm has participated in the evolution of these programs over the years. SCS staff have an intimate knowledge of both the purpose and substance of the Federal and many state hazardous waste programs. In all, SCS has conducted more than 1,000 projects relating to solid and hazardous waste management, both pre- and post-RCRA.

Services provided by the firm have ranged from assistance with regulatory compliance and permitting (waste characterization, security plans, training plans, contingency plans, etc.), to preparation of plans and specifications for hazardous waste treatment, storage and disposal facilities and facility closure.

Regulatory Compliance and Permitting. SCS has assisted a variety of clients in complying with Federal and state hazardous waste management regulations, and in applying for the necessary permits. SCS has developed partial or complete RCRA and equivalent permit applications for a long list of clients, including military ordnance facilities, iron and steel manufacturers, fertilizer production facilities, commercial waste disposal firms, and manufacturers. SCS has prepared hazardous waste permit applications for facilities located in California, Georgia, Iowa, Maryland, New York, North Carolina, Ohio, Pennsylvania, Virginia, and Washington. In addition, the firm has provided regulatory compliance assistance (such as environmental audits) to clients in more than 20 states.

For the American Petroleum Institute, SCS prepared two training packages for use in training hazardous waste landfill and hazardous waste land treatment operators, as required by hazardous waste management regulations. For the Chemical Manufacturers Association, the firm conducted two nationwide surveys of hazardous waste underground injection well facilities with particular attention to regulatory compliance issues.

Waste Minimization Plans. The reauthorization of RCRA in 1984 included a requirement for generators to minimize their generation of hazardous wastes. SCS assists generators in complying with waste minimization requirements. In many cases, generators find that relatively simple changes in their operations can result in significant cost savings for hazardous waste management; in some cases the generator is able to remove itself from the hazardous waste regulatory program altogther.

SCS performs a detailed inventory of hazardous wastes being generated at the facility; identifies recycling (onsite and offsite) and other reduction alternatives; prepares cost estimates and performs payback analysis; and prepares a written implementation plan. The firm has prepared such waste minimization plans for clients in Alabama, California, Illinois, Maine, Maryland, Ohio, Pennsylvania, Virginia, and Washington.

Comprehensive Hazardous Waste Management Plans. SCS Engineers has prepared a number of hazardous waste management plans, including those for Western Canada; the Province of Alberta, Canada; the state of Hawaii; Vandenberg Air Force Base, California (including the Space Shuttle project); small quantity generators in North Hollywood, California; Yolo County, California; southeastern Virginia; and King County, Washington. Such plans typically include:

- Identifying sources, quantities, types, and frequencies of hazardous wastes generated, including wastes from contaminated site cleanup.
- Preparing an inventory of existing hazardous waste treatment, storage, and disposal facilities, analyzing their capacity, and performing TSD facility needs assessment.

- Siting hazardous waste TSD facilities.
- Identifying alternative waste management strategies source minimization, including good housekeeping practices, waste segregation, process modification, product substitution, on-site recycling, and on-site treatment.
- Recommending plan for management of hazardous waste generated by commercial small quantity generators and households.
- Developing conceptual designs, schedules, and financing alternatives.
- Preparing and conducting public information programs.

Design of Hazardous Waste Treatment Facilities. SCS has conducted several dozen projects relating to hazardous waste treatment. These include preparation of engineering of design plans and specifications for treatment facilities, and development of computer-based models to predict the cost and performance of characteristics of different treatment technologies.

SCS has designed incineration facilities for infectious (hospital) wastes, toxic gases collected at Superfund sites, and small solid waste management facilities. Other types of treatment systems designed by the firm include solvent distillation and recovery, oil-water separation, carbon adsorption, lead battery acid neutralization and lead recovery, and physical/chemical treatment for photographic wastes. Clients served in these projects include military installations, private companies, and municipal governments.

SCS clients for engineering feasibility study services include military branches and private companies. For example, SCS reviewed engineering designs for a hazardous waste incinerator and a PCB incinerator for two private developers considering construction of such facilities. Financing the facilities was contingent upon SCS's engineering review. SCS performed a series of projects for the Navy's Civil Engineering Laboratory to examine the feasibility of modular incineration for solid wastes.

Design of Hazardous Material/Waste Storage and Disposal Facilities. SCS has conducted scores of hazardous material and hazardous waste storage projects stretching literally from coast to coast. These have included Spill Prevention, Control and Countermeasure (SPCC) plan preparation, design of modifications to storage facilities, and design of new storage facilities. Over the last two years, SCS has designed new hazardous material/hazardous waste storage facilities totalling several millions of gallons in capacity, including:

- Hazardous materials storage facilities, Mare Island Naval Shipyard, Vallejo, California
- Transformer and circuit breaker oil storage facility, Vancouver, Washington
- JP-4 and liquid oxygen storage facilities, Glenn L. Martin Air National Guard Base, Baltimore, Maryland
- JP-4, JP-5, diesel, fuel oil, leaded gasoline, unleaded gasoline and kerosene storage facility, Marine Corps Development and education Command, Quantico, Virginia
- JP-4 storage facility, West Virginia Air National Guard Base, Charleston, West Virginia
- Hazardous waste storage and transfer facilities (underground tanks and containers), Bureau of Engraving and Printing, Washington, DC
- Hazardous materials storage and dispensing facilities (containers, and aboveground and underground tanks), Bureau of Engraving and Printing, Washington, DC

- Chemical storage and transfer facility, Great Lakes Chemical Company, Irvine, California
- Diesel and unleaded gasoline storage facility, Fort Lee, Petersburg, Virginia

SCS has provided land disposal consulting services to a variety of Federal, state and local government agencies, military branches, and private companies. More than 250 projects relating to land disposal of wastes have been performed by the firm, including both hazardous and solid waste. SCS has provided full-scale siting and design services at more than a dozen municipal and industrial landfills, and has provided limited design services at scores of others. In addition to landfill facilities, the firm has prepared designs for land treatment and surface impoundment facilities.

Closure and Corrective Action Plans. SCS has prepared several dozen closure plans for hazardous waste facilities in Arizona, Arkansas, California, Georgia, Iowa, Maryland, North Carolina, Ohio, Oregon, Pensylvania, Texas, Virginia, and Washington. Facilities covered by these plans range from simple storage and treatment facilities to complex combinations of treatment and land disposal. Where possible, SCS assists facility owners in achieving "clean closure", thus eliminating the need for continuing post-closure care.

Where clean closure is not possible, SCS prepares closure and post-closure care plans leaving some contamination in place, with caps and groundwater monitoring designed in accordance with regulatory guidance. The firm assists in developing risk-based closure standards and groundwater monitoring standards ("Alternate Concentration Limits") to help determine whether further corrective action is needed at a facility.

When a release of hazardous waste constituents is identified at a RCRA-regulated facility, even where the release is from a non-regulated solid waste management unit, then new Federal regulations require the development and implementation of a corrective action plan to address the release. SCS has been involved in preparing and negotiating some of the nation's first RCRA corrective actions conducted under these new requirements.

One example includes the firm's work in response to an apparent release of trichloroethylene from a southern manufacturing plant. SCS assisted the manufacturer in assuming control of its response to the situation, rather than awaiting regulatory direction. As a result, carbon filters were installed on wells serving nearby homes and combination air stripper and carbon filter was installed on the plant's water supply within a matter of weeks of discovery of the release. The formal corrective action plan required more than 18 months for agency approval, but in the meantime, the problem was largely solved. Testing indicates that the technologies reduced trichloroethylene concentrations below detection limits.

Underground Storage Tanks

Federal regulations require owners of underground tanks to perform precision tank testing on a regular basis. If leaks are detected, a corrective action program must be developed and implemented. SCS has assisted underground tank owners in developing tank management programs, including identifying underground tanks, assigning priorities for testing, conducting precision tank tests, installing monitoring wells, and designing and implementing corrective measures where necessary.

In the last year, SCS has conducted underground tank testing programs for chemical companies, manufacturers, trucking companies, oil companies, and private developers. SCS conducts the most appropriate tank integrity test method using certified technicians. If necessary, SCS installs groundwater or unsaturated zone monitoring well systems, and collects and interprets analytical results.

In the course of performing underground tank projects for some of the nation's prominent owners of underground tanks, SCS has gained a reputation for practical, effective solutions to underground tank problems. In one case, the firm designed and constructed a groundwater interceptor trench and hydrocarbon recovery system which was far more effective than required by the client's specifications, and which cost roughly one-

third of what the client expected to pay. In another example, the firm was retained to determine the source of migrating gasoline in the groundwater beneath one California site, and to design remedial measures to permit development to continue. Such projects typically are conducted under intense time constraints to assure continuation of the developer's financing; SCS is accustomed to performance under pressure.

Construction of remedial measures can be facilitated through the use of SCS's construction subsidiary, SCS Field Services. Through Field Services, SCS offers "full service" investigation, design, construction and monitoring for remedial measures. Many clients have found this arrangement meets their requirements for responsiveness and accountability when facing an environmental emergency.

Real Estate Contamination Assessments

With the authorization of Superfund in 1986, and a series of similar laws at the state level, sellers and purchasers of real estate (and their lenders) have been placed in an uncomfortable position. Environmental contamination resulting from hazardous material mismanagement can impose substantial liabilities on a purchaser of real estate; in some cases, the expense may be so large as to make the property worthless. If the lender forecloses under these circumstances, it may become the owner of the Superfund site with a net negative value. From the seller's perspective, liability for future contamination of the property could be imposed upon it, unless it can prove that the property was "clean" at the time of transfer.

SCS helps sellers, purchasers, and lenders estimate the extent, if any, of their exposure by performing an environmental contamination assessment prior to conveyance. The purpose of the assessment is to estimate the extent of environmental contamination which may exist at the site. SCS has provided environmental contamination assessments to private developers, lenders, and clients. Each has benefitted from SCS's pragmatic approach to these assignments, which includes conducting the work in phases to minimize the expense of the survey effort. Under this approach, the scope of each phase depends upon the results of the preceding phases.

The SCS approach to contamination assessments includes compiling the site history, reviewing regulatory agency files, and performing site reconnaissance. If contamination is suspected, SCS recommends a specific sampling program to further characterize the nature of the problem. Where hazardous substance contamination is confirmed, SCS has assisted clients in presenting a plan of action to the appropriate regulatory agencies. The firm has provided these services to clients in Alabama, Arizona, British Columbia, California, the District of Columbia, Florida, Georgia, Illinois, Indiana, Kansas, Kentucky, Maryland, Mississippi, Missouri, Nevada, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Texas, Virginia, and Washington.

Asbestos Services

Asbestos-containing materials (ACM) were used for a wide range of building components until the mid-1970s, when concern over airborne asbestos fibers and their health effects became widespread. SCS assists real estate developers and financial institutions in identifying and managing abatement of ACM. Normally, SCS services begin with a comprehensive inspection and sampling of possible ACM, followed by recommendations regarding appropriate abatement measures. Depending upon the condition and location of ACM within a building, it may be possible to isolate ACM (rather than removing it) at considerable savings to the client. Subsequent phases of SCS services include monitoring abatement activities and certification of conditions. SCS has provided asbestos services for scores of projects in Arizona, California, Indiana, Kansas, Maine, Maryland, Missouri, Ohio, Pennsylvania, Virginia, and Washington.

PERSONNEL

Exhibit A summarizes the backgrounds of some 95 key SCS professionals with experience in waste matters. Together, this core staff has more than 750 years of experience solving a wide range of hazardous waste problems, and more than 1,100 total years of professional experience. Two-thirds of the personnel shown hold professional licenses in fields relevant to the firm's practice in hazardous waste and Superfund services. Many are licensed in more than one state; taken together, they provide the firm with the ability to practice professional engineering in most states.

Full resumes and references for any professional shown are available on request.

