

**SOIL/GROUNDWATER MITIGATION
AND CLOSURE
5800 CHRISTIE STREET
EMERYVILLE, CALIFORNIA**

MAY 22, 1989



McLaren Environmental Engineering



McLaren Environmental Engineering

May 22, 1989

Mr. Steve G. Croley
Croley & Herring Investment Co.
1311 63rd Street
Emeryville, CA 94608

Mr. Gregg Steele
The Good Guys, Inc.
1649 Adrian Road
Burlingame, California 94010

**SUBJECT: SOIL/GROUNDWATER MITIGATION AND CLOSURE, 5800 CHRISTIE STREET,
EMERYVILLE, CALIFORNIA**

Dear Mr. Croley and Mr. Steele:

This letter presents the following topics in regard to the subject facility:

- Previous Soil Investigation,
- Foundation Excavation Area Soil Analysis,
- Contaminated Soil Excavation/Treatment,
- Groundwater Investigation Results,
- Ambient Air Monitoring, and
- Projected Soil and Groundwater Remediation Cost.

Previous Soil Investigation

A soil investigation of the subject facility was previously performed by Robert Gils & Associates and a site assessment report was prepared on January 20, 1989. A total of 17 soil borings were drilled (Figure 1). A copy of the Gils report was appended in McLaren's April 5, 1989 report entitled "Source Area Soil Remediation Plan". A summary of the soil analysis results were presented as Tables 2-1, 2-2 and 2-3 in the McLaren's report. Significant soil contamination was detected at soil boring locations #1, #2, #3, and #4.

Foundation Excavation Area Soil Analysis

The proposed Good Guys Store construction plan includes demolition of foundation footings on the north side of the existing building and construction of new foundations on the southern half of the existing parking lot (Figure 1). Eleven soil sample locations were proposed within

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the foundation excavation area. A total of 9 soil samples were collected and analyzed for EPA 8240 volatile organic compounds (VOCs). Soils were sampled to a depth of about 3 feet below grade. The detected total VOCs were less than 0.5 parts per million (ppm). Laboratory analysis results are included in Attachment 1.

Contaminated Soil Excavation & Treatment

On April 5, 1989, McLaren submitted a source area soil remediation plan to the Alameda County Health Care Services (lead agency for soil remediation) for review. Approval for the implementation of the on-site soil excavation and remediation was obtained on April 13, 1989 (Attachment 2).

Prior to the source area soil excavation, permission for access was obtained from the adjacent land owner (F.P. Lathrop Co.) and the California Department of Health Services (CDOHS). In addition, full cooperation was obtained from Mr. Ric Notini and Mr. Dave Anderson of CDOHS on site clearance and the health and safety plan for excavation.

During May 1, 1989 through May 4, 1989, the source area soil was excavated and stockpiled at the soil treatment area. A soil sample collected on the north side wall (A-1) of the excavation detected less than 0.5 ppm VOCs. A south side wall soil sample (E-2) did not detect any VOCs. A total of about 80 cubic yards of contaminated soil was excavated and the excavation was backfilled and compacted to specification. The excavated soil was placed on a lined surface and covered with plastic sheets. The soil is presently awaiting treatment.

Prior to the soil excavation, the Bay Area Air Quality Management Board (BAAQMD) was notified in accordance to BAAQMD Regulation 8, Rule 40 as amended February 15, 1989 (Attachment 2). Also prior to initiation of soil treatment, advance notice will be provided to BAAQMD in accordance to BAAQMD Regulation 8, Rule 40.

The anticipated soil treatment will start May 15, 1989 and the projected treatment duration is about 8 weeks. The exact duration of treatment will depend on soil conditions and initial total volatile organic concentrations. The proposed cleanup level of 50 ppm for total VOCs was approved by the Alameda County Health Care Service on April 5, 1989.



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Groundwater Investigation Results

Initially, three shallow groundwater monitoring wells were installed and were named as MW-1, MW-2 and MW-3 (Figure 1). The associated well logs and construction details are included in Attachment 3.

Groundwater samples were collected from these wells and analyzed for EPA 8240 VOCs. Results of the laboratory analyses are included in Attachment 4. No VOCs were detected in wells MW-2 and MW-3. Only 2 VOCs were detected at Well MW-1 and they were 1,1-DCA and 1,2-DCE. The detected concentrations for both VOCs were 9 parts per billion (ppb).

A groundwater level survey was performed on April 25, 1989 and the groundwater table elevations at MW-1, MW-2 and MW-3 were 3.31, 3.11 and 2.99 feet above mean sea level, respectively. The groundwater flow direction was estimated as southwest towards the bay with a hydraulic gradient of 0.00145. Well MW-3 is the downgradient well.

Ambient Air Monitoring

Two separate rounds of air monitoring were conducted inside the existing building (formerly occupied by Fisher Berkeley) on 5/5/89 and 5/8/89 with OVM equipment. The organic vapor levels detected were below 2 ppm, which is the background level in open air. Specific OVM readings were also taken at boreholes 16 and 17 drilled during the Gils investigation. These boreholes are close to the source area. The OVM readings were below 2 ppm.

Projected Soil & Groundwater Remediation Cost

There may be residual concentrations of VOCs in soils along the excavation walls. Based on the low concentration of VOCs encountered in samples from boreholes 15, 16 and 17, the anticipated residual VOCs may be limited to below the footing of the building foundation. Vapor which volatilizes can be captured by a vapor extraction well system in the sandy backfill material and filtered through vapor phase carbon prior to emission. The proposed vapor venting system in the sandy backfill material will include about 4 vent wells to a depth of 5 feet with a 10 to 15 foot spacing between wells.



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At boreholes 13 and 14, adjacent to the L. P. Lathrop fuel tank, the low level of gasoline detected (3 to 5 ppm TPH) in soil 11 feet deep will most likely not require remediation. Any vapor volatilization at these low concentrations will most likely be non-detectable by the time it reaches the ground surface.

A new groundwater extraction Well EW-1 was constructed on 5/5/89 in the source area after soil excavation and backfill were completed. A groundwater sample collected on 5/8/89 was analyzed for EPA 601 and 602 volatile organic compounds. The following volatile organic compounds were detected:

1,1 DCE	78 ppb (action level 6 ppb)
TCE	640 ppb (action level 5 ppb)
Toluene	190 ppb (action level 180 ppb)
Xylenes	170 ppb (action level 680 ppb)

McLaren has also taken two groundwater samples in the downgradient direction of extraction Well EW-1. One of the sample locations is located at the center of the former Fisher Berkeley facility, about 80 feet downgradient. No organic chemical compounds were detected. The other groundwater sample was taken at the southeast corner of the former Fisher Berkeley facility. Benzene was detected at 47 ppb. The state action level of benzene is 1 ppb. Because, benzene was not found at the source area, its origin at this location is most likely from an off-site source.

It is apparent from these results that the contaminants on-site have not significantly affected the shallow aquifer. However, the 1,1-DCE, TCE and toluene concentrations are above the state action level for groundwater cleanup. McLaren recommends a groundwater extraction/treatment system be installed to clean up the minor quantity of contaminant which was detected. The treatment system would be comprised of an aqueous phase activated carbon filter.

For estimation of the groundwater remediation cost, McLaren anticipates that the maximum plume has a 60 foot radius, a saturated thickness of 15 feet, and an effective porosity of 0.10. The estimated plume volume is about 127,000 gallons. About 63,500 gallons of the plume volume is estimated to be off-site and underlying the F.P. Lathrop property. Extraction Well EW-1 is capable of recovering the contaminated water off-site. The duration of treatment for one plume volume is estimated at 90 days assuming an extraction rate of 1 gallon per minute (1,440 gallons



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per day). Assuming a total maximum VOC concentration in groundwater at 1 ppm, the amount of VOC in the groundwater plume is estimated at a maximum of 1.1 pounds. McLaren estimates that two 55-gallon drums of aqueous phase activated carbon would be needed to remove the VOCs. The regulatory agency will most likely require quarterly groundwater monitoring for 2 years after the cleanup level is achieved.

A summary of the projected soil and groundwater remediation costs for the subject site is presented in Table 1.

The total projected soil remediation cost is \$128,000. The initial groundwater remediation cost is projected to be \$45,000 plus 2 years of groundwater monitoring at \$60,000 if required. Therefore, total remediation costs are projected to be \$233,000 for the subject facility.