EXHIBIT A: KEY SCS PERSONNEL WITH WASTE MANAGEMENT EXPERIENCE

Key Personnel	SCS Classification	Education				Years Experience			Professional Registration*
		BS	MS	PhD	Degree	With SCS	In Waste Management	Total Prof.	
M.D. Alpers	Sr. Project Analyst	•	•		Planning	1	8	10	EIT
R.C. Alvord	Sr. Project Scientist	•			Geology	3	11	12	CPG
V.S. Apte	Project Engineer	•	•		Civil/Environmental Engineering	3	6	7	EIT
D.A. Austin	Project Director	•	•		Mechanical Engineering/Business	2	10	20	PE
K.L. Beattie	Staff Analyst	•	•		Sociology/Political Economy	1	2	8	
M.B. Belzer	Project Director	•			Civil Engineering	8	8	18	PE
S.C. Benitez	Sr. Project Scientist	•			Environmental Science	10	10	11	CHMM
C.M. Boone	Project Scientist	•			Environmental Science	11	10	11	
J.L. Briggs	Project Manager	•	•	•	Ecology	5	5	21	
J.E. Buckley	Staff Engineer	•			Geological Engineering	1	3	3	
A.C. Caldwell	Staff Engineer	•			Engineering	1	1	7	
P.J. Carrico	Project Manager	•			Environmental Science	4	4	4	
T.J. Chang	Project Director	•	•		Mechanical Engineering	9	10	15	PE
A.S. Childress	Project Scientist	•	•		Geology	3	3	5	CPG
B.B. Clark	Sr. Project Engineer	•			Civil Engineering	2	12	13	PE/CHMM
E.B. Clement	Staff Engineer	•	•		Civil/Environmental Engineer	1	4	14	PE
T..R. Collings	Staff Scientist	•			Microbiology	1	9	9	
G.L. Coiner	Staff Engineer	•			Agricultural Engineering	4	4	8	EIT
E.T. Conrad	Principal	•			Civil Engineering	20	23	31	PE
J.P. Cummings	Project Director	•	•	•	Chemistry/Environmental Eng./Law	2	20	30	REA/SB
A.J. DiPuccio	Project Director	•			Civil Engineering	11	12	17	PE
C.D. Forbes	Assoc. Staff Scientist					1	2	12	
G.A. Farrer	Sr. Project Engineer	•			Civil Engineering	1	5	10	PE
P.K. Foxwell	Staff Engineer	•			Geological Engineering	3	3	3	
R.B. Gardner	Project Director	•	•		Civil Engineering	10	10	10	PE
D.P. Gillespie	Project Scientist	•	•		Geology	11	11	13	CPG
M.D. Geyer	Project Engineer	•			Soil Science/Agricultural Eng.	3	3	3	EIT/AHERA
T.D. Dong	Project Manager	•	•		Environmental Engineering	12	12	12	REA
A.J. Gordon	Project Manager	•	•		Geology	2	9	9	CPG
K.W. Green	Project Scientist	•			Geology	3	3	8	
R.L. Grier	Project Manager	•			Civil Engineering	3	26	27	PE

* Professional Registration

AHERD = Asbestos Hazard Emergency Response Act
CPG = Certified Professional Geologist/Registered Geologist
CEG = Certified Engineering Geologist
CHMM = Certified Hazardous Materials Manager
EIT = Engineer in Training
PE = Professional Engineer
PLS = Professional Land Surveyor
REA = Registered Environmental Assessor
SB = State Bar

EXHIBIT A: KEY SCS PERSONNEL WITH WASTE MANAGEMENT EXPERIENCE, Continued

Key Personnel	SCS Classification	Education				Years Experience			Professional Registration*
		BS	MS	PhD	Degree	With SCS	In Waste Management	Total Prof.	
M.J. Griffin	Project Scientist	•	•		Chemistry/Environmental Science	3	9	9	
S.M. Hamilton	Project Manager	•			Biology	1	9	10	
M.J. Haven	Project Director	•	•		Biology/Computer Science	10	10	21	
W.M. Held	Sr. Project Engineer	•	•		Civil/Environmental Engineering	7	9	9	EIT
G.D. Helland	Project Scientist	•			Geology	3	3	5	
J.O. Hendricks	Staff Geologist	•			Geology	1	1	13	
J.W. Hughes	Sr. Project Engineer	•			Civil Engineering	2	12	12	PE
C.B. Jenkins	Project Director	•			Chemistry	3	17	24	
B.F. Johnson	Project Scientist	•			Geology	1	7	7	CPG/AHERA
R.W. Jones	Project Engineer	•			Civil Engineering	1	3	14	PE/PLS
K.O. Kagy	Project Engineer	•			Civil Engineering	1	3	10	EIT
M.M. Katzman	Project Manager	•			Geology	3	10	19	CPG
B.P. Knoll	Project Engineer	•			Civil Engineering	1	15	20	PE
S.R Kothary	Project Engineer	•			Civil Engineering	3	17	19	PE
M. Krieski	Sr. Project Engineer	•			Geological Engineering	1	6	8	PE
K.V. LaConde	Project Director	•			Chemistry	15	15	25	REA
S.A. Levin	Project Engineer	•			Civil Engineering	1	2	6	EIT
K.H. Lister	Sr. Project Scientist	•	•	•	Geology	3	3	13	CPG/REA
R.W. Luce	Project Manager	•	•	•	Geochemistry	5	5	21	CPG
K.A. Madenwald	Project Manager	•	•		Geology/Geotechnical Engineering	3	16	32	PE
P.A. Mandeville	Sr. Project Engineer	•	•		Civil Engineering	2	3	8	PE
J.R. Marsh	Project Manager	•	•		Environmental Engineering	11	11	14	REA
J.D. Marshall	Sr. Project Engineer	•			Chemical Engineering	5	7	8	PE
J.D. McClenagan	Staff Scientist	•			Geology	1	3	4	
M.J. McGuigan	Project Engineer	•			Mechanical Engineering	2	4	10	EIT
J.R. McKie	Staff Engineer	•	•		Meteorology/Civil Engineering	3	3	12	PE
M.W. McLaughlin	Project Director	•		•	Civil Engineering/Law	11	11	12	EIT/SB
J.H. Miller	Asspc. Staff Scientist	•	•		Geology/Forest Hydrology	1	1	5	
J.J. Miller	Sr.Project Engineer	•			Environmental Engineering	6	6	9	PE
P.G. Newton	Project Manager	•			Civil Engineering	4	11	11	PE/PLS
J.A. Nuno	Sr. Project Engineer	•	•		Environmental Engineering	7	7	7	REA
L.R. Patel	Assoc. Staff Engineer	•			Civil Engineering	1	3	14	

* Professional Registration

AHERA = Asbestos Hazard Emergency Response Act
CPG = Certified Professional Geologist/Registered Geologist
CEG = Certified Engineering Geologist
CHMM = Certified Hazardous Materials Manager
EIT = Engineer in Training
PE = Professional Engineer
PLS = Professional Land Surveyor
REA = Registered Environmental Assessor
SB = State Bar

EXHIBIT A: KEY SCS PERSONNEL WITH WASTE MANAGEMENT EXPERIENCE, Continued

Key Personnel	SCS Classification	Education				Years Experience			Professional Registration*
		BS	MS	PhD	Degree	With SCS	In Waste Management	Total Prof.	
E.R. Peterson	Sr.Project Engineer	•	•		Civil Engineering	4	6	7	PE
G.A. Petoyan	Project Director	•	•		Environmental Engineering	9	9	9	
L.A. Polos	Project Scientist	•			Biology	4	9	9	
T.W. Quane	Staff Scientist	•			Biology	2	2	14	
R.S. Reis	Project Manager	•			Civil Engineering	1	4	12	EIT
K.L. Richardson	Staff Scientist	•			Environmental Studies	4	4	4	AHERA
D.E. Roberson	Project Manager	•	•		Environmental Science	11	11	14	CHMM
D.E. Ross	Project Director	•	•		Civil Engineering	19	22	22	PE/REA
K.K. Salgal	Project Manager	•			Civil Engineering	8	8	28	PE
D.C. Sincerbeaux	Staff Scientist	•			Chemistry	5	5	5	
J.W. Stamm	Staff Engineer	•	•		Chemical Engineering	4	5	5	EIT
R.P. Stearns	Principal	•	•		Civil Engineering	20	29	29	PE
J. Steffan	Project Analyst	•			Business/Marketing	2	12	20	
U.G. Steinberger	Staff Engineer	•	•		Chemical/Environmental Engineering	5	5	5	EIT/AHERA
D.E. Stinson	Project Manager	•			Civil Engineering	3	6	13	PE
K.M. Stremlau	Staff Engineer	•			Civil Engineering	3	4	4	EIT
P.S. Strickland	Staff Engineer	•			Civil Engineering	1	3	4	EIT
L.T. Tagawa	Project Scientist	•	•		Geology	4	5	5	
J.S. Van Volkenburgh	Project Analyst	•			Economics	1	5	10	
W.G. Vogt	Project Manager	•	•		Biology/Environmental Science	9	9	11	
C.A. Votaw	Project Scientist	•			Planning	3	4	5	
J.J. Walsh	Project Director	•			Civil Engineering	15	15	15	PE
C.G. Ward	Project Manager	•			Geologist	2	7	7	
S.J. Watterson	Project Engineer	•			Civil Engineering	2	4	8	PE
T.D. Wetherill	Sr. Project Engineer	•			Mathematics	2	9	10	
J.H. Wheeler	Project Manager					2	15	15	
S.S. Whiting	Project Scientist	•	•		Environmental Planning	1	10	12	
N.E. Wetting	Project Manager	•			Mechanical Engineering	2	15	15	
J.D. Wright	Project Director	•	•		Civil Engineering	7	7	20	PE
J.A. Young	Project Director	•	•		Chemical Engineering/Business	2	16	24	
N.G. Zolten	Project Engineer	•			Civil Engineering	1	2	6	PE

* Professional Registration

AHERA = Asbestos Hazard Emergency Response Act
CPG = Certified Professional Geologist/Registered Geologist
CEG = Certified Engineering Geologist
CHMM = Certified Hazardous Materials Manager
EIT = Engineer in Training
PE = Professional Engineer
PLS = Professional Land Surveyor
REA = Registered Environmental Assessor
SB = State Bar

LABORATORY

The SCS laboratory is located in Signal Hill, California, near the Long Beach office. This facility includes two Hewlett-Packard 5970B GC/MS, a total of eight Varian Gas Chromatographs, Thermo-Jarrell Ash Inductively Coupled Argon Plasma Spectrometer, a Perkin-Elmer Atomic Absorption Spectrometer and various other spectrophotometric equipment. A separate area houses a full wet chemistry laboratory and peripheral equipment. The laboratory performs analyses on water, wastewater, sludges, soils, plants, leachates, gases and groundwater.

The SCS laboratory is widely regarded for its work in analyzing subsurface gases for trace compounds, and for its work in support of SCS's underground tank investigations (e.g., analyses for Benzene, Toluene and Xylene, or BTX; total recoverable petroleum hydrocarbons; and organo-lead in soil and water). In addition, the laboratory has a large bench-scale testing area in which to conduct treatability and leachability studies on a variety of waste materials.

In addition to providing laboratory analyses in support of SCS projects, the laboratory also provides analytical services to a wide range of commercial and military clients. The laboratory is certified by the State of California.

Each SCS office maintains a full complement of field sampling equipment for water, groundwater, soil, air and waste sampling and site assessment. Included are photo-ionization, flame ionization, and electrochemical direct reading instruments for vapor analysis, non-contaminating sample pumps, water level indicators, a portable drill rig, and a variety of supporting field equipment. In addition, each SCS office maintains necessary safety equipment and supplies to enable the firm to respond quickly to field investigation assignments.

CORPORATE FACILITIES

Information and Data Management

SCS Engineers maintains sophisticated data management capabilities within its Data Processing Group. The firm has a large HP 3000 mini-computer system with associated terminals, printers and plotters configured in a time-sharing environment. In addition, the firm has a variety of IBM, Compaq, and Hewlett-Packard micro-computers.

These in-house systems, when coupled with the firm's data processing staff, provide state-of-the-art data manipulation and analysis capabilities for SCS assignments. The firm has developed several specialized applications for hazardous waste and toxic materials analysis at the national or regional level. For example, SCS offers a modified version of EPAs Hazardous Waste Data Management System (HWDMS) to hazardous waste companies performing market research.

The SCS service is called AEGIS, for Automated Environmental Geographic Information Service. Included within AEGIS are the RCRA 3010 notifications (more than 50,000 records); RCRA Part A applicants (some 7,500 records); CERCLA 103c notifications (some 7,000 records); the Open Dumps Inventory; Surface Impoundment Assessment files; wastewater discharge data from 40,000 sites; and state information collected from 10 of the largest states. In addition, the firm has computerized EPAs Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) to enable SCS staff to quickly identify potential Superfund sites located near any property of interest throughout the United States.

Library Facilities

Each SCS office maintains a working library of solid and hazardous waste research materials, product catalogs, and military guide specifications. The firm's main library is located in the Long Beach office, and contains roughly 25,000 volumes. All of the firm's library holdings are fully automated, with search and circulations assisted using SCS-AUTOLIB (TM), an automated library management system developed by the firm and available commercially. Due to the specialized nature of SCS's work, the library contains solid and hazardous waste reference materials which are not available elsewhere. In addition, the library maintains subscriptions to most of the available solid and hazardous waste research services.