To date, all contaminated soil accessible to excavation equipment (about 80 cubic yards) located on the subject property was removed and stockpiled for treatment. A minor amount of contaminated soil located under the footing foundation will be remediated by the proposed vapor venting system. This vapor venting system will also be effective recovering organic vapor as far as 10 feet into the F.P. Lathrop property, and remediating residual contamination on the east wall (property line) of the excavation. In the highly unlikely case that the soil contamination extends 20 feet beyond the property boundary, the additional soil remediation cost for off-site soil vapor venting is estimated to be \$20,000. Based on the current soil and groundwater data and on our experience, the proposed soil remediation and groundwater extraction and treatment system will satisfy the requirements of the regulatory agency of concern (Alameda County Health Care Services and Regional Water Quality Control Board) for site closure.

The total maximum cost for on-site soil and groundwater remediation is \$173,000. The total maximum cost for off-site soil and groundwater remediation is \$80,000. This includes soil remediation 20 feet beyond the east boundary of the site. McLaren believes the above mentioned costs are maximum based on the investigation results to date.

Tables 2 and 3 summarize the soil/groundwater investigation and remediation work performed to date and to be performed in the future.

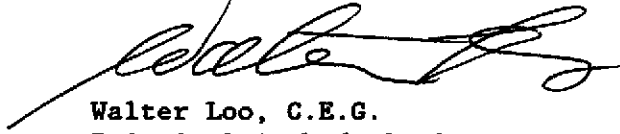


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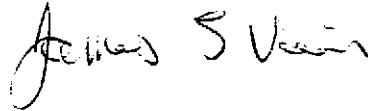
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May 22, 1989
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If you have any question about this letter, please contact us.

Sincerely,



Walter Loo, C.E.G.
Principal Geohydrologist



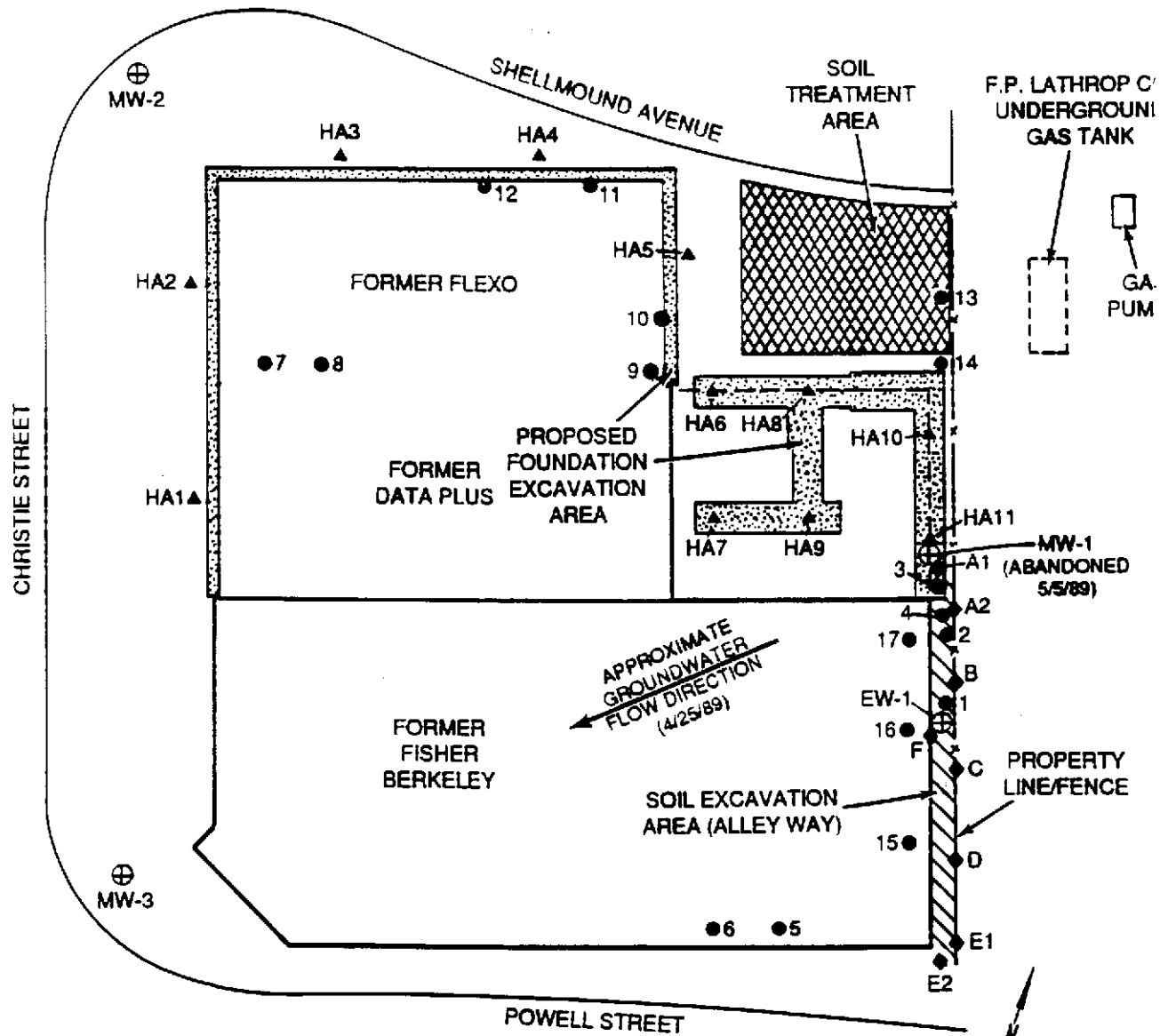
James Vais, P.E.
Supervising Engineer

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FIGURE 1
LOCATION MAP



LEGEND

- GIL'S SOIL BORING LOCATION
- ▲ FOUNDATION EXCAVATION SOIL SAMPLE LOCATION
- ◆ EXCAVATION SOIL SAMPLE
- ⊕ WELL

SCALE IN FEET
(APPROX)



TABLE 1

SUMMARY OF PROJECTED SOIL & GROUNDWATER REMEDIATION COST

Soil Remediation Cost

Soil Remediation Plan	\$ 10,000
Soil Excavation	15,000
Soil Treatment System	
Piping & Liner	2,800
Air Management Unit (Carbon, blower, meters, etc.)	15,000
Soil Sample Analysis	13,500
Engineering/Operation/Maintenance	22,200
Organic Vapor Venting System	40,000
Health & Safety	5,500
Closure Report	4,000
	<u>\$128,000</u>

Groundwater Investigation/Remediation Cost

Investigation (5 wells)	\$ 25,000
Groundwater Extraction/Treatment (1 well, carbon, piping, etc.)	12,000
Groundwater Remediation Plan	6,000
Groundwater Sampling (60 samples, EPA 624)	20,000
Quarterly Monitoring Reports (2 years)	33,000
Groundwater Closure Plan	9,000
	<u>\$105,000</u>

PROJECTED TOTAL \$233,000

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TABLE 2

SITE INVESTIGATION RESULTS

	<u>ON SITE AREAS INSPECTED</u>	<u>VOG IDENTIFIED</u>	<u>ACTION LEVEL</u>	<u>REF. FOR FINDINGS</u>	<u>RECOMMENDED ACTION</u>
<u>SOIL</u>	Area near Lathrop gasoline tank	TPH 3-5 ppm	N/A	RGA Findings In ACDOHS approved plan	None
	Inside building	Trace	N/A	RGA Findings	None
	Exterior of Bldg. Northern 1/2 near foundation	Trace	N/A	McLaren findings Attachment I in 5/19/89 letter	None
	Area Required for for foundation footings	Trace	N/A	McLaren findings Attachment I in 5/19/89 letter	None
	Alley Way	Various		RGA findings in ACDOHS plan	Soil Excavation and vapor venting
<u>GROUNDWATER</u>	N.W. corner of lot (MW-2)	Not detected	N/A	McLaren findings Attachment 3 5/19/89 letter	None
	S.W. corner of lot (MW-3)	Not detected	N/A	"	None
	Mid lot on East (MW-1)	1,1-DCA 9 ppb 1,1-DCE 9 ppb	20 ppb 16 ppb	"	Extraction
	Middle of Fisher Berkeley (TW-2)	Not detected	N/A	New	None

TABLE 2

SITE INVESTIGATION RESULTS
(continued)

	<u>ON SITE AREAS INSPECTED</u>	<u>VOC IDENTIFIED</u>	<u>ACTION LEVEL</u>	<u>REF. FOR FINDINGS</u>	<u>RECOMMENDED ACTION</u>
<u>GROUNDWATER</u>	S.E. corner of Fisher Berkeley (TW-2)	Benzene 47 ppb	1 ppb	New	None
	Mid lot East (EW-1 source area)	1,1-DCE 78 ppb TCE 640 ppb Toluene 190 ppb Xylene 170 ppb	6 ppb 5 ppb 180 ppb 680 ppb	New	Extraction/ Treatment

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TABLE 3

REMEDIATION OBJECTIVES

	<u>PROBLEMS THAT REMAIN</u>	<u>EXTENT OF PROBLEM</u>	<u>REMEDIATION</u>	<u>TIME TO REMEDIATE</u>	<u>ESTIMATED COST</u>
<u>SOIL</u>	Alley excavation and excavated walls adjacent Lathrop Property	Peripheral and 10' onto Lathrop Property	Venting Venting	3 - 6 months 3 - 6 months	\$ 128,000
	Worst cast on adjacent Lathrop property	20' onto Lathrop Property	Venting	6 - 36 months	\$ 20,000 (over \$ 128,000)
	Excavated Soil	80 cu. yds. stockpiled on site	Soil Treatment	3 months	Included in \$ 128,000 above
<u>GROUNDWATER</u>	Mid alley on site	15' deep 60' radius	Extraction Well (EW-1)	3 months	\$ 105,000
	Adjacent Lathrop	127,000 gallons 1/2 on site 1/2 on Lathrop	Extraction (Well EW-1)	Same	

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ATTACHMENT 1

FOUNDATION EXCAVATION SOIL ANALYSIS RESULTS

McLaren Analytical Laboratory

Chain of Custody Record

No 211454

L.P. 1666

PROJECT DESIGNATION CHIC 2.0 SAMPLES TAKEN BY: Gerrit Rost

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE		SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
				WATER COMP	SOIL GRAB			
	SB ^{HA} 10 3.5'	4-14-89			✓	5228	Brasstube	8240 (24133)
	SB ^{HA} 8 3.5'				✓	5229	"	" (24134)
	HA 9 3.5'				✓	5230	"	" (24135)
	HA 6 3.5'				✓	5231	"	" (24136)
	HA 5 2.7'				✓	5232	"	" (24137)
	HA 7 3.5'				✓	5233	"	" (24138)
	HA 11 2.5'				✓	5234	"	" (24139)
	HA 4 2'				✓	5235	"	" (24140)
	HA 1 2 1/4'				✓	5236	"	" (24141)

FIELD DISPOSITION:

IMMEDIATE DELIVERY

STORAGE REFRIGERATOR ID _____
 OR ICE FREEZER ID _____

SECURED YES
 NO

RELINQUISHED BY: Gerrit Rost Gerrit Rost RECEIVED BY: _____ DATE/TIME 4-14-89 1700

RELINQUISHED BY: _____ RECEIVED BY: _____ DATE/TIME _____

RECEIVED FOR LABORATORY BY: S.L. DATE/TIME 4/15/89 9 A.M.

METHOD OF SHIPMENT: FedEx

LABORATORY DISPOSITION:

IMMEDIATE ANALYSIS **SAMPLES RECEIVED**
Res. Turnaround **GOOD CONDITION**

REFRIGERATOR ID 4 528 SECURED
 FREEZER ID _____ YES
 CABINET ID _____ YES NO

* PRINT NAME AFTER SIGNATURE



HSL VOLATILE ORGANICS
EPA METHOD 8240

Project: CHIC 2.0

Lab ID: 24141

Sample Location: HA1 2 1/4'

Date Sampled: 04/14/89

Sample Number: 5236

Date Analyzed: 04/24/89

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u> ug/kg (ppb)	<u>REPORTING LIMIT</u> ug/kg (ppb)
Chloromethane	< 10	10.
Bromomethane	< 10	10.
Vinyl Chloride	< 10	10.
Chloroethane	< 10	10.
Methylene Chloride	67.	25.
Acetone	< 5	25.
Carbon Disulfide	< 5	5.
1,1-Dichloroethene	< 5	5.
1,1-Dichloroethene	< 5	5.
1,2-Dichloroethene (cis/trans)	< 5	5.
Chloroform	< 5	5.
1,2-Dichloroethane	< 5	5.
2-Butanone	< 25	25.
1,1,1,-Trichloroethane	< 5	5.
Carbon Tetrachloride	< 5	5.
Bromodichloromethane	< 5	5.
1,2-Dichloropropane	< 5	5.
Trans-1,3-Dichloropropene	< 5	5.
Trichloroethene	< 5	5.
Benzene	< 5	5.
1,1,2-Trichloroethane	< 5	5.
Dibromochloromethane	< 5	5.
Cis-1,3-Dichloropropene	< 5	5.
Bromoform	< 5	5.
4-Methyl-2-pentanone	< 25	25.
2-Hexanone	< 25	25.
1,1,2,2-Tetrachloroethane	< 5	5.
Tetrachloroethylene	< 10	10.
Toluene	19.	5.
Chlorobenzene	< 5	5.
Ethyl Benzene	< 5	5.
Styrene	< 5	5.
Total Xylene	< 5	5.
Freon 113	< 5	5.

Analyst: [Signature]
K. Badal

Reviewed By: [Signature]
R. L. James

Date: 04/27/89

Laboratory Director: [Signature]
J. M. Bartell



Lab ID: 24141

GCMS 8240 SURROGATE % RECOVERY

Compounds	% Recovery	Soil Matrix
S1 = D4-1,2-Dichloroethane	108	70-121
S2 = D8-Toluene	101	81-117
S3 = 4-Bromofluorobenzene	98	74-121

Comments:



HSL VOLATILE ORGANICS
EPA METHOD 8240

Project: CHIC 2.0

Lab ID: 24140

Sample Location: HA4 2'

Date Sampled: 04/14/89

Sample Number: 5235

Date Analyzed: 04/23/89

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u> ug/kg (ppb)	<u>REPORTING LIMIT</u> ug/kg (ppb)
Chloromethane	< 10	10.
Bromomethane	< 10	10.
Vinyl Chloride	< 10	10.
Chloroethane	< 10	10.
Methylene Chloride	130.	25.
Acetone	< 5	25.
Carbon Disulfide	< 5	5.
1,1-Dichloroethene	< 5	5.
1,1-Dichloroethene	< 5	5.
1,2-Dichloroethene(cis/trans)	< 5	5.
Chloroform	< 5	5.
1,2-Dichloroethane	< 5	5.
2-Butanone	< 25	25.
1,1,1,-Trichloroethane	< 5	5.
Carbon Tetrachloride	< 5	5.
Bromodichloromethane	< 5	5.
1,2-Dichloropropane	< 5	5.
Trans-1,3-Dichloropropene	< 5	5.
Trichloroethene	< 5	5.
Benzene	< 5	5.
1,1,2-Trichloroethane	< 5	5.
Dibromochloromethane	< 5	5.
Cis-1,3-Dichloropropene	< 5	5.
Bromoform	< 5	5.
4-Methyl-2-pentanone	< 25	25.
2-Hexanone	< 25	25.
1,1,2,2-Tetrachloroethane	< 5	5.
Tetrachloroethylene	< 10	10.
Toluene	160.	5.
Chlorobenzene	< 5	5.
Ethyl Benzene	< 5	5.
Styrene	< 5	5.
Total Xylene	< 5	5.
Freon 113	< 5	5.