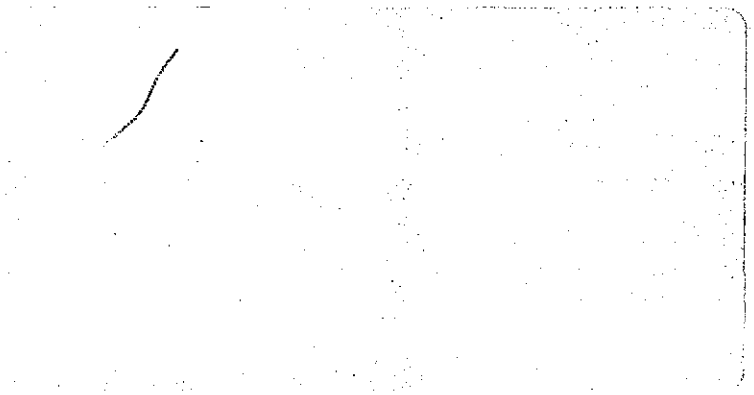
Drafting and Graphics

SCS offices are equipped with a wide range of drafting and graphics equipment. From traditional engineering drafting (plans, details, etc.) to sophisticated computer aided design, drafting, graphics and desktop publishing, SCS has the in-house capabilities to meet client requirements.

Over its history, SCS has amassed a considerable number of proven engineering details and construction techniques which can be used for efficient production of construction drawings. The firm prepares all types of illustrations, including black and white, full color, and line art from photography. Many solid and hazardous waste projects include public participation; use of SCS-produced illustration materials in various media has proven valuable for a number of these projects.

Environmental Consultants

SCS ENGINEERS



ADDENDUM TO
SITE CHARACTERIZATION/
ASSESSMENT PROPOSAL
FOR
PARKING GARAGE
AT
1432 HARRISON STREET
OAKLAND, CALIFORNIA

Submitted to:

Alameda County Health Care Services Agency
Hazardous Materials Program
Department of Environmental Health (ACDEH)
80 Swan Way, Room 200
Oakland, California 94621

Submitted by:

SCS Engineers
6761 Sierra Court, Suite D
Dublin, California 94568

March 4, 1991

File No. 0390044.00

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

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415)

February 21, 1991

Mr. John Cummings
SCS Engineers
6761 Sierra Court, Suite D
Dublin, CA 94568

Re: Oakland Parking Garage, 1432 Harrison Street including connecting Alice Street garage, Oakland, CA 94612

Dear Mr. Cummings:

I have received and reviewed the site characterization/ assessment proposal dated February 15, 1991 for proposed work at the above sites prepared by SCS Engineers. That review was also greatly facilitated as a result of our meeting onsite on 2/11/91.

The workplan proposes to install 13 groundwater monitoring wells in order to investigate potential soil and groundwater contamination in several areas of both of the parking facilities.

The workplan is not approved. Although the workplan is adequate in many areas, the following concerns need to be addressed and understood prior to workplan approval:

1) It is your responsibility to determine the appropriate locations for monitoring wells and borings. Keep in mind that wells must be installed within 10 feet of a contaminated source in the downgradient direction and the full extent of soil and groundwater contamination must be determined at the above sites.

2) Specific areas requiring subsurface investigation are listed below:

a) You are required to investigate for possible soil contamination beneath the wash rack sump located in the northeast corner of the Harrison Street garage.

b) You are required to sample the material from beneath the drain grate in the basement of the Alice Street structure and to sample the soil beneath the location of the capped pipe in between space 12/13 also located in the Alice Street Basement.

c) You are required to examine for soil contamination around the area of the three hydraulic lift rams and the hydraulic oil reservoir.

d) You are also required to investigate and delimit the location of the pipes running within the garage complex and to develop a sampling schedule to investigate for contaminated soil beneath any pipes which were historically used as a conduit for

hazardous materials/ or hazardous waste. The extent and locations of all piping needs to be defined and the ultimate destination of all piping and drains identified in order to determine where the pipes ultimately connect to (sewer drain, storm drain, etc.).

e) In the January 25th letter from this department to you we requested that you investigate downgradient of the waste oil tanks located on Alice Street for possible contamination from PCB's and petroleum contaminants. Based on the assumption stated in the workplan proposal the proposed downgradient direction is in the southeasterly direction. The proposed monitoring wells in this area have not been placed so that downgradient monitoring would occur. You are required to reevaluate the well placement.

3) You are also required to specify what chemical sampling analysis will be performed for soil and water samples collected from each boring or water sample.

4) Once subsurface contamination levels have been established for the site an assessment will be necessary of the human health risks associated with both the underground tank removals and any remedial activity which will occur at the above site.

Please be advised that some of the wells as specified in the proposed workplan may need to be removed when soil excavation occurs following the tank removals. Additional wells may be required to delineate the extent of groundwater contamination following tank and soil removal.

You are requested to submit copies of all documentation pertaining to the remedial activity at this site to the Regional Water Quality Control Board.

Finally, a review of our records indicates that the balance of the deposit submitted with the initial underground tank removal closure submittal has been nearly exhausted. Please submit to our office a check made payable to the County of Alameda for $ 750.00. (This deposit is authorized by Section 3-141.6 of the Ordinance Code of the County of Alameda and is used to cover expenses incurred by Alameda County personnel in the discharge of their oversight duties associated with this project. Records are maintained of the time County employees commit to a project and the deposit is charged at an hourly rate of $ 69.00 per hour. Upon the completion of the project the balance of the deposit will be returned to you).

Please submit within 10 calendar days an addendum to your proposal explaining how you plan to address the issues outlined in this letter. Should you have any questions please call me at 415/271-4320.

Sincerely,

Paul M. Smith

Paul M. Smith
Hazardous Materials Specialist

cc:
Mark Borsuk, Attorney at Law
Jonathan Leo, Heller, Ehrman, White & McAuliffe
Mark Thomson, Alameda County District Attorney's office of Consumer and Environmental Affairs
Rafat A. Shahid, Assistant Agency Director, Alameda County Environmental Health Department
Lester Feldman, SFRWQCB
Charlene Williams, DHS

Environmental Consultants

6761 Sierra Court
Suite D
Dublin, CA 94568

415 829-0661
FAX 415 829-5493

SCS ENGINEERS

91 MAR -5 PM 2:14

March 4, 1991
File No. 0390044.00

Alameda County Health Care Services Agency
Department of Environmental Health (ACDEH)
Hazardous Material Program
80 Swan Way, Room 200
Oakland, California 94621

Attention: Mr. Paul Smith

Subject: Health and Safety Code Section 25299.37 (c) Order:
Addendum to Site Characterization/Assessment Proposal
for the Parking Garage
at 1432 Harrison Street
Oakland, California 94612

Dear Mr. Smith:

SCS Engineers (SCS) is pleased to submit this Addendum to the Site Characterization/Assessment Proposal dated February 15, 1991 at the above mentioned parking garage for your review. The items enumerated in this Addendum correspond to those enumerated in your letter to us dated February 21, 1991.

1) Locations for monitoring Wells and Borings:

SCS fully understands its responsibility to determine the appropriate locations for monitoring wells and soil borings. Their placement and installation will be done in accordance with the County's guidelines. Plate three (3) is an illustration of the placement rationale. The exact locations will be determined in the field by our geologist after incorporating any logistical constraints.

2a) Soil Contamination Beneath Wash Rack Sump:

The wash rack sump is located in the northeast corner of the Harrison Street Garage. A test boring is proposed adjacent to the sump utilizing a four inch solid stem auger. The boring will extend to a depth of approximately 20 ft below Harrison Street grade and samples will be collected at a minimum of every five (5) feet. The samples will be prepared, and shipped to a certified laboratory for analysis.

2b) Collection Drain and Capped Pipe in Alice Street Basement: Must cl- HC 8120

A grab sample (approximately one (1) liter) of the material beneath the grate in the collection drain will be collected. The sample will be stored in a glass jar, prepared and shipped out for certified laboratory analysis.

The capped pipe is located adjacent to a column in between space 12/13 in the Alice Street Basement. The pipe appears to extend through the column footing. To collect a soil sample from beneath the capped pipe, a boring would have to penetrate approximately five (5) feet of concrete. To determine whether this will be necessary, SCS proposes to remove the cap, define the direction and extent of the piping, and collect and analyze a grab sample of the pipe contents. SCS proposes not to sample soil beneath the five (5) feet of concrete underlying the capped pipe if the foregoing analysis does not disclose the presence of hazardous material or wastes.

2c) Hydraulic Lift Area:

The hydraulic lift area is located in the northeast corner of the Harrison Street Garage. Four (4) test borings are proposed, utilizing a four inch solid stem auger. The borings will be located adjacent to each of the three lift rams and the suspected hydraulic reservoir. They will extend to a depth of approximately 20 feet below Harrison Street grade and each sample will be collected at a minimum of every five (5) feet. The samples will be prepared and shipped to a certified laboratory for analysis.

2d) Piping Within the Garage Complex:

Attached is a report by J R Associates, dated August 28, 1990, that presents the results of a geophysical investigation performed at the Harrison Street Garage. The report reveals the location of the waste oil tanks and associated piping as well as piping within the hydraulic area. A review of agency records will be done to determine the extent and ultimate destination of water collection drains. If it is determined that a pipe was used as a conduit for hazardous materials and/or hazardous waste, a plan to take soil samples at 20 foot intervals beneath such a pipe will be implemented to investigate for contamination beneath that pipe.

2e) Monitoring Well Locations for Waste Oil Tanks:

SCS has revised Plate three (3), which delineates the proposed monitoring well locations, to show the waste oil tanks set back from the wall. The wells will be placed as close as possible to the basement wall which is downgradient from these tanks. Their actual position is not known. However, based on the location of their fill pipes, it is believed the end of the tank is approximately 8 to 10 feet from the basement wall.

3) Chemical Sampling Analysis

The analysis for the soil and water samples collected is summarized in the following table:

TABLE 1

Location	TPH-G[1]	TPH-D[2]	BTEX[3]	O.L.[4]	O&G[5]	ClH[6]	PCB's[7]	PPM[8]
Gasoline Tanks	X	X	X	X	X	X	X	X
Waste Oil Tanks (Basement)	X	X	X		X	X	X	X
Hydraulic Lift		X	X		X			
Wash Rack Sump	X	X	X		X	X		
Collection Drain (Basement)	X	X	X		X			X

1. Total Petroleum Hydrocarbon as FAS (EPA 8015 Mod)
2. Total Petroleum Hydrocarbon as Diesel (EPA 8015 Mod)
3. Benzene, Toluene, Ethylbenzene, Xylene (EPA 8020)
4. Organic Lead (DOHS MIBK Method)
5. Oil & Grease (EPA 413.1)
6. Chlorinated Hydrocarbons (EPA 8120)
7. Polychlorinated Biphenyls (EPA 8080)
8. Priority Pollutant Metals

4) Human Health Risk Assessment:

At the completion of the site characterization, a Health Risk Assessment associated with both the underground tank removal and any site remediation activities will be performed.

This completes the Addendum to the Site Characterization/Assessment Proposal for the Parking Garage at 1432 Harrison Street. If you should have any questions, please contact either of the undersigned at (415) 829-0661.

Sincerely,

Nels R. Johnson, P.E.
Sr. Project Engineer
SCS Engineers

John P. Cummings, Ph.D., R.E.A., R.E.P.
Office Director
SCS Engineers

NRJ/JPC/sar/egh

cc: Mr. Lester Feldman, Regional Water Quality Control Board
Mr. Mark Thomson, Alameda County District Attorney's Office

ATTACHMENT

J R ASSOCIATE GEOPHYSICAL INVESTIGATION

J R ASSOCIATES

Engineering Geophysics
1886 Emory Street
San Jose, CA 95126
(408) 293-7390

HARRISON STREET GARAGE GEOPHYSICAL INVESTIGATION
HARRISON STREET GARAGE
1432 HARRISON STREET
OAKLAND, CALIFORNIA

August 27, 1990

for

SCS Engineers
6761 Sierra Court, Suite D
Dublin, CA 94568

by

James Rezowalli, GP-921

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

I INTRODUCTION

This report presents the results of a geophysical investigation performed at the Harrison Street Garage for SCS Engineers by J R Associates. The purpose of the survey was to determine if there were geophysical indications of buried tanks at two locations in the garage. The Harrison Street Garage is located at 1432 Harrison Street in Oakland, California (Drawing 1). The field work was performed on August 16, 1990, by James Rezowalli, Principal Geophysicist, and Lanbo Liu, Geophysicist, of J R Associates.