Analyst: K. Badal

Reviewed By: R. L. James

Date: 04/27/89



Laboratory Director: J. M. Bartell

Lab ID: 24140

GCMS 8240 SURROGATE % RECOVERY

Compounds	% Recovery	Soil Matrix
S1 = D4-1,2-Dichloroethane	104	70-121
S2 = D8-Toluene	111	81-117
S3 = 4-Bromofluorobenzene	102	74-121

Comments:



HSL VOLATILE ORGANICS
EPA METHOD 8240

HA 5 WNL
4/28/89

Project: CHIC 2.0

Lab ID: 24137

Sample Location: HA4 2.7'

Date Sampled: 04/14/89

Sample Number: 5232

Date Analyzed: 04/24/89

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u> ug/kg (ppb)	<u>REPORTING LIMIT</u> ug/kg (ppb)
Chloromethane	< 10	10.
Bromomethane	< 10	10.
Vinyl Chloride	< 10	10.
Chloroethane	< 10	10.
Methylene Chloride	< 25	25.
Acetone	< 5	25.
Carbon Disulfide	< 5	5.
1,1-Dichloroethene	< 5	5.
1,1-Dichloroethene	< 5	5.
1,2-Dichloroethene(cis/trans)	< 5	5.
Chloroform	< 5	5.
1,2-Dichloroethane	< 5	5.
2-Butanone	< 25	25.
1,1,1,-Trichloroethane	< 5	5.
Carbon Tetrachloride	< 5	5.
Bromodichloromethane	< 5	5.
1,2-Dichloropropane	< 5	5.
Trans-1,3-Dichloropropene	< 5	5.
Trichloroethene	< 5	5.
Benzene	< 5	5.
1,1,2-Trichloroethane	< 5	5.
Dibromochloromethane	< 5	5.
Cis-1,3-Dichloropropene	< 5	5.
Bromoform	< 5	5.
4-Methyl-2-pentanone	< 25	25.
2-Hexanone	< 25	25.
1,1,2,2-Tetrachloroethane	< 5	5.
Tetrachloroethylene	< 10	10.
Toluene	80.	5.
Chlorobenzene	< 5	5.
Ethyl Benzene	< 5	5.
Styrene	< 5	5.
Total Xylene	< 5	5.
Freon 113	< 5	5.

Analyst: K. Badal Reviewed By: R. L. James Date: 04/27/89

Laboratory Director: J. M. Bartell



Lab ID: 24137

GCMS 8240 SURROGATE % RECOVERY

Compounds	% Recovery	Soil Matrix
S1 = D4-1,2-Dichloroethane	103	70-121
S2 = D8-Toluene	87	81-117
S3 = 4-Bromofluorobenzene	108	74-121

Comments:



HSL VOLATILE ORGANICS
EPA METHOD 8240

Project: CHIC 2.0

Lab ID: 24136

Sample Location: HA6 3.5'

Date Sampled: 04/14/89

Sample Number: 5231

Date Analyzed: 04/24/89

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u>	<u>REPORTING LIMIT</u>
	ug/kg (ppb)	ug/kg (ppb)
Chloromethane	< 50	50.
Bromomethane	< 50	50.
Vinyl Chloride	< 50	50.
Chloroethane	< 50	50.
Methylene Chloride	130.	125.
Acetone	< 125	125.
Carbon Disulfide	< 25	25.
1,1-Dichloroethene	< 25	25.
1,1-Dichloroethene	< 25	25.
1,2-Dichloroethene (cis/trans)	< 25	25.
Chloroform	< 25	25.
1,2-Dichloroethane	< 25	25.
2-Butanone	< 125	125.
1,1,1,-Trichloroethane	< 25	25.
Carbon Tetrachloride	< 25	25.
Bromodichloromethane	< 25	25.
1,2-Dichloropropane	< 25	25.
Trans-1,3-Dichloropropene	< 25	25.
Trichloroethene	< 25	25.
Benzene	< 25	25.
1,1,2-Trichloroethane	< 25	25.
Dibromochloromethane	< 25	25.
Cis-1,3-Dichloropropene	< 25	25.
Bromoform	< 25	25.
4-Methyl-2-pentanone	< 125	125.
2-Hexanone	< 125	125.
1,1,2,2-Tetrachloroethane	< 25	25.
Tetrachloroethylene	< 50	50.
Toluene	120.	25.
Chlorobenzene	< 25	25.
Ethyl Benzene	< 25	25.
Styrene	< 25	25.
Total Xylene	< 25	25.
Freon 113	< 25	25.

Analyst: K. Badal

Reviewed By: R. L. James

Date: 04/27/89



Laboratory Director: J. M. Bartell

Lab ID: 24136

GCMS 8240 SURROGATE % RECOVERY

Compounds	% Recovery	Soil Matrix
S1 = D4-1,2-Dichloroethane	104	70-121
S2 = D8-Toluene	92	81-117
S3 = 4-Bromofluorobenzene	96	74-121

Comments: 1:5 dilution used in analysis.



**HSL VOLATILE ORGANICS
EPA METHOD 8240**

Project: CHIC 2.0

Lab ID: 24138

Sample Location: HA7 3.5'

Date Sampled: 04/14/89

Sample Number: 5233

Date Analyzed: 04/24/89

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u> ug/kg (ppb)	<u>REPORTING LIMIT</u> ug/kg (ppb)
Chloromethane	< 50	50.
Bromomethane	< 50	50.
Vinyl Chloride	< 50	50.
Chloroethane	< 50	50.
Methylene Chloride	< 125 *	125.
Acetone	< 125	125.
Carbon Disulfide	< 25	25.
1,1-Dichloroethene	< 25	25.
1,1-Dichloroethene	< 25	25.
1,2-Dichloroethene(cis/trans)	< 25	25.
Chloroform	< 25	25.
1,2-Dichloroethane	< 25	25.
2-Butanone	< 125	125.
1,1,1,-Trichloroethane	< 25	25.
Carbon Tetrachloride	< 25	25.
Bromodichloromethane	< 25	25.
1,2-Dichloropropane	< 25	25.
Trans-1,3-Dichloropropene	< 25	25.
Trichloroethene	< 25	25.
Benzene	< 25	25.
1,1,2-Trichloroethane	< 25	25.
Dibromochloromethane	< 25	25.
Cis-1,3-Dichloropropene	< 25	25.
Bromoform	< 25	25.
4-Methyl-2-pentanone	< 125	125.
2-Hexanone	< 125	125.
1,1,2,2-Tetrachloroethane	< 25	25.
Tetrachloroethylene	< 50	50.
Toluene	72.	25.
Chlorobenzene	< 25	25.
Ethyl Benzene	< 25	25.
Styrene	< 25	25.
Total Xylene	< 25	25.
Freon 113	< 25 *	25.

Analyst: *K. Badal* Reviewed By: *R. L. James* Date: 04/27/89

Laboratory Director: *J. M. Bartell*



Lab ID: 24138

GCMS 8240 SURROGATE % RECOVERY

Compounds	% Recovery	Soil Matrix
S1 = D4-1,2-Dichloroethane	108	70-121
S2 = D8-Toluene	97	81-117
S3 = 4-Bromofluorobenzene	103	74-121

Comments: * Methylene chloride and freon were detected at 110 ppb and 14 ppb respectively which were less than the raised reporting limit.
1:5 dilution used in analysis.



HSL VOLATILE ORGANICS
EPA METHOD 8240

Project: CHIC 2.0

Lab ID: 24134

Sample Location: HA8 3.5'

Date Sampled: 04/14/89

Sample Number: 5229

Date Analyzed: 04/24/89

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u> ug/kg (ppb)	<u>REPORTING LIMIT</u> ug/kg (ppb)
Chloromethane	< 50	50.
Bromomethane	< 50	50.
Vinyl Chloride	< 50	50.
Chloroethane	< 50	50.
Methylene Chloride	< 125 *	125.
Acetone	< 125	125.
Carbon Disulfide	< 25	25.
1,1-Dichloroethene	< 25	25.
1,1-Dichloroethene	< 25	25.
1,2-Dichloroethene (cis/trans)	< 25	25.
Chloroform	< 25	25.
1,2-Dichloroethane	< 25	25.
2-Butanone	< 125	125.
1,1,1,-Trichloroethane	< 25	25.
Carbon Tetrachloride	< 25	25.
Bromodichloromethane	< 25	25.
1,2-Dichloropropane	< 25	25.
Trans-1,3-Dichloropropene	< 25	25.
Trichloroethene	< 25	25.
Benzene	< 25	25.
1,1,2-Trichloroethane	< 25	25.
Dibromochloromethane	< 25	25.
Cis-1,3-Dichloropropene	< 25	25.
Bromoform	< 25	25.
4-Methyl-2-pentanone	< 125	125.
2-Hexanone	< 125	125.
1,1,2,2-Tetrachloroethane	< 25	25.
Tetrachloroethylene	< 50	50.
Toluene	48.	25.
Chlorobenzene	< 25	25.
Ethyl Benzene	< 25	25.
Styrene	< 25	25.
Total Xylene	< 25	25.
Freon 113	< 25	25.

Analyst: AA Mooney / for
K. Badal

Reviewed By: R. L. James
R. L. James

Date: 04/27/89

Laboratory Director: J. M. Bartell
J. M. Bartell



Lab ID: 24134

GCMS 8240 SURROGATE % RECOVERY

Compounds	% Recovery	Soil Matrix
S1 = D4-1,2-Dichloroethane	111	70-121
S2 = D8-Toluene	102	81-117
S3 = 4-Bromofluorobenzene	109	74-121

Comments: * Methylene chloride was detected at 73 ppb which was less than the raised reporting limit.
1:5 dilution used in analysis.



HSL VOLATILE ORGANICS
EPA METHOD 8240

Project: CHIC 2.0

Lab ID: 24135

Sample Location: HA9 3.5'

Date Sampled: 04/14/89

Sample Number: 5230

Date Analyzed: 04/24/89

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u> ug/kg (ppb)	<u>REPORTING LIMIT</u> ug/kg (ppb)
Chloromethane	< 50	50.
Bromomethane	< 50	50.
Vinyl Chloride	< 50	50.
Chloroethane	< 50	50.
Methylene Chloride	< 125 *	125.
Acetone	< 125	125.
Carbon Disulfide	< 25	25.
1,1-Dichloroethene	< 25	25.
1,1-Dichloroethene	< 25	25.
1,2-Dichloroethene(cis/trans)	< 25	25.
Chloroform	< 25	25.
1,2-Dichloroethane	< 25	25.
2-Butanone	< 125	125.
1,1,1,-Trichloroethane	< 25	25.
Carbon Tetrachloride	< 25	25.
Bromodichloromethane	< 25	25.
1,2-Dichloropropane	< 25	25.
Trans-1,3-Dichloropropene	< 25	25.
Trichloroethene	< 25	25.
Benzene	< 25	25.
1,1,2-Trichloroethane	< 25	25.
Dibromochloromethane	< 25	25.
Cis-1,3-Dichloropropene	< 25	25.
Bromoform	< 25	25.
4-Methyl-2-pentanone	< 125	125.
2-Hexanone	< 125	125.
1,1,2,2-Tetrachloroethane	< 25	25.
Tetrachloroethylene	< 50	50.
Toluene	< 25 *	25.
Chlorobenzene	< 25	25.
Ethyl Benzene	< 25	25.
Styrene	< 25	25.
Total Xylene	< 25	25.
Freon 113	< 25	25.

Analyst: L. A. Mooney

Reviewed By: R. L. James Date: 04/27/89

Laboratory Director: J. M. Bartell



Lab ID: 24135

GCMS 8240 SURROGATE % RECOVERY

Compounds	% Recovery	Soil Matrix
S1 = D4-1,2-Dichloroethane	100	70-121
S2 = D8-Toluene	95	81-117
S3 = 4-Bromofluorobenzene	107	74-121

Comments: * Methylene chloride and toluene were present at 63 ppb and 7 ppb respectively which were less than the raised reporting limit.
1:5 dilution used in analysis.



HSL VOLATILE ORGANICS
EPA METHOD 8240

Project: CHIC 2.0

Lab ID: 24133

Sample Location: HA10 3.5'

Date Sampled: 04/14/89

Sample Number: 5228

Date Analyzed: 04/24/89

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u> ug/kg (ppb)	<u>REPORTING LIMIT</u> ug/kg (ppb)
Chloromethane	< 50	50.
Bromomethane	< 50	50.
Vinyl Chloride	< 50	50.
Chloroethane	< 50	50.
Methylene Chloride	< 125 *	125.
Acetone	< 125	125.
Carbon Disulfide	< 25	25.
1,1-Dichloroethene	< 25	25.
1,1-Dichloroethene	< 25	25.
1,2-Dichloroethene(cis/trans)	< 25	25.
Chloroform	< 25	25.
1,2-Dichloroethane	< 25	25.
2-Butanone	< 125	125.
1,1,1,-Trichloroethane	< 25	25.
Carbon Tetrachloride	< 25	25.
Bromodichloromethane	< 25	25.
1,2-Dichloropropane	< 25	25.
Trans-1,3-Dichloropropene	< 25	25.
Trichloroethene	< 25	25.
Benzene	< 25	25.
1,1,2-Trichloroethane	< 25	25.
Dibromochloromethane	< 25	25.
Cis-1,3-Dichloropropene	< 25	25.
Bromoform	< 25	25.
4-Methyl-2-pentanone	< 125	125.
2-Hexanone	< 125	125.
1,1,2,2-Tetrachloroethane	< 25	25.
Tetrachloroethylene	< 50	50.
Toluene	49.	25.
Chlorobenzene	< 25	25.
Ethyl Benzene	< 25	25.
Styrene	< 25	25.
Total Xylene	< 25	25.
Freon 113	< 25	25.

Analyst: L. A. Mooney

Reviewed By: R. I. James

Date: 04/27/89

Laboratory Director: J. M. Bartell



Lab ID: 24133

GCMS 8240 SURROGATE % RECOVERY

Compounds	% Recovery	Soil Matrix
S1 = D4-1,2-Dichloroethane	112	70-121
S2 = D8-Toluene	99	81-117
S3 = 4-Bromofluorobenzene	98	74-121

Comments: * Methylene chloride was present at 71 ppb which was less than the raised reporting limit.
1:5 dilution used in analysis.



HSL VOLATILE ORGANICS
EPA METHOD 8240

Project: CHIC 2.0

Lab ID: 24139

Sample Location: HA11 2.5'

Date Sampled: 04/14/89

Sample Number: 5234

Date Analyzed: 04/24/89

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u>	<u>REPORTING LIMIT</u>
	ug/kg (ppb)	ug/kg (ppb)
Chloromethane	< 50	50.
Bromomethane	< 50	50.
Vinyl Chloride	< 50	50.
Chloroethane	< 50	50.
Methylene Chloride	< 125 *	125.
Acetone	< 125	125.
Carbon Disulfide	< 25	25.
1,1-Dichloroethene	< 25	25.
1,1-Dichloroethene	< 25	25.
1,2-Dichloroethene(cis/trans)	< 25	25.
Chloroform	< 25	25.
1,2-Dichloroethane	< 25	25.
2-Butanone	< 125	125.
1,1,1,-Trichloroethane	< 25	25.
Carbon Tetrachloride	< 25	25.
Bromodichloromethane	< 25	25.
1,2-Dichloropropane	< 25	25.
Trans-1,3-Dichloropropene	< 25	25.
Trichloroethene	< 25	25.
Benzene	< 25	25.
1,1,2-Trichloroethane	< 25	25.
Dibromochloromethane	< 25	25.
Cis-1,3-Dichloropropene	< 25	25.
Bromoform	< 25	25.
4-Methyl-2-pentanone	< 125	125.
2-Hexanone	< 125	125.
1,1,2,2-Tetrachloroethane	< 25	25.
Tetrachloroethylene	< 50	50.
Toluene	30.	25.
Chlorobenzene	< 25	25.
Ethyl Benzene	< 25	25.
Styrene	< 25	25.
Total Xylene	< 25	25.
Freon 113	< 25	25.

Analyst: K. Badal

Reviewed By: R. L. James

Date: 04/27/89

Laboratory Director: J. M. Bartell



Lab ID: 24139

GCMS 8240 SURROGATE % RECOVERY

Compounds	% Recovery	Soil Matrix
S1 = D4-1,2-Dichloroethane	107	70-121
S2 = D8-Toluene	96	81-117
S3 = 4-Bromofluorobenzene	106	74-121

Comments: * Methylene chloride was detected at 43 ppb which was less than the raised reporting limit.
1:5 dilution used in analysis.



ATTACHMENT 2

ALAMEDA COUNTY HEALTH CARE SERVICES AUTHORIZATION LETTER
4/13/89

NOTIFICATION OF INTENTION TO EXCAVATE
4/20/89

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY
DAVID J. KEARS, Agency Director



13 April, 1989

Mr. S.G. Crowley
1311 63rd Street
Emeryville, Ca. 94608

RECEIVED

APR 18 1989

McLAREN

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

Subject: Soil Remediation at 5800 Christie Ave. Emeryville.