A. Site Conditions

The geophysical investigation took place inside the Harrison Street Garage. An area around three car lifts near the ground level Harrison Street entrance of the garage was investigated using a ground penetrating radar (GPR) and a pipe and cable locator. An area in the southern corner of the lower level of the garage adjacent to Alice Street was also investigated with the GPR and pipe and cable locator. The first purpose of the geophysical investigation was to aid in determining if there were buried hydraulic tanks associated with the car lifts near the garage entrance. The car lifts and a pneumatic line indicated that tanks may have been buried in this area. The second purpose of the GPR investigation was to aid in determining if waste oil tanks were buried in the lower southern corner of the garage. An apparent fill (or drain) pipe originating on the Alice Street sidewalk and leading into the lower garage floor along with two apparent tank vent pipes indicated that two tanks may have been buried in the lower southern corner of the garage.

II METHODOLOGY

A. GPR Instrumentation

A SIR 3 radar system made by Geophysical Survey Systems, Inc., was used at the site. The SIR 3 consists of a radar control unit, a graphic recorder, and a 500 MHz antenna. The GPR transmits a radio frequency electromagnetic pulse into the ground. The pulse travels through the ground at approximately 3 nanoseconds per foot. The pulse is reflected back to the surface from buried features with dielectric constants that are different than the surrounding or overlying media. GPR pulses are transmitted and the returning reflections are recorded 32 times a second as the antenna is slowly pulled across the ground. The GPR detects the returning reflections and plots them on the graphic recorder. The X axis of a GPR record is distance and the Y axis is time. Drawing 2 shows two GPR records collected at the site. The dark bands seen on the GPR records indicate the returning radar reflections. The GPR antenna must travel directly over a buried tank to detect it.

B. GPR Field Procedures

GPR data were collected along a grid of traverse lines in the vicinity of the car lifts and in the lower southern corner of the garage. The traverse lines were spaced two feet apart. Data collection began by marking the beginning and the end of a radar traverse. A tape measure was then laid on the ground between the beginning and end marks. The antenna, connected to the control unit by a cable, was dragged along the traverse collecting radar records adjacent to the tape measure. The antenna operator manually marked the radar records every time the radar antenna traveled 5 feet. The dashed distance marks (Drawing 2) were created by pressing a momentary switch connected to the antenna. After a traverse was completed, the tape measure was moved to the next traverse line and the above process was repeated.

C. Pipe and Cable Surveying

A pipe and cable survey was performed at the site using a Radiodetection, Inc., RD 400 pipe and cable locator.* Buried utilities create GPR anomalies that appear similar to the anomalies created by buried tanks. The utilities were located so their anomalies would not be associated with buried tanks. The approximate locations of most of the buried utilities found by the pipe and cable locator are noted on Drawings 3 and 4.

III RESULTS

A. Car Lift Area

The results of the geophysical investigation around the car lifts near the ground floor entrance of the garage are illustrated in Drawing 3. The GPR and the pipe and cable locator indicated several buried pipes in this area. The most significant buried pipe appeared to connect an abandoned drain near the car lifts to two waste oil tanks buried near the southern corner of the lower level of the garage (Drawings 3 and 4). Another buried pipe, probably a pneumatic line, was traced from the garage wall to a valve adjacent to lift 1 (Drawing 3). There was also a buried line connecting lifts 1 and 2. The GPR anomaly created by the line connecting the two lifts is shown in Drawing 2. There were no other indications of buried lines leading into or away from lift 1 or lift 2. The data indicate that if a tank is buried in the vicinity of lift 1 or lift 2, it is probably located next to the hydraulic rams where surface metal interfered with the GPR. Using the pipe and cable locator, a buried line was traced from near what appeared to be a lift valve on the garage wall to lift 3. This line had been cut into the floor and patched over. There were no other indications of buried lines leading into or away from lift 3. The data indicate the hydraulic tank for lift 3 was either located above ground or is buried next to the hydraulic ram of lift 3.

There was one GPR anomaly indicative of a object buried approximately 8 feet from the car lifts (Drawing 3). This GPR anomaly is also shown in Drawing 2. Although this object could be a buried tank, there was no indications of buried lines leading to or from it, and no surface indications of a fill spout or vent lines. It is likely that this anomaly is due to an object other than a buried tank.

B. Lower Southern Garage Corner

The results of the GPR and pipe and cable locating in the southern corner of the lower level of the garage are illustrated in Drawing 4. We were able to trace the suspected tank vent lines to two tanks buried approximately 20 feet from the corner of the garage. Large metal plates covered the fill spouts of the tanks. As mentioned above, a pipe was traced from what appeared to be an abandoned drain near lifts 1 and 2 to the two buried tanks. A pipe leading from the fill spout (or drain) in the sidewalk adjacent to the rear of the garage was also traced to these two tanks. There were no indications of other buried tanks in the area investigated.

C. Limitations

The GPR's depth of penetration is dependent on soil conductivity. The more conductive the soil, the shallower the depth of penetration. In urban areas, particularly in the San Francisco Bay Area, soil conductivities can vary considerably over a short distance. The depth of penetration can be less than one foot in very conductive soils and greater then five feet in resistive soils. Therefore, it is possible there are materials buried at the site that were not detected by the GPR. Also the GPR cannot differentiate a buried tank from another buried object that is roughly the same shape and size.

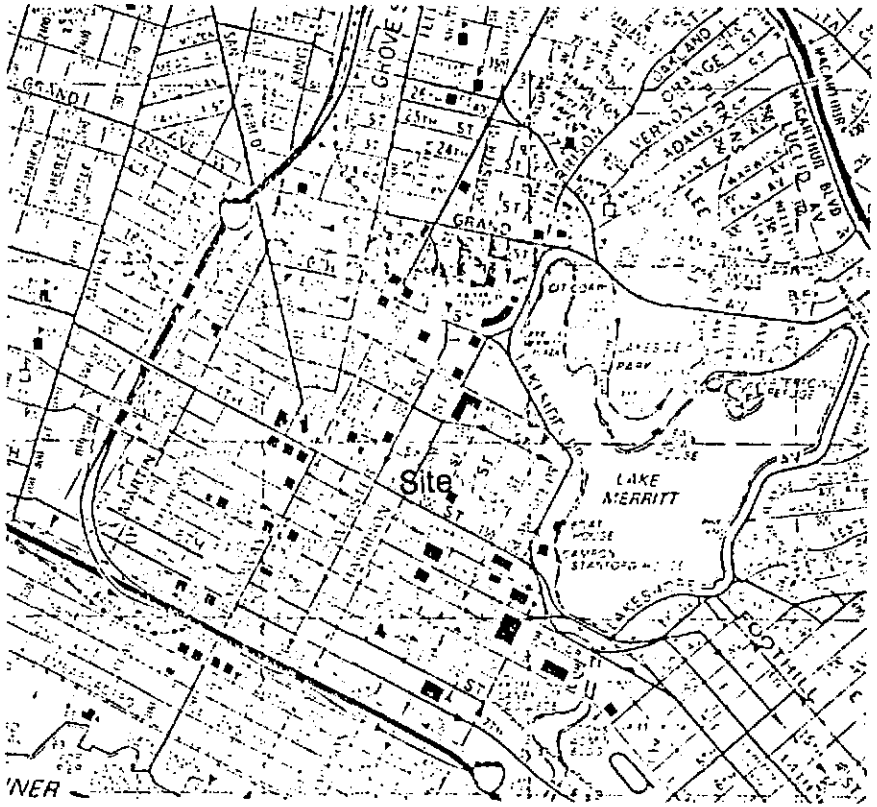
The pipe and cable survey was performed to augment the GPR data. Buried utilities can be missed if they are buried too deep, buried in groups of two or more, or if they are relatively short. Also, the RD 400 can not detect pipes that are not metal. The utility locations shown on the drawings in this report are only approximate and some utilities may have been missed.

D. Conclusions

Two tanks were located during the geophysical investigation at the Harrison Street Garage. These tanks were located near the southern corner of the lower level of the garage. There appeared to be a pipe connecting these two tanks to an abandoned drain in the vicinity of the car lifts located on the ground level near the garage entrance. These tanks were also connected to two vent pipes and to an opening on the sidewalk adjacent to the rear of the building.

There was one GPR anomaly indicative of a buried object near the car lifts. Although this object could be a buried tank, there were no indications of buried lines leading into or away from it, and there was no surface indications of a fill spout or vent lines. We suspect that this GPR anomaly is due to an object other then a buried tank. If there are buried tanks associated with lifts 1 and 2, they are probably located next to the hydraulic rams where surface metal interfered with the GPR data. If there is a buried tank associated with lift 3, it could have been located above ground or it could be buried next to the hydraulic ram where surface metal interfered with the GPR data. However, there were no geophysical indications of buried tanks associated with any of the three car lifts.

IV DRAWINGS



N

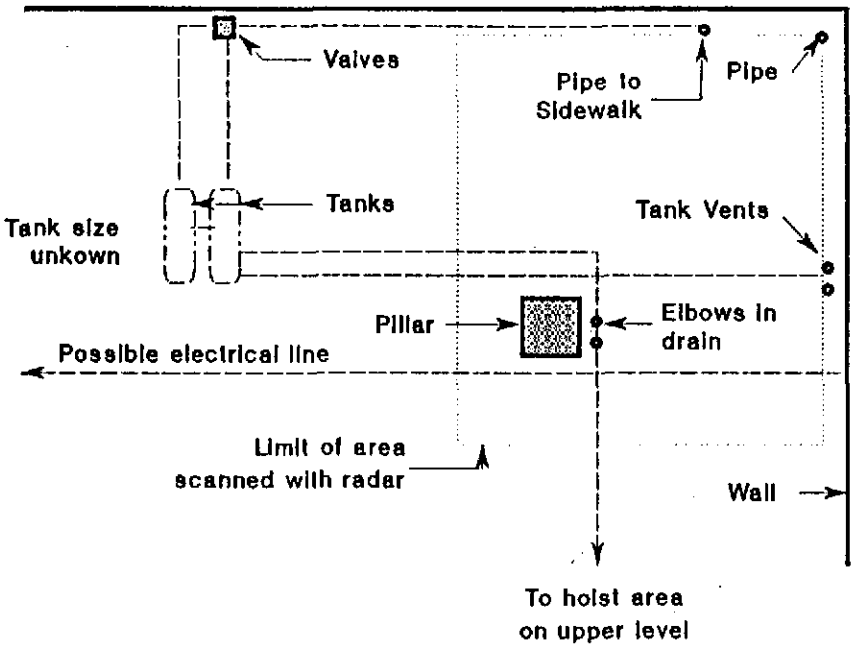
Site Location- Harrison Street Garage
SCS Engineers
Dublin, California

SCALE: N.T.S.		DRAWN BY J.J.R.
DATE: August 27, 1990	Job No: 013119-90	REVISED

J R ASSOCIATES Engineering Geophysics
1886 Emory Street, San Jose, CA 95126 (408) 293-7390

DRAWING NUMBER
1

← Alice street →



EXPLANATION:

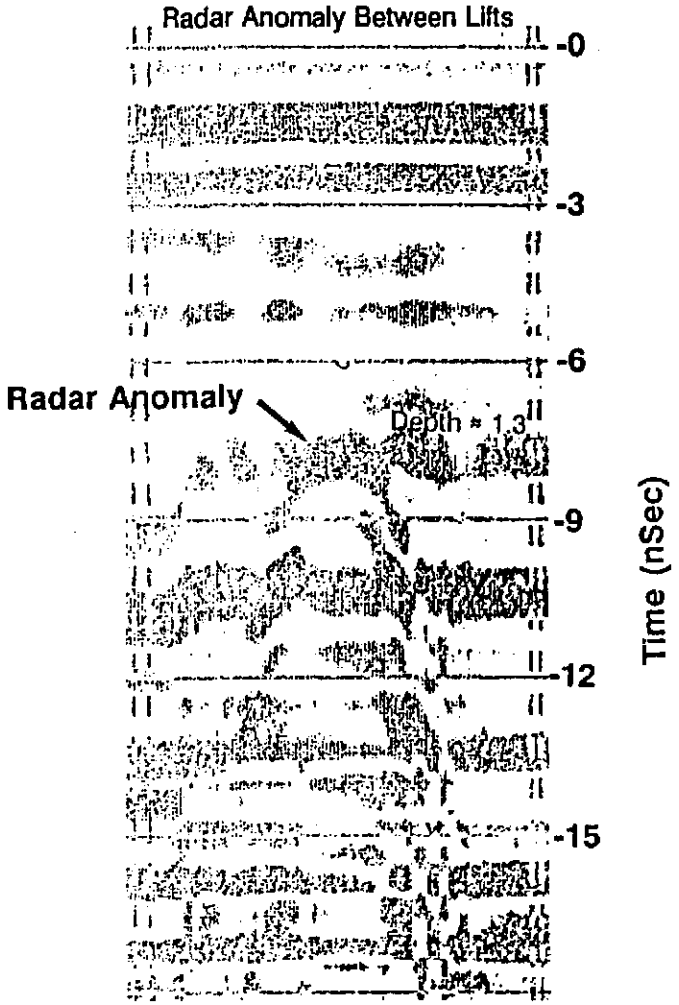
---------- Buried Line

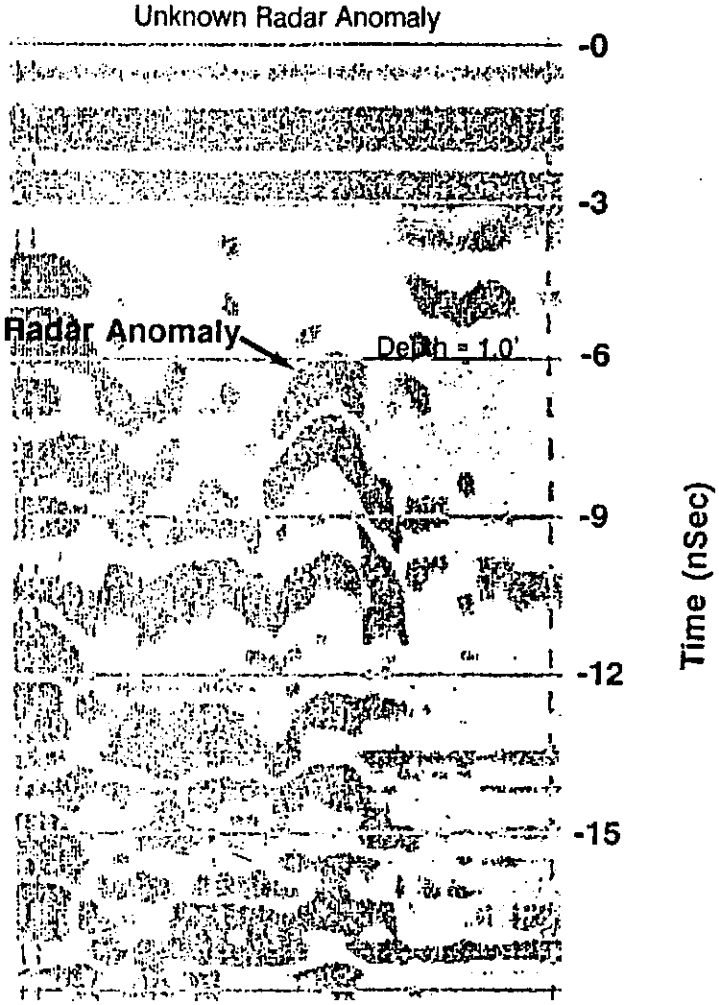
Lower Southern Garage Area- Harrison Street Garage
SCS Engineers
Dublin, California

SCALE: N.T.S.		DRAWN BY J.J.R.
DATE: August 27, 1990	Job No: 013119-90	REVISED

J R ASSOCIATES Engineering Geophysics
1886 Emory Street, San Jose, CA 95126 (408) 293-7390

DRAWING NUMBER
4



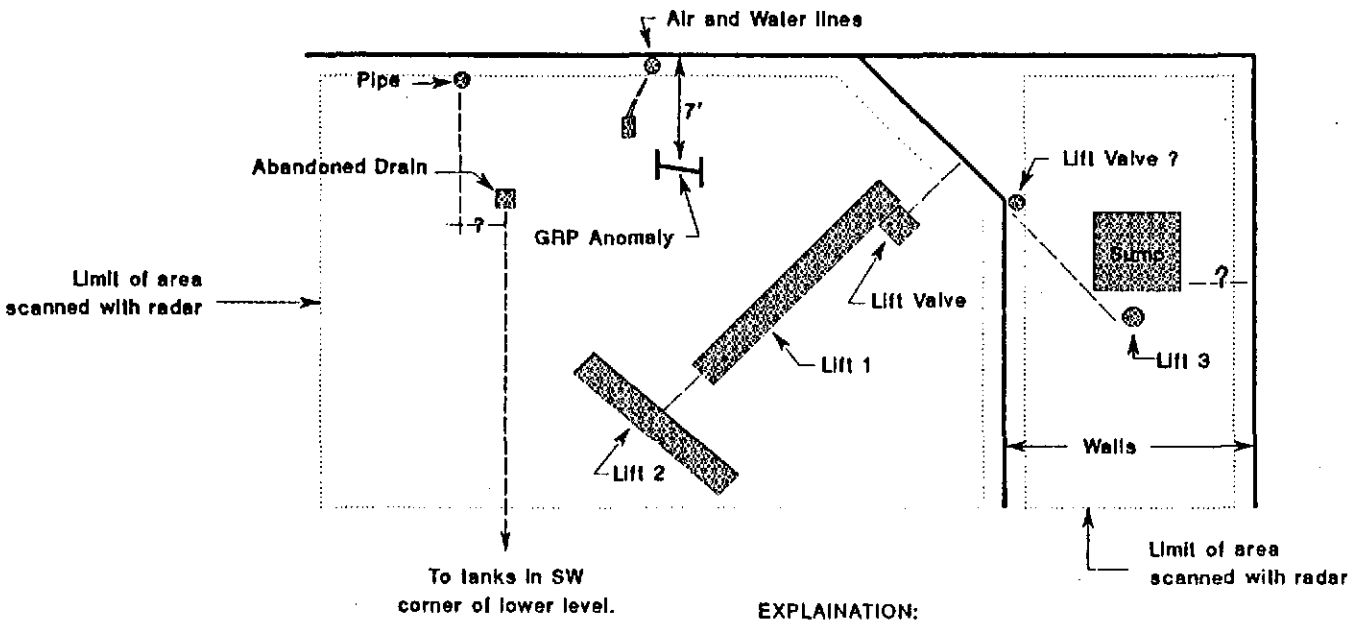


Example Radar Anomalies- Harrison Street Garage
SCS Engineers
Dublin, California

SCALE: N.T.S		DRAWN BY J.J.R.
DATE: August 27, 1990	Job No: 013119-90	REVISED

J R ASSOCIATES Engineering Geophysics
1886 Emory Street, San Jose, CA 95126 (408) 293-7390

DRAWING NUMBER
2



EXPLAINATION:

Buried Line

Possible Buried Line

Upper Garage Area- Harrison Street Garage
SCS Engineers
Dublin, California

SCALE: N.T.S		DRAWN BY J.J.R.
DATE: August 27, 1990	Job No: 013119-90	REVISED

J R ASSOCIATES Engineering Geophysics
1886 Emory Street, San Jose, CA 95126 (408) 293-7390

DRAWING NUMBER
3

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

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415)

March 6, 1991

Mr. John Cummings
SCS Engineers
6761 Sierra Court, Suite D
Dublin, CA 94568

Re: Oakland Parking Garage, 1432 Harrison Street including connecting Alice Street garage, Oakland, CA 94612

Dear Mr. Cummings:

I have received and reviewed the Addendum to the site characterization/ assessment proposal dated March 4, 1991 for proposed work at the above sites prepared by SCS Engineers.

The Addendum responded to requirements specified in a letter dated February 21, 1991, by this department on areas of the proposed workplan requiring further investigation or elaboration.

The following issues still require resolution prior to workplan approval:

1) You are required to specify the type of laboratory analysis to be conducted on the borings taken during monitoring well installation and the analyses type to be performed of groundwater samples from each groundwater well.

2) When sampling beneath the collection drain located in the basement of the Alice Street garage you are requested to analyze for the presence of chlorinated hydrocarbons (EPA 8020).

3) You are requested to indicate the approximate locations of the monitoring wells on a revised drawing 4 of the addendum report.

Please submit within 5 calendar days the requested changes to the addendum to your proposal addressing the issues outlined in this letter. Should you have any questions please call me at 415/271-4320.

Sincerely,

Paul M. Smith
Hazardous Materials Specialist

cc:
Mark Borsuk, Attorney at Law
Jonathan Leo, Heller, Ehrman, White & McAuliffe
Mark Thomson, Alameda County District Attorney's office of Consumer and Environmental Affairs
Rafat A. Shahid, Assistant Agency Director, Alameda County Environmental Health Department
Lester Feldman, SFRWQCB
Charlene Williams, DHS
LS

Environmental Consultants

6761 Sierra Court
Suite D
Dublin, CA 94568

415 829-0661
FAX 415 829-5493

SCS ENGINEERS

91 MAR 14 PM 12:44

March 12, 1991
File No. 0390044.00

Alameda County Health Care Services Agency
Department of Environmental Health (ACDEH)
Hazardous Material Program
80 Swan Way, Room 200
Oakland, California 94621

Attention: Mr. Paul Smith

Subject: Health and Safety Code Section 25299.37 (c) Order:
Revision to Addendum
Site Characterization/Assessment Proposal
for the Parking Garage
at 1432 Harrison Street
Oakland, California 94612

Dear Mr. Smith:

SCS Engineers (SCS) is submitting the attached pages as a revision to the Addendum submitted by our office on March 4, 1991.

The revisions correspond to issues in your letter dated March 6, 1991, that required resolution prior to the work plan being approved.

Per discussion with you on March 11, 1991, regarding SCS' proposed responses, you indicated that the attached revisions would satisfy your requirements for the work plan.

The revised attachments are as follows:

1) Table 1: Laboratory Analyses Summary revised to show assigned monitoring well numbers corresponding to designated locations.

2) Plate 3: To be inserted prior to attachments in Addendum letter; revised to show assigned monitoring well numbers.

Please insert these revised pages in your copies of the Addendum. If this submittal is satisfactory, please inform SCS in writing that the work plan in its entirety is approved.

If you have any questions, please contact either of the undersigned at (415) 829-0661.

Sincerely,

Nels R. Johnson, P.E.
Senior Project Engineer
SCS Engineers

John P. Cummings, Ph.D., R.E.A., R.E.P.
Office Director
SCS Engineers

NRJ/JPC:egh
Attachments

cc: Mr. Lester Feldman, Regional Water Quality Control Board
Mr. Mark Thomson, Alameda County District Attorney's Office

TABLE 1

LABORATORY ANALYSIS SUMMARY
FOR COLLECTED SOIL AND WATER SAMPLES

Location	TPH-G[1]	TPH-D[2]	BTEX[3]	O.L.[4]	O&G[5]	ClH[6]	PCB's[7]	PPM[8]
Gasoline Tanks MW 1-8	X	X	X	X	X	X	X	X
Hydraulic Lift MW 9 & 10		X	X		X			
Waste Oil Tanks (Basement) MW 11-13	X	X	X		X	X	X	X
Wash Rack Sump	X	X	X		X	X		
Collection Drain (Basement)	X	X	X		X	X		X

1. Total Petroleum Hydrocarbon as GAS (EPA 8015 Mod)
2. Total Petroleum Hydrocarbon as Diesel (EPA 8015 Mod)
3. Benzene, Toluene, Ethylbenzene, Xylene (EPA 8020)
4. Organic Lead (DOHS MIBK Method)
5. Oil & Grease (EPA 413.1)
6. Chlorinated Hydrocarbons (EPA 8120)
7. Polychlorinated Biphenyls (EPA 8080)
8. Priority Pollutant Metals