Dear Mr. Crowley:

Thank you for the fee deposit check, remediation action and site safety plans submitted to our office concerning the facility listed above. The plans have been reviewed by our staff and approval is granted for their implementation.

If you have any questions concerning this matter, please contact, Dennis Byrne, Hazardous Materials Specialist, at (415) 271-4320.

Sincerely,

Rafat A. Shahid, Chief,
Hazardous Materials Division

RAS:DB

cc: Walter Loo, Principal Geohydrologist
McLaren Environmental Engineering
980 Atlantic Avenue
Suite 100
Alameda, Ca. 94501

Walter



McLaren Environmental Engineering

April 20, 1989

Mr. Milton Feldstein
Air Pollution Control Officer
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Dear Mr. Feldstein:

NOTIFICATION OF INTENTION TO EXCAVATE

This letter presents Croley and Herring Investment Company's (CHIC) intention to excavate soil located on site at 5800 Christie Street, Emeryville, California. McLaren is the remediation consultant to CHIC. The scheduled starting date of this excavation is on or during the week of April 24, 1989.

The proposed total excavation will be less than 100 cubic yards of soil. Concentrations of organic compounds detected in the soil average less than 500 ppm. Organic compounds which have been detected include; Carbon Tetrachloride, Ethyl Benzene, Toluene, 1,1,1-Trichloroethane, Trichloroethene, Xylenes, and Gasoline.

Remediation action and site safety plans were submitted to and reviewed by the Alameda County Department of Environmental Health and approval was granted for their implementation (see attached letter). If you have any questions please call me at (415) 521-5200.

Sincerely,

Amy Brownell

Amy Brownell
Assistant Engineer

Attachment

0420LCD1

ATTACHMENT 3

**SOIL DRILLING LOGS
WELLS MW-1, MW-2, & MW-3**



SOIL DRILLING LOG

McLaren Environmental Engineering

SB/MW # : MW-1
 # D- _____
 Page 1 of 1
 Sampler: B. WRIGHT

PROJECT 5800 CHRISTIE LOCATION 88' SW OF SHELLMOUND, 4' NW OF BACK FENCE
 ELEVATION 9.23' MSL MONITORING DEVICE LEL, 580 A OVM; DRAEGER
 SAMPLING DATE(S) 4/21/89 START 0930 FINISH 1140
 SAMPLING METHOD CALIFORNIA SPLIT SPOON SUBCONTRACTOR & EQUIPMENT AQUA SCIENCE ENGINEERS,
 MEMO HAND AUGER TO 4.5 FEET MOBILE DRILL B-61

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	OMV reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Classification	Graphic Log	Sample Depth	Well Construction Details	
	Blows 6"-6"-6"	BF								Vault Box	Locking Cap
5'	3-2	5	4.5-5.5	29105		Grayish brown (2.5Y 5/2) gravelly sand, unconsolidated, well graded slightly moist.	SW	[Graphic Log Pattern]	3'	4'	5.5'
	2-1-1	2	6.0-7.5			Very dark gray (2.5Y 3/0) to greenish gray (5GY 6/1) at 3.0'; silty clay, high plasticity, medium stiff, slightly moist common gravel and debris.	CL				
10'	1-1-1	2	10.0-11.5			Black (2.5Y 2/0) silty clay, soft, sticky, saturated, organic odor.	OL	[Graphic Log Pattern]			
15'	4-6-14	20	15.0-16.5			Light yellowish brown (2.5Y 6/4) gravelly sand, unconsolidated, well graded, clay to medium pebble gravel, saturated, 21' sample same as above with 20% clay matrix, moist.	SW				
20'	6-8-13	21	21.0-22.5						20.5'		T.D.
25'											
30'											

SIGNATURE OF FIELD SUPERVISOR _____

SIGNATURE OF REVIEWER _____

TITLE _____

TITLE _____



SOIL DRILLING LOG

McLaren Environmental Engineering

SB/MW # : MW-2
 # D-
 Page 1 of 1
 Sampler: B. WRIGHT

PROJECT 5800 CHRISTIE LOCATION 8' SW OF SHELLMOUND, 15' E OF CHRISTIE EMERYVILLE
 ELEVATION 7.42' MSL MONITORING DEVICE LEL, 580 A OVM; DRAEGER
 SAMPLING DATE(S) 4/20/89 START 0800 FINISH 1115
 SAMPLING METHOD CALIFORNIA SPLIT SPOON SUBCONTRACTOR & EQUIPMENT AQUA SCIENCE ENGINEERS,
 MEMO HAND AUGER TO THREE FEET MOBILE DRILL B-61

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	OVM reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Classification	Graphic Log	Sampled Depth	Well Construction Details
	Blows 6"-6"-6"	BF								
0					1.0	Light olive brown (2.5Y 5/4) clayey sand, poorly graded, unconsolidated, moist.	SC			
3-5	8	3.0-4.5	29103	0.0	Very dark gray (10YR 3/1) sandy clay, medium plasticity, soft, common coarse gravels, and construction debris, moist.	CL		3'		
5	2	6.0		0.0	Dark greenish gray (5GY 4/1) silty sand, poorly graded silt to fine sand, dense saturated.	SM		4'		
2-1-1				0.0	Very dark gray (2.5Y 3/0) silty clay, low plasticity, very soft, sticky, common fine sand, saturated, organic odor.	OL		5'		
1-1-3	4	10.0-11.5		0.0	Very dark gray (2.5Y 5/4) silty sand, soft, dense, very moist, mild organic odor.	SM				
8-9-13	22	15.0-16.5		0.0	Light olive brown (2.5Y 5/4) silty sand, dense, poorly graded fine sand, very moist.	SP				
				0.8	Olive brown (2.5Y 4/4) gravelly sand, unconsolidated, well graded fine sand to fine subrounded pebble gravels, saturated.	SW				
8-12-14	26	20.0-21.5		0.0	Light olive brown (2.5Y 5/4) silty clay, common embedded pebble gravels, high plasticity, very stiff, slightly moist.	CL		20'		
20										
25										
30										

SIGNATURE OF FIELD SUPERVISOR _____

SIGNATURE OF REVIEWER _____

TITLE _____

TITLE _____



SOIL DRILLING LOG

McLaren Environmental Engineering

SB/MW # : MW-3
 # D-
 Page 1 of 1
 Sampler: B. WRIGHT

PROJECT 5800 CHRISTIE LOCATION 20' N OF POWELL ST., 13' E OF CHRISTIE EMERYVILLE
 ELEVATION 8.51' MSL MONITORING DEVICE LEL, 580 A OVM; DRAEGER
 SAMPLING DATE(S) 4/20/89 START 1340 FINISH 1435
 SAMPLING METHOD CALIFORNIA SPLIT SPOON SUBCONTRACTOR & EQUIPMENT AQUA SCIENCE ENGINEERS,
 MEMO HAND AUGER TO THREE FEET MOBILE DRILL B-61

Depth Below Surface (ft.)	Penetration Results		Sampler Depth Interval (ft.)	Sample ID #	OVM reading (ppm)	Soil Description Color, Texture, Moisture, Etc.	Unified Classification	Graphic Log	Sampled Depth	Well Construction Details
	Blows 6"-6"-6"	BF								
5'	5-8-14	22	3.0-4.5	29104	0.0	Grayish brown (2.5Y 5/2) gravelly sand, well graded construction fill, slightly moist.	SW	[Graphic Log Symbols]	3' 4' 5'	Vault Box Locking Cap 2" Sch. 40 PVC Flush Joint Blank Casing Sanitary Seal, Portland cement with 5% Bentonite Bentonite Pellets 8" Borehole 0.020" slot 2" Sch. 40 PVC Flush Joint Well Screen 8/20 Mesh Sand T.D.
	2-2-2	4	4.5-6.0		0.0	Dark greenish gray (5GY 4/1) silty clay, medium plasticity, stiff common construction debris, slightly moist.	CL			
	1-1-1	2	6.5-8.0		0.0	Dark gray (5Y 4/1) silty clay, trace fine sand, medium plasticity, soft, very moist.	SP			
	2-2-2	4	8.0-9.5		0.0	Olive brown (2.5Y 4/4) clayey sand, poorly graded fine sand, soft, sticky, saturated.	CL SW			
10'			9.5-11.0			Grayish brown (2.5Y 5/2) silty clay, soft, sticky, very moist to saturated, gravelly sand at 9.0'-9.5'.	OL			
	4-9-11	20	15.0-16.5		0.0	Very dark gray (2.5Y 3/0) silty clay, soft, sticky, saturated, organic odor.				
20'	5-7-11	18	20.0-21.5		0.0	Mottled greenish gray (5GY 5/1) and olive yellow (2.5Y 6/6) sandy clay, low plasticity, stiff, slightly moist.	CL			
25'										
30'										

SIGNATURE OF FIELD SUPERVISOR _____

SIGNATURE OF REVIEWER _____

TITLE _____

TITLE _____

ATTACHMENT 4

GROUNDWATER ANALYSIS RESULTS

McLaren Analytical Laboratory

Chain of Custody Record

L.P. 1699
No 209517

24 hr. rush

PROJECT DESIGNATION Chc-30

SAMPLES TAKEN BY: Brad Wright

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE		SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
				WATER COMP	SOIL GRAB			
	MW-1	4/25/89	1200		X	028517	VOA	624 (24512) (4)
					X	028518	VOA	624 spare
					X	028519	VOA	624
					X	028520	VOA	624
					X	028521	VOA	624 *
					X	028522	VOA	624 spare *
					X	028523	VOA	624 *
					X	028524	VOA	624 *

FIELD DISPOSITION: Fed Ex #2030976726

*: Preserved with HCL

IMMEDIATE DELIVERY
STORAGE REFRIGERATOR ID _____
FREEZER ID _____

SECURED YES
 NO

RELINQUISHED BY: <u>Brad Wright</u>	RECEIVED BY: _____	DATE/TIME: <u>4/25/89 1400</u>
RELINQUISHED BY: _____	RECEIVED BY: _____	DATE/TIME: _____

RECEIVED FOR LABORATORY BY: <u>Michael N. Neuenburg</u>	MICHAEL N. NEUENBURG	DATE/TIME: <u>4/24/89 10:00</u>
---	----------------------	---------------------------------

METHOD OF SHIPMENT:

LABORATORY DISPOSITION:
IMMEDIATE ANALYSIS STORAGE REFRIGERATOR ID 3 SECURED
FREEZER ID _____ YES
CABINET ID _____ NO

**SAMPLES RECEIVED
IN GOOD CONDITION**

* PRINT NAME AFTER SIGNATURE



McLaren Analytical Laboratory

Chain of Custody Record

L.P. 1699
No 209519

24 hr rush

PROJECT DESIGNATION

Chic-3.0

SAMPLES TAKEN BY:

Brad Wright / Brad Wright

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE			SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
				WATER		SOIL			
				COMP	GRAB				
	MW-2	4/25/89	1040		X		028501	VOA	621 24509 624 (GM)
					X		028502	VOA	621 spare
					X		028503	VOA	621
					X		028504	VOA	621
					X		028505	VOA	622 622/2 spare
					X		028506	VOA	622 spare *
					X		028507	VOA	622 *
					X		028508	VOA	622 *

FIELD DISPOSITION:

Fed Ex # 2050976726

* preserved with HCL

IMMEDIATE DELIVERY

STORAGE REFRIGERATOR ID _____

SECURED YES

FREEZER ID _____

NO

RELINQUISHED BY:

Brad Wright

RECEIVED BY:

[Signature]

DATE/TIME

4/25/89 1400

RELINQUISHED BY:

RECEIVED BY:

DATE/TIME

RECEIVED FOR LABORATORY BY:

Michael N. Neuenburg

MICHAEL N. NEUENBURG

DATE/TIME

4/26/89 10:00

METHOD OF SHIPMENT:

LABORATORY DISPOSITION:

IMMEDIATE ANALYSIS

**SAMPLES RECEIVED
IN GOOD CONDITION**

STORAGE REFRIGERATOR ID 3

FREEZER ID _____

CABINET ID _____

SECURED

YES NO

* PRINT NAME AFTER SIGNATURE



McLaren Environmental Engineering

11101 White Rock Road, Rancho Cordova, CA 95670 (916) 638-3696

McLaren Analytical Laboratory

Chain of Custody Record

L.P. 1699
No 209516

24 hr mesh

PROJECT DESIGNATION *Chic-3.0*

SAMPLES TAKEN BY: *Brad Wright Brad Wright*

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE			SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
				WATER		SOIL			
				COMP	GRAB				
	<i>Tri-Blank</i>	<i>4/25/89</i>	<i>1000</i>		<i>X</i>		<i>028525</i>	<i>VOA</i>	<i>(X) 1 (2951) 624 (5)</i>
					<i>X</i>		<i>028526</i>	<i>VOA</i>	<i>(X) 1 spare</i>
					<i>X</i>		<i>028527</i>	<i>VOA</i>	<i>(X) 1 h</i>
					<i>X</i>		<i>028528</i>	<i>VOA</i>	<i>(X) 2 *</i>
					<i>X</i>		<i>028529</i>	<i>VOA</i>	<i>(X) 2 spare *</i>
					<i>X</i>		<i>028530</i>	<i>VOA</i>	<i>(X) 2 h *</i>

FIELD DISPOSITION: *Fed Ex # 2030976724* * : *preserved with H*

IMMEDIATE DELIVERY STORAGE REFRIGERATOR ID _____ SECURED YES
FREEZER ID _____ NO

RELINQUISHED BY: *Brad Wright* RECEIVED BY: _____ DATE/TIME: *4/25/89 1400*

RELINQUISHED BY: _____ RECEIVED BY: _____ DATE/TIME: _____

RECEIVED FOR LABORATORY BY: *Michael N. Neuenburg* MICHAEL N. NEUENBURG DATE/TIME: *4/26/89 10:00*

METHOD OF SHIPMENT: _____

LABORATORY DISPOSITION:

IMMEDIATE ANALYSIS STORAGE REFRIGERATOR ID 3 SECURED YES NO
FREEZER ID _____
CABINET ID _____

* PRINT NAME AFTER SIGNATURE



**VOLATILE ORGANICS
MODIFIED EPA METHOD 624**

Project: CHIC-3.0

Lab ID: 24512

Sample Location: MW-1

Date Sampled: 04/25/89

Sample Number: 028517

Date Analyzed: 04/27/89

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Chloromethane	< 10	10.
Bromomethane	< 10	10.
Vinyl Chloride	< 10	10.
Chloroethane	< 10	10.
Methylene Chloride	< 25	25.
Acetone	< 25	25.
Carbon Disulfide	< 5	5.
1,1 Dichloroethene	< 5	5.
1,1 Dichloroethane	9.	5.
1,2 Dichloroethene (cis/trans)	9.	5.
Chloroform	< 5	5.
1,2 Dichloroethane	< 5	5.
2 Butanone	< 25	25.
1,1,1 Trichloroethane	< 5	5.
Carbon Tetrachloride	< 5	5.
Bromodichloromethane	< 5	5.
1,2 Dichloropropane	< 5	5.
Trans 1,3 Dichloropropene	< 5	5.
Trichloroethene	< 5	5.
Benzene	< 5	5.
1,1,2 Trichloroethane	< 5	5.
Dibromochloromethane	< 5	5.
Cis 1,3 Dichloropropene	< 5	5.
Bromoform	< 5	5.
4 Methyl 2 Pentanone	< 25	25.
2 Hexanone	< 25	25.
1,1,2,2 Tetrachloroethane	< 5	5.
Tetrachloroethylene	< 10	10.
Toluene	< 5	5.
Chlorobenzene	< 5	5.
Ethyl Benzene	< 5	5.
Styrene	< 5	5.
Total Xylenes	< 5	5.