MW - Monitoring Well

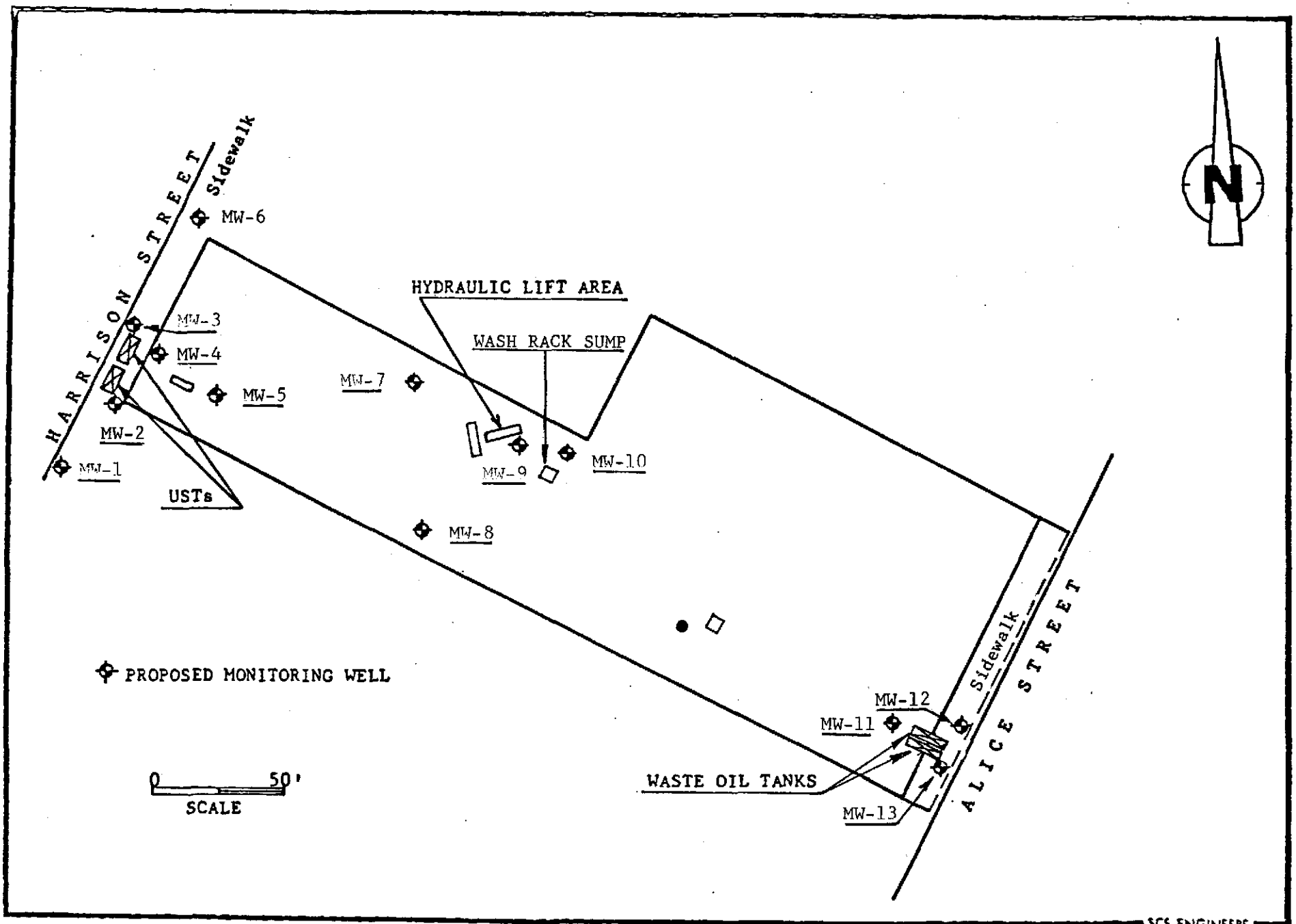


PLATE 3: HARRISON STREET GARAGE-OAKLAND Site , Proposed Monitoring Wells

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

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415)

March 14, 1991

Mr. John Cummings
SCS Engineers
6761 Sierra Court, Suite D
Dublin, CA 94568

Re: Oakland Parking Garage, 1432 Harrison Street including connecting Alice Street garage, Oakland, CA 94612

Dear Mr. Cummings:

I have received and reviewed the Revision to the Addendum to the site characterization/ assessment proposal dated March 12, 1991 for proposed work at the above sites prepared by SCS Engineers.

It is deficient in only one regard. You are required to test MW 10 for the presence of chlorinated hydrocarbons.

Please send to this office a brief letter confirming this requirement within 5 days of the receipt of this letter.

As a reminder, this office has still not received payment of the requested $ 750.00 for oversight expenses of the above project. You are requested to submit payment as authorized by the Alameda County Fee Ordinance. Should you have any questions please call me at 415/271-4320.

Sincerely,

Paul M. Smith

Paul M. Smith
Hazardous Materials Specialist

cc:
Mark Borsuk, Attorney at Law
Jonathan Leo, Heller, Ehrman, White & McAuliffe
Mark Thomson, Alameda County District Attorney's office of Consumer and Environmental Affairs
Rafat A. Shahid, Assistant Agency Director, Alameda County Environmental Health Department
Lester Feldman, SFRWQCB
Charlene Williams, DHS
AL

Environmental Consultants
6761 Sierra Court
Suite D
Dublin, CA 94568
415 829-0661
FAX 415 829-5493

SCS ENGINEERS

March 18, 1991
File No. 0390044.00

Mr. Paul Smith
Alameda County Health Care Services Agency
Department of Environmental Health (ACDEH)
Hazardous Material Program
80 Swan Way, Room 200
Oakland, California 94621

Subject: Health and Safety Code Section 25299.37(c) Order:
Site Characterization/Assessment Proposal
for the Parking Garage
at 1432 Harrison Street
Oakland, California 94612

Dear Mr. Smith:

SCS Engineers (SCS) has received and reviewed your letter dated March 14, 1991, regarding the revision to the Addendum to the site characterization/assessment proposal submitted by our office on March 12, 1991.

In accordance with your request, this letter is to confirm the requirement of testing samples from Monitoring Well 10 (MW-10) for chlorinated hydrocarbons per EPA Method 8120.

Please find a check for $750.00 for oversight as required by Alameda County Ordinances.

Please make note of this on your copies of the Addendum (i.e. Table 1). If this letter of confirmation is satisfactory and the work plan is approved in its entirety, please inform SCS in writing.

If you have any questions, please contact either of the undersigned at (415) 829-0661.

Sincerely,

Nels R. Johnson, P.E.
Senior Project Engineer
SCS Engineers

John P. Cummings, Ph.D., R.E.A., R.E.P.
Office Director
SCS Engineers

NRJ/JPC:egh:sar

cc: Mr. Lester Feldman, Regional Water Quality Control Board
Mr. Mark Thomson, Alameda County District Attorney's Office

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

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415)

March 22, 1991

Mr. John Cummings
SCS Engineers
6761 Sierra Court, Suite D
Dublin, CA 94444568

RE: Site Characterization/Assessment Proposal for the 1432 Harrison & Adjoining Alice Street Parting Garages

Dear Mr. Cummings:

Alameda County Department of Environmental Health, Hazardous Materials Division is in receipt of the Final Revision to the addendum to the Site Characterization/Assessment Proposal for the above site, dated March 18, 1991.

The proposal is approved in accordance with all of the inclusions specified in the correspondence from your office since the initial Site Characterization/Assessment Proposal dated February 15, 1991.

In accordance with the arrangements set forth in the January 25, 1991 correspondence from this office, you are required to implement the proposed work within forty-five (45) calendar days of the receipt of this letter.

Should you have any questions, please feel free to contact me at (415) 271-4320.

Sincerely,

Paul M. Smith

Paul M. Smith
Hazardous Materials Specialist

PMS:mnc

cc: Mark Borsuk, Attorney at Law
Jonathan Leo, Heller, Ehrman, White & McAuliffe
Mark Thomson, Alameda County District Attorney, Consumer and Environmental Protection Agency
Lester Feldman, RWQCB
Rafat A. Shahid, Assistant Agency Director, Environmental Health
Files

3/25/91

JOHN J. MEEHAN
District Attorney
County of Alameda
MARK THOMSON
Deputy District Attorney
Consumer & Environmental Protection Division
7677 Oakport Street, Suite 400
Oakland, CA 94621

Attorneys for the Alameda County District Attorney's Office

BEFORE THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

Response to Petition for Review of Failure to Act by the County of Alameda Health Care Services Agency re: Corrective Action Order for Harrison Street Garage, 1432 Harrison Street, Oakland, California 94612	No. A-728

INTRODUCTION

When Petitioner's attorney wrote the Alameda County Hazardous Materials Division on November 27, 1990, he argued, "The equities . . . argue overwhelmingly in favor of substituting Douglas for my clients in the County's clean up order". (See Alameda County Hazardous Material Program Title 23, Section 2050(a)(10) record document 4M.) At the January 14, 1990, meeting, Petitioner's primary argument was that a substitution should occur. In the alternative, a request was made that Douglas be added to the order.

As noted by Petitioner, Petitioner's position before the Board is different than that presented to the County. In its petition, Petitioner "has chosen not to appeal from that portion of the County's decision which denied Petitioner's request to

substitute Douglas for Petitioner on the Order". Petitioner's decision renders moot a discussion of why a substitution would be unconscionable.

1. As to the issue of whether Douglas should be added to the order as a responsible party, the issue is submitted.

2. As to Petitioner's request that the Board make Douglas the primarily responsible party, the People object. If Douglas is added to the order, Petitioner should be the primarily responsible party.

A. Petitioner is the owner of the Harrison Street tanks

Petitioner has been the continuous owner of the Harrison Street property since 1945. From that date through the expiration of the Douglas lease in 1988, "the garage has always been...used as a.... gasoline station". (See Petition for Review, page 5.) For a 43 year period, tenants leased the property and operated underground tanks. Douglas probably operated tanks for 16 years.

Although Petitioner denies ownership of service station businesses, Petitioner never denies ownership of tanks in place prior to their removal in 1975 and 1982. These "original" tanks were permanent fixtures used by a number of tenants as they conducted their service station businesses. Unlike the situation facing the Court in Murr v. Cohen (1927) 87 Cal.App 478, where the contract was wholly silent as to the intended use of the property, when Douglas and Petitioner contracted in 1972 they stated their intended use for which the property would be used: parking garage, auto repair shop, auto service center - with specific provisions concerning revenue generated from the sale of gasoline. (See

OFFICE OF
DISTRICT ATTORNEY
ALAMEDA COUNTY
CALIFORNIA

Petition for Review, Exhibit 3A.) Petitioner intended to lease property containing underground tank fixtures that would be used by tenant Douglas and Petitioner did just that.

Petitioner Bacharach declares, "It was my clear understanding when Douglas replaced the existing 550 gallon tanks [in 1975 and 1982] on the property, that Douglas owned the new 1000 gallon tanks which he installed". (See Petition for Review, Bacharach Dec., page 3.) However, at the Deposition of Mr. Bacharach on October 11, 1990, he testified at pg. 138 and 139:

A. Paula Williams is the district manager for Hertz now.

Q. Was this an indication here that they were thinking about renting the garage?

A. Yes, they were very interested.

Q. When was this? This was in '87?

A. Yes. I had a chance to make a deal with them or Mr. Davis and, unfortunately, I made a bad deal, bad decision.

. . . . .

Q. Where there any negotiations, lease negotiations with Hertz?

A. Uh-huh. Yes.

Q. Was there a lease offer to Hertz?

A. We didn't get that far.

Q. Was there any discussion with Hertz about the underground storage tanks?

A. No. They wanted gas. It was imperative to their business that they have gasoline. (See Exhibit 1.)

Contrary to what Petitioner currently declares, when Petitioner was negotiating with Hertz in 1987, where he "had a chance to make a deal with them", where tanks were "imperative to their business", Petitioner certainly was acting like a property owner with tank fixtures on site that were his to lease.

When Douglas removed the existing 550 gallon tank in 1975 and replaced it with a 1000 gallon tank, his request for contribution only makes sense if Douglas believed the 1000 gallon tank belonged to Petitioner as a replacement fixture. When Petitioner Bacharach writes Douglas on October 28, 1975, Bacharach refers to the work as "replacing the gasoline tank". (See Petition for Review, Exhibit 7.) Replace means to take the place of, to supplant.

Prior to the 1982 removal of the existing 550 gallon tank and replacement with a 1000 gallon tank, Douglas and Petitioner apparently agreed upon an amount that Petitioner would contribute. Petitioner asserts in 1991 that this was "essentially. . .a goodwill gesture". (See Petition for Review, Bacharach Dec., page 3.) Another explanation appears more likely: In 1982, it looked like a smart business move. Unlike the 1975 tank replacement, Douglas had apparently requested contribution prior to replacement. (See Exhibit 2.) It had been easy enough in 1975 to say no because contribution was requested after replacement had already occurred. Here, the upgrade would occur only if there was some sort of contribution. With a modest $1,500.00 contribution (subsequently reduced to $1,141.00), Petitioner would be the owner of a newer, bigger fixture. Paragraph 5 of the lease provided, "...all alterations, additions and improvements, including fixtures...shall be the

property of Lessor". (See Petition for Review, Exhibit 3.) (That paragraph is found in each of the three Douglas-Petitioner leases.)

Petitioner asserts, "Douglas registered itself as the "owner of the USTs on the installation permits issued by the City of Oakland". Actually, the applicants for the permits were the contractors, U.L. Stevens Co. and Walter R. Schneider, Inc. The permits are not probative of ownership and certainly do not indicate Douglas registered itself as the owner. The County's issuance of a permit to operate does not provide proof of ownership. The instructions to the Official Registration Form of the Hazardous Substance Storage Statement states the form must be filed by "each person storing hazardous substance. . .". Douglas, who was using the tanks, apparently filled out this form. Whether the words "Douglas Parking Co." under "Owner" were intended to define the owner of the garage business or the owner of the tanks cannot be determined on the face of the form.

Clearly, Petitioner conducted its negotiations with Hertz as if it was the owner of the tanks. It strains all knowledge of human behavior to believe that Petitioner would lease his property to multiple tenants over the years for the purpose of operating gasoline stations and when in 1975 and 1982 new tanks were installed, the property owner would allow his ability to lease the property to change because Douglas owned the tanks. Petitioner knew the upgraded fixtures were his pursuant to the terms of the lease and he acted accordingly.

Because Petitioner was the owner of the original tanks and piping as well as the tanks installed in 1975 and 1982, Petitioner

should bear the primary responsibility for corrective action under the statute.

B. Petitioner's Failure to Comply With the Statute Substantially Contributed to and Exacerbated the Contamination.

Question: From 1945 to 1988, when did the tanks and piping leak? Answer: That's a good question. The Robert J. Miller Co. invoice dated 10/19/82 states, "found many leaks in tank and product lines". (See Exhibit 2.) Douglas forwarded the invoice to Petitioner on February 10, 1983. The leaking tank was apparently an "original" tank. Whether during other years the tanks and piping leaked is currently unknown. (During which tenancies leakage occurred is currently unknown.)

As the owners of the tanks, Petitioner was required to repair and upgrade underground tank systems (Health and Safety Code Section 25299(b)(2)). When Petitioner was informed in February, 1983, that a tank and piping had been found leaking he, essentially, chose to ignore the problem, never investigating in 1983 whether the repair was adequate and whether remediation was necessary.

As the owner of the tanks, Petitioner is responsible for the proper closure of the UGTs. (Health and Safety Code Section 25299(b)(3)).

Health and Safety Code Section 25299(b)(4) provides for owner liability for failures to take reasonable and necessary steps to assure compliance of the act by the operator. If Douglas did fail to monitor and keep records of testing and repair, said failure could have easily been discovered by Petitioner simply exercising his Entry and Inspection right found in each of the three lease agreements. (See Petition for Review, Exhibit 3, paragraph 7.)

(Note: Petitioner visited the site frequently. On May 18, 1984, Petitioner wrote Douglas, ". . . we have a percentage rental clause such as we have with you, (unintelligible) in actuality a 45% - 55% business relationship, and we have to protect our interests . . . I drop in (unintelligible) a couple time a month and my feeling is that you are (unintelligible) to get business. You do not have aggressive management . . ." See Exhibit 3) Reasonable and necessary steps to assure compliance of the act by the operator were not taken by the owner.

C. Petitioner is the Primary Responsible party.

(1) The lease agreements

Petitioner quotes two provisions of the lease to argue Douglas' sole responsibility.

It should be noted that the contracts also provide at paragraph 15, "In the event of damage . . . of the demised premises during the term hereof from . . . the elements, Lessor shall forthwith repair the same . . ."

If Petitioner has been injured by Douglas' failure to comply with the terms of the contract, Petitioner may bring an action against Douglas for breach of the contract. (Alameda County's action is not dispositive of the contract terms.)

In In re Stuart Petroleum, WQ86-15, the Board wrote, "It is not the province of this Board to assign rights and duties between various third parties based on their mutual contractual obligations. Those issues must be decided elsewhere".

(2) Applicable Law and State Board Decisions Require Petitioner be the Primary Responsible Party

A May 4, 1987 State Water Resources Control Board memorandum on the subject of responsibility for clean-up concludes:

> So long as the owner of a piece of land is aware of what is happening on the land (or should be expected to be aware) and has the power to regulate the conduct of which he or she is aware, the landowner, not the public treasury, should bear the costs of cleaning up pollution and nuisances that occur on the land.

The instant case is distinguished from In re Schmidl, WQ 89-1, wherein the landowners had purchased property in March 1987, an Order was issued in February 1988, and the long term tenant/discharger had leased the property since 1977. Here, the landowner since 1945 knew tanks were on site, knew the tanks were being used and knew at least as early at 1983 that there was a leak problem. During the Douglas tenancy, the landowner had the right of Entry and Inspection per the terms of the contract. Here, the landowner visited the site a couple times a month during the Douglas tenancy.

In September, 1987, Petitioner's attorney (and son/nephew), Mark Borsuk, inspected the property with James Bowers, President of Subsurface Consultants, Inc. James Bowers declares:

> 5. During the inspection Mr. Borsuk indicated that a tank had been removed previously and replaced with a new tank. The tank was situated beneath the Harrison Street sidewalk. Mr. Borsuk indicated that the tank that had been removed had been observed to be leaking.
>
> 6. During the inspection, I discovered piping in the basement of the structure suggesting the presence

> of another underground storage tank. The tank was suspected to be located beneath the basement floor slab in the southwest corner of the building, adjacent to Alice Street. Black oily stains were noted on the basement wall of the building near the fuel piping for the tank. Similar stains were observed on the floor in the area. It is my opinion that this tank represents a possible source of soil and groundwater contamination. I recommended to Mr. Borsuk that a test boring be drilled in the area to check for indications of tank leakage. The proposal to Bacharach contained the same recommendation. (See Exhibit 4.)

Subsurface prepared a proposal to conduct a preliminary site investigation into past fuel tank leakage on the property and submitted the $4,950 bid to Alvin Bacharach on September 23, 1987. Subsurface was never retained by Petitioner to conduct the study. (See Exhibit 4.)

Quoting the May 4, 1987 State Water Resources Control Board Memorandum again:

> Section 13304 of the Water Code provides that any person "who has discharged or discharges waste" or any person "who has caused or permitted, causes or permits, or threatens to cause or permit" the discharge of waste into water or where it might get into water may be ordered to clean it up by the Regional Board. . . [Allowing] an existing source of contamination to spread from the soil to nearby ground water is as much a discharge as pouring a barrel of the stuff into a sump.

By failing to do anything (i.e., investigate, remediate, notify government, etc.) in 1983 when informed of the leak and in 1987 when Subsurface inspected the site with attorney Borsuk, the landowner

(even if the landowner isn't and has never been an owner of the Harrison Street underground tanks) has allowed an existing source of contamination to spread.

Order No. WQ86-2 (Zoecon):

> . . . considered the plight of a company which had recently acquired a property from prior owners who had discharged a variety of hazardous chemicals into the ground . . . Because there was an actual movement of waste from soil to water on the site, a continuing discharge existed for which the current owner could be held responsible (May 4, 1987 Board Memo at page 4).

WQ86-2 (Zoecon) at page 11 states:

> The court in Uccello (44 Cal.App 3d 504 (1975)) held that an enlightened public policy requires that a landlord owes a duty of care to correct a dangerous condition created by a tenant, where the landlord has actual knowledge of the condition and an opportunity and the ability to obviate it. "To permit a landlord in such a situation to sit idly by in the face of the known danger to others must be deemed to be socially and legally unacceptable." (44 Cal.App.3d at 513.)

(3) Another compelling reason to make Petitioner the Primary responsible party is that, as discussed below, environmental problems in this case are more expansive than petroleum contamination from two underground tanks on Harrison Street.

3. The Board may determine that no order ever issued.

It is important the Board understand that the environmental problems the District Attorney's Office and County Hazardous Materials are attempting to have remediated are more expansive than petroleum contamination from two underground tanks on Harrison Street. (See Alameda County Hazardous Materials Program

Title 23, Section 2050(a)(10) record, document 4.0) Petitioners, in addition to being the owners of the Harrison Street property under which we currently believe there are two UGTs are also the owners of the adjacent 1439 Alice Street property. The 1432 Harrison Street parking structure consists of a 9000 square foot single level parking structure which is connected to a 6000 square foot multilevel parking structure which extends to the adjacent Alice Street. A preliminary subsurface investigation prepared by Subsurface Consultants dated October 19, 1990 (See Alameda County Hazardous Materials Program Title 23, Section 2050(a)(10) record document 4L) indicated a number of separate contamination issues: 1) The existing Harrison Street gasoline storage tanks. Soil boring taken next to these tanks indicated contamination as high as 9,300 ppm of Total Petroleum Hydrocarbon TPH(g) 99,000 ppb of benzene. 2) The Hydraulic hoist area located near the center of both parking structures consisting of three hydraulic lifts. A boring taken next to this area indicated 1700 ppm of Total Petroleum Hydrocarbon contamination as diesel TPH(d) and 6,300 ppm of Total Oil and Grease (TOG). 3) The wash rack sump - located near the hydraulic hoist area. A boring was taken next to this sump; however samples were not analyzed based upon initial organic vapor meter (ovm) screening. 4) Waste oil tanks (2) - located along Alice Street. (Note: Petitioner has not denied ownership of these abandoned tanks.) A test boring drilled adjacent to these tanks indicated concentrations of kerosene as high as 140 ppm and concentrations of PBC's as high as 9 ppb. 5) A suspected former tank location located near the hydraulic lift area. A boring placed in this location indicated Total Petroleum Hydrocarbon TPH(g) contamination as high as 110 ppm

and benzene as high as 22 ppb. The preliminary investigation did not examine sources of contamination associated with piping. Piping appears likely to extend throughout the two properties. There can be no controversy that contamination issues at these two sites are numerous and many are unrelated to the geneology of the two Harrison Street tanks.

In Hazardous Materials' Specialist Paul Smith's third letter to Petitioner, he wrote, "Section 25299.37(c) states that the local agency may issue an order to the owner requiring compliance with this section". (See Petition for Review, Exhibit 1.) When Attorney Leo wrote Smith on November 27, 1990, he referenced Smith's three letters as "letter order[s]". (See Petition for Review, Exhibit 12.) Although no transcript or recording was made of the January 14, 1991 meeting, almost certainly both Attorney Leo and DDA Thomson referenced Smith's demand as an "order".

Smith explains in his attached declaration that he was not satisfied with the response received from the landowners subsequent to his first two letters. The closure plan submitted by petitioner's tank removal contractor was inadequate given the extensive environmental problems detailed in the Subsurface Consultant's report of August 18, 1990. While composing his third letter he began to search the Health and Safety Code for additional legal support that would compel the owners to effect an adequate site investigation and remediation. He found Health and Safety Code Section 25299.37(c). Smith believed that the section gave him the authority to order corrective action. He believed referencing the section might induce and expedite site remediation. He included the statute's language in his letter. (See Smith Dec.)

Although Health and Safety Code Section 25299.37(c) provides the local agency may issue an order, and Health and Safety Code Section 25299.37(d) provides for administrative review of any order issued, Health and Safety Code Section 25299.37(e) states:

> Until the board adopts regulations pursuant to Section 25299.77, the owner, operator, or other responsible party shall take corrective action in accordance with Chapter 6.7 . . .

If no regulations have been adopted, then the Board may properly determine that no order ever issued.

Chapter 6.7 in enforced by the District Attorney pursuant to Health and Safety Code Section 25299.02. The District Attorney's Office is an independent enforcement office with broad civil and criminal enforcement options.

When Smith sent Petitioner his July 31, 1990 letter, it was titled "Notice of Violation". The sanction discussed by Smith in that letter is a Chapter 6.7 sanction, Health and Safety Code Section 25299. In Smith's second letter of August 27, 1990, sanctions are not addressed. It is in the September 24, 1990, letter that Smith first mentions Health and Safety Code 25299.37(c) advising the "local agency may issue an order . . ." This sentence is followed by a reference to Chapter 6.7, Health and Safety Code Section 25298(c)(4) and the possibility of a $5,000 sanction for improper closure. Smith's reference to a sanction is obviously the Chapter 6.7, Health and Safety Code Section 25299(b)(3) sanction.

It is Respondent's understanding that orders issued pursuant to Water Code Section 13301, 13302, 13304, have a well established administrative process consisting of staff reports,

staff investigations, staff findings with notice and hearing where evidence can be presented and witnesses cross examined.

Contrast that process with the instant case: Smith wrote three letters demanding site investigation and possible clean up depending upon the results of site investigation. As discussed above, referenced sanctions were those pursuant to a 6.7 District Attorney enforcement action. Attorney Leo requested in his November 27, 1990 letter a meeting to discuss the issues raised and requested the District Attorney attend that meeting. A meeting was scheduled for January 14, 1991. At the meeting, Thomson explained the meeting was called to discuss issues of responsibility for site remediation. Thomson indicated no promises were being made as to whether or not a District Attorney enforcement action would be filed regardless of the decisions made by the landowner in relation to site investigation/remediation. The meeting was one at which Attorney Leo and DDA Thomson dominated the three hour discussion with explanations of how they saw the issues in the case. The meeting was not recorded. The meeting was not an evidentiary hearing. D.D.A. Thomson made clear that all environmental issues raised by the Subsurface Consultant's report for both properties must be investigated by Petitioner. (See Smith Dec.)