Analyst: *K. Badal* Reviewed By: *R. L. James* Date: 04/27/89

Laboratory Director: *J. M. Bartell*



Lab ID: 24512

GCMS 624 SURROGATE % RECOVERY

COMPOUND NAME	% RECOVERY	RANGE
S1 = 1,2-Dichloroethane-D4	108	76-114
S2 = Toluene-D8	94	88-110
S3 = 4-Bromofluorobenzene	96	86-115

Comments:



**VOLATILE ORGANICS
MODIFIED EPA METHOD 624**

Project: CHIC-3.0

Lab ID: 24509

Sample Location: MW-2

Date Sampled: 04/25/89

Sample Number: 028501

Date Analyzed: 04/26/89

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Chloromethane	< 10	10.
Bromomethane	< 10	10.
Vinyl Chloride	< 10	10.
Chloroethane	< 10	10.
Methylene Chloride	< 25	25.
Acetone	< 25	25.
Carbon Disulfide	< 5	5.
1,1 Dichloroethene	< 5	5.
1,1 Dichloroethane	< 5	5.
1,2 Dichloroethene(cis/trans)	< 5	5.
Chloroform	< 5	5.
1,2 Dichloroethane	< 5	5.
2 Butanone	< 25	25.
1,1,1 Trichloroethane	< 5	5.
Carbon Tetrachloride	< 5	5.
Bromodichloromethane	< 5	5.
1,2 Dichloropropane	< 5	5.
Trans 1,3 Dichloropropene	< 5	5.
Trichloroethene	< 5	5.
Benzene	< 5	5.
1,1,2 Trichloroethane	< 5	5.
Dibromochloromethane	< 5	5.
Cis 1,3 Dichloropropene	< 5	5.
Bromoform	< 5	5.
4 Methyl 2 Pentanone	< 25	25.
2 Hexanone	< 25	25.
1,1,2,2 Tetrachloroethane	< 5	5.
Tetrachloroethylene	< 10	10.
Toluene	< 5	5.
Chlorobenzene	< 5	5.
Ethyl Benzene	< 5	5.
Styrene	< 5	5.
Total Xylenes	< 5	5.

Analyst: K. Badal

Reviewed By: R. L. James

Date: 04/27/89

Laboratory Director: J. M. Bartell



Lab ID: 24509

GCMS 624 SURROGATE % RECOVERY

COMPOUND NAME	% RECOVERY	RANGE
S1 = 1,2-Dichloroethane-D4	106	76-114
S2 = Toluene-D8	98	88-110
S3 = 4-Bromofluorobenzene	102	86-115

Comments:



**VOLATILE ORGANICS
MODIFIED EPA METHOD 624**

Project: CHIC-3.0

Lab ID: 24510

Sample Location: MW-3

Date Sampled: 04/25/89

Sample Number: 028509

Date Analyzed: 04/27/89

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Chloromethane	< 10	10.
Bromomethane	< 10	10.
Vinyl Chloride	< 10	10.
Chloroethane	< 10	10.
Methylene Chloride	< 25	25.
Acetone	< 25	25.
Carbon Disulfide	< 5	5.
1,1 Dichloroethene	< 5	5.
1,1 Dichloroethane	< 5	5.
1,2 Dichloroethene(cis/trans)	< 5	5.
Chloroform	< 5	5.
1,2 Dichloroethane	< 5	5.
2 Butanone	< 25	25.
1,1,1 Trichloroethane	< 5	5.
Carbon Tetrachloride	< 5	5.
Bromodichloromethane	< 5	5.
1,2 Dichloropropane	< 5	5.
Trans 1,3 Dichloropropene	< 5	5.
Trichloroethene	< 5	5.
Benzene	< 5	5.
1,1,2 Trichloroethane	< 5	5.
Dibromochloromethane	< 5	5.
Cis 1,3 Dichloropropene	< 5	5.
Bromoform	< 5	5.
4 Methyl 2 Pentanone	< 25	25.
2 Hexanone	< 25	25.
1,1,2,2 Tetrachloroethane	< 5	5.
Tetrachloroethylene	< 10	10.
Toluene	< 5	5.
Chlorobenzene	< 5	5.
Ethyl Benzene	< 5	5.
Styrene	< 5	5.
Total Xylenes	< 5	5.

Analyst: *K. Bañal*

Reviewed By: *R. L. James*

Date: 04/27/89

Laboratory Director: *J. M. Bartell*



Lab ID: 24510

GCMS 624 SURROGATE % RECOVERY

COMPOUND NAME	% RECOVERY	RANGE
S1 = 1,2-Dichloroethane-D4	93	76-114
S2 = Toluene-D8	101	88-110
S3 = 4-Bromofluorobenzene	103	86-115

Comments:



**VOLATILE ORGANICS
MODIFIED EPA METHOD 624**

Project: CHIC-3.0

Lab ID: 24511

Sample Location: Trip Blank

Date Sampled: 04/25/89

Sample Number: 028525

Date Analyzed: 04/26/89

<u>COMPOUND</u>	<u>ANALYTE CONCENTRATION</u> ug/L (ppb)	<u>REPORTING LIMIT</u> ug/L (ppb)
Chloromethane	< 10	10.
Bromomethane	< 10	10.
Vinyl Chloride	< 10	10.
Chloroethane	< 10	10.
Methylene Chloride	< 25	25.
Acetone	< 25	25.
Carbon Disulfide	< 5	5.
1,1 Dichloroethene	< 5	5.
1,1 Dichloroethane	< 5	5.
1,2 Dichloroethene(cis/trans)	< 5	5.
Chloroform	< 5	5.
1,2 Dichloroethane	< 5	5.
2 Butanone	< 25	25.
1,1,1 Trichloroethane	< 5	5.
Carbon Tetrachloride	< 5	5.
Bromodichloromethane	< 5	5.
1,2 Dichloropropane	< 5	5.
Trans 1,3 Dichloropropene	< 5	5.
Trichloroethene	< 5	5.
Benzene	< 5	5.
1,1,2 Trichloroethane	< 5	5.
Dibromochloromethane	< 5	5.
Cis 1,3 Dichloropropene	< 5	5.
Bromoform	< 5	5.
4 Methyl 2 Pentanone	< 25	25.
2 Hexanone	< 25	25.
1,1,2,2 Tetrachloroethane	< 5	5.
Tetrachloroethylene	< 10	10.
Toluene	< 5	5.
Chlorobenzene	< 5	5.
Ethyl Benzene	< 5	5.
Styrene	< 5	5.
Total Xylenes	< 5	5.

Analyst: K. Badal

Reviewed By: R. L. James

Date: 04/27/89

Laboratory Director: J. M. Bartell



Lab ID: 24511

GCMS 624 SURROGATE % RECOVERY

COMPOUND NAME	% RECOVERY	RANGE
S1 = 1,2-Dichloroethane-D4	96	76-114
S2 = Toluene-D8	98	88-110
S3 = 4-Bromofluorobenzene	105	86-115

Comments:



McLaren Analytical Laboratory

Chain of Custody Record

L.P. 1699
No 209518

24 hr rest

PROJECT DESIGNATION Chic - 3.0

SAMPLES TAKEN BY: Brad Weyt / Brad Weyt

AREA	SAMPLE LOCATION	DATE	TIME	SAMPLE TYPE			SAMPLE NO.	TYPE CONTAINER(S)	ANALYSIS REQUIRED
				WATER		SOIL			
				COMP	GRAB				
	MW-3	4/25/89	1125		X		028509	VOA	001 24510 624 (9)
					X		028510	VOA	001 spare
					X		028511	VOA	001 L
					X		028512	VOA	001 L
					X		028513	VOA	002 *
					X		028514	VOA	002 spare *
					X		028515	VOA	002 L *
					X		028516	VOA	002 L *

FIELD DISPOSITION: FedEx # 2030976726

*: Preserved with HCL

IMMEDIATE DELIVERY
 STORAGE REFRIGERATOR ID _____
 FREEZER ID _____

SECURED YES
 NO

RELINQUISHED BY: <u>Brad Weyt</u>	RECEIVED BY: _____	DATE/TIME 4/25/89 1400
RELINQUISHED BY: _____	RECEIVED BY: _____	DATE/TIME

RECEIVED FOR LABORATORY BY: Michael N. Neuenburg **MICHAEL N. NEUENBURG** DATE/TIME 4/26/89 10:00

METHOD OF SHIPMENT:

LABORATORY DISPOSITION:
 IMMEDIATE ANALYSIS STORAGE REFRIGERATOR ID 3 SECURED YES NO
SAMPLES RECEIVED IN GOOD CONDITION FREEZER ID _____
 CABINET ID _____

* PRINT NAME AFTER SIGNATURE