CONCLUSION

These two sites have, presumably, had numerous tenants since 1945. The environmental problems are complex and it is anticipated that remediation will be costly. The enforcement team of the Alameda County District Attorney's Office and Alameda County Hazardous Materials Division are requiring the owners to commence site characterization in preparation for site remediation - work

that should have commenced years ago. It was not the landowners who notified government of the numerous environmental problems at the Alice Street and Harrison Street properties. Had Paul Smith not inspected the site on July 27, 1990 (See Alameda County Hazardous Materials Program Title 23, Section 2050(a)(10) record document 4D and 4E) and had the tenant who leased the premises after Douglas not notified county government of the environmental problems at these sites (See Alameda County Hazardous Materials Program Title 23, Section 2050(a)(10) record document 4F), one wonders if government would yet know of the fact of abandoned underground tanks, contaminated soil and probable impact to groundwater.

The Board could find that no order has issued. If the Board determines an order did issue, the issue of adding Douglas to the order is submitted. However, it is respectfully recommended that the long term landowner who has leased to a number of tenants over the years at two sites which have abandoned tanks and contaminated soil, with possible groundwater contamination - that that landowner who has known about contamination at least since 1983 and did nothing to abate the problem until local government intervention, be the primarily responsible party.

Dated: March 25, 1991

Respectfully Submitted,

JOHN J. MEEHAN
District Attorney

By: Mark Thomson

Mark Thomson
Deputy District Attorney
Alameda County District Attorney's Office

JOHN J. MEEHAN
District Attorney
County of Alameda
MARK THOMSON
Deputy District Attorney
Consumer & Environmental Protection Division
7677 Oakport Street, Suite 400
Oakland, CA 94621

Attorneys for the Alameda County District Attorney's Office

BEFORE THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

Response to Petition for Review of Failure to Act by the County of Alameda Health Care Services Agency re: Corrective Action Order for Harrison Street Garage, 1432 Harrison Street, Oakland, California 94612	No. A-728

DECLARATION OF PAUL SMITH

I, Paul Smith, hereby declare:

1. I am a hazardous materials specialist for the County of Alameda, Hazardous Materials Program. I am the specialist assigned to oversee site remediation at 1432 Harrison Street including the connecting Alice Street garage, Oakland, California 94612. I have personal knowledge of the facts herein alleged.

2. Petitioner's closure plan in response to my "Notice of Violation" dated July 31, 1990 and letter of August 27, 1990, was inadequate given the extensive environmental problems detailed in the Subsurface Consultants report of August 18, 1990.

3. While composing my third letter dated September 24, 1990, I began to search the Health and Safety Code for additional

legal support that would compel the owners to effect an adequate site investigation and remediation. I found Health and Safety Code Section 25299.37(c). I believed the section gave me the authority to order corrective action. Because I believed referencing the section might induce and expedite site remediation I included the statute's language in my letter.

4. At the January 14, 1991 meeting, D.D.A. Thomson stated words to the effect that the meeting was called to discuss issues of responsibility for site remediation and that no promises were being made as to whether or not a District Attorney enforcement action would be filed regardless of the decisions made by the landowner in relation to site investigation/remediation.

No witnesses were sworn and the meeting was not recorded. Leo and Thomson dominated the three hour meeting with discussions explaining how each saw the issues. At some point toward the end of the meeting, Thomson explained the owner's site investigation must address all issues raised for both the Harrison Street and Alice Street properties in the Subsurface Consultant's report.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 25th day of March 1991, at Oakland, California.

Paul M. Smith

Paul Smith

INDEX TO EXHIBITS

1. Deposition of Alvin H. Bacharach, October 11, 1990, page 138, 139.

2. February 10, 1983 letter from Douglas to Bacharach with three enclosures.

3. May 18, 1984 letter from Bacharach to Douglas.

4. Declaration of James P. Bowers with attached resume and September 23, 1987 letter from Bowers to Alvin Bacharach.

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF ALAMEDA

--oOo--

ALVIN H. BACHARACH and
BARBARA JEAN BORSUK,

Plaintiffs,

vs.

STEVEN DAVIS, LEONARD DAVIS,
ROBERT L. DAVIS, and DOES 1
to 25,

Defendants.

COPY

No. 666290-3

DEPOSITION OF ALVIN H. BACHARACH

Taken before VALERIE PADILLA, a Notary Public

In and for the County of Alameda

State of California

CSR No. 3081

October 11, 1990

Aiken & Welch, Inc.
ORDWAY BUILDING • SUITE 505 • ONE KAISER PLAZA
OAKLAND, CALIFORNIA 94612
CERTIFIED SHORTHAND REPORTERS
415-451-1580
TELEFAX 415-451-3797

A. Paula Williams is the district manager for Hertz now.

Q. Was this an indication here that they were thinking about renting the garage?

A. Yes, they were very interested.

Q. When was this? This was in '87?

A. Yes. I had a chance to make a deal with them or Mr. Davis and, unfortunately, I made a bad deal, bad decision.

Q. And the second page of this, is that in your handwriting?

A. Yeah, that's mine.

Q. Can you read that, please?

A. "Gas, wash area, minimum 275 stalls, location, women's AC." I don't know what that means. "Map, show buildings and Kaiser." They were interested in wanting to know how far they were from Kaiser. And when it would be available. It's April 1st, '87.

Q. Were there any negotiations, lease negotiations with Hertz?

A. Uh-huh. Yes.

Q. Was there a lease offer to Hertz?

A. We didn't get that far.

Q. Was there any discussion with Hertz about the underground storage tanks?

A. No. They wanted gas. It was imperative to

their business that they have gasoline.

MR. MATTEOSIAN: I want to ask for a short break.

(Recess taken.)

(Document marked Defendants' Exhibit No. 78 for Identification.)

MR. MATTEOSIAN: Q. Defendants' Exhibit 78 is another copy of an offer to lease with more handwriting on it than we had seen on the previous ones. I'd just like you to look at this and tell me if it's your handwriting on the top of this lease. It's a two-page document.

A. Are they my --

MR. PROVINE: The green.

THE WITNESS: The question is --

MR. PROVINE: The green --

MR. MATTEOSIAN: Or the red.

MR. PROVINE: The green or the red, is that your handwriting, that's question.

THE WITNESS: Yes.

MR. MATTEOSIAN: Q. Can you read the green ink into --

A. "Cancelled 9-9-87 phone call to Mark on night after 3:00 p.m. meeting with Bob B."

Q. What is that referring to? It says "cancelled." Cancelled what?

MR. PROVINE: If you know. See where he's

SITE PLANNING
ECONOMIC FEASIBILITY STUDIES
FUNCTIONAL DESIGN PLANNING
OPERATIONAL SERVICES
COIN-TROL PARKING

Douglas Parking Company
PARKING CONSULTANTS & MANAGEMENT
Main Office
1721 WEBSTER STREET
OAKLAND, CALIFORNIA 94612

TELEPHONE 444-7352

DOUGLAS PARKING CO.

#255,000

January ~~10~~, 1933
Feb 14

Alvin Bacharach
11 Embarcadero West
Oakland, California 94607

Dear Al:

As per our conversation regarding the installation of a gas tank at 1432 Harrison Street; we had an original estimate from Robert Miller (enclosed) for $6,979.00. As per usual, we try to save money wherever possible. As you can see by the enclosed bills we did save $1,671.66.

$6,979.00
$5,307.34
$1,671.66

$1,500 represents 21.5% of $6,979.00. If we multiply 21.5% of $5,307 it comes out to $1,141.00. Please send us a check for this amount.

Thank you for your courtesy in this matter.

Very truly yours,

HARRISON STREET GARAGE

Ronald S. Douglas
Ronald S. Douglas

562
3680

PETROLEUM AND INDUSTRIAL H - SERVICE STATION EQUIPMENT - K PLANT AND TRUCK EQUIPMENT
GASOLINE AND OIL FUELING SYSTEMS - AIR COMPRESSORS

ROBERT J. MILLER CO.

Contractor's License No. 118850

Service Station and Industrial Equipment

3261 GROVE STREET
OAKLAND, CALIFORNIA 94609
653 - 5469 233-9000

October 4, 1982

Douglas Motor Service
1721 Webster Street
Oakland, CA 94612

Re: 1432 Harrison Street
Oakland, CA

Attention: Ron or Lee Douglas

Dear Sir:

We are pleased to submit the following quotation as requested by you.

To furnish and install as follows:

1 - One (1) 1,000 gallon U.L. approved tank (double asphalt wrapped).
2 - Excavate the tank hole, remove old 550 gallon tank, install new 1,000 gallon tank, and back fill with sand.
3 - Furnish and install the tank fittings, vent, fill and suction lines. All new suction line to pump and vent. Wrap all lines.
4 - Replace the cement removed by us, approximately 8'x15'x6" with wire reinforcing.
5 - Secure all permits and inspections as per the City and the Bay Area Air Quality Control District specifications.

TOTAL BID.....$ 6,979.00

Very truly yours,

ROBERT J. MILLER COMPANY

Philip W. Musser

Accepted

Date

Please Note: The above quote is good for 30 days.

ROBERT J. MILLER CO.

Service Station and Industrial Equipment

04776

CONTRACTORS LICENSE NO. 118850

3261 GROVE STREET OAKLAND, CALIFORNIA 94609

(415) 653-5469

DATE	YOUR ORDER NO	OUR ORDER NO	VIA	TERMS
10/19/32	Ron Douglas	15931		NET 30 DAYS

SOLD TO Douglas Motor Service
1721 Webster Street
Oakland, CA 94612

SHIPPED TO 1432 Harrison Street
Oakland, CA

PART NO.	DESCRIPTION	UNIT	AMOUNT
	Dug up sidewalk - found many leaks in tank and product line. (Note: Barricades are still at job site - to be billed upon removal)		$ 332 50
	Rental for compressor, jack hammer, asphalt blade and air hose.		150 00
	TOTAL.....		$ 982 50

Any invoice not paid within 30 days from date of invoice will become finance charge of 1½% per month of unpaid balance (18%) annually.

PLEASE PAY FROM STATEMENT

NO STATEMENT WILL BE SENT UNLESS REQUESTED

It is understood that the title of goods received shall remain in the name of Robert J. Miller Company until the full amount of this bill is paid.

aximum FINANCE CHARGE, if any, is determined by applying a Periodic Rate of 1½% ervice

period to the Previ nce corresponding to an ANNUAL PERCENTAGE RATE of 18%

W. VERNON BERNARD . . . BUILDER

[illegible] • OAKLAND, CALIFORNIA 94621 • TELEPHONE (415) [illegible]

5915 LEONA STREET 94605 531-4577

December 16, 1982.

Mr. Ron Douglas
Harrison St. Garage
1432 Harrison Street
Oakland, Ca. 94612

LABOR - MATERIAL - REPAIRS -
INSULATION GAS TANK

1432 Harrison Street, Oakland, Ca.

$ 4,204.70

W. Vernon Bernard

W. Vernon Bernard
5915 Leona Street
Oakland, Ca. 94605

12/16 Paid in full D.O.B.

[redacted]

May 18, 1984

Mr. Leland Douglas
Douglas Parking Company
1721 Webster Street
Oakland, CA 94612

Dear Lee:

With reference to our recent meeting, and your letter of April [redacted] 1984, regarding your applying the $763.52 overage payment to y[redacted] minimum annual sales, I am very concerned about this problem. [redacted] we have a percentage rental clause such as we have with you, w[redacted] in actuality a 45%-55% business relationship, and we have to protect our interests as much as you have to protect yours, and I feel that something is wrong with your end of the bargain.

The two main things that hurt a business is; under capitalization and the other is poor management. We have supplied the capitalization problem with the ownership of the building in a service type business operation, and your end of the bargain is proper management.

The income potential of that garage should be approximately 400 spaces @ $50.00 per space per month which equals $20,000.00 monthly income. Based on your first three months of this year, you only average about $8,930.00 per month and your monthly average for your last fiscal year, April 1, 1983 to March 30, 1984 was only $9,494.00.

I drop i[redacted] couple of times a month and my feeling is that you are [redacted]ing to get business. You do not have agressive managem[redacted] amount of activity in the downtown parking garages, [redacted]e are getting our fair share of the action.

You also mentioned that you are going to move your Thrifty Car Rental operation to our garage. How do you propose to work that out with our percentage clause in our lease? I would like to review these thoughts with you, and would appreciate it if you would call me at your earliest convenience and set up an appointment to discuss this mutual problem.

Thanking you, I remain

Sincerely,

ALVIN H. BACHARACH

AHB:bv