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

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

REMEDIAL ACTION COMPLETION CERTIFICATION

September 5,1997

Mr. Johnny T. Lin
Ms. Amy Lin
P.O. Box 4154
San Leandro, CA 94579

RE: Windsor Square Auto Repair, 1900 Lewelling Blvd.,
San Leandro, CA 94579

STID 3583

Dear Mr. & Ms. Lin:

This letter confirms the completion of a site investigation and remedial action for the underground storage tanks formerly located at the above described location. Thank you for your cooperation throughout this investigation. Your willingness and promptness in responding to our inquiries concerning the former underground storage tanks are greatly appreciated.

Based on information in the above-referenced file and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground tank release is required.

This notice is issued pursuant to a regulation contained in Section 2721(e) of Title 23 of the California Code of Regulations.

Please contact our office if you have any questions regarding this matter.

Sincerely,

Mee Ling Tung
Director of Environmental Health Services

c: Chief, Hazardous Materials Division - files
Larry Seto, ACDEH
Kevin Graves, RWQCB
Lori Casias, SWRCB (w/ Case Closure Summary)

01-1787

ENVIRONMENTAL PROTECTION
97 AUG 21 PM 2:52

CASE CLOSURE SUMMARY
Leaking Underground Fuel Storage Tank Program

I. AGENCY INFORMATION Date: August 12, 1997

Agency name: **Alameda County-HazMat** Address: **1131 Harbor Bay Pkwy**
City/State/Zip: **Alameda, CA 94502** Phone: **(510) 567-6700**
Responsible staff person: **Madhulla Logan** Title: **Haz. Materials Spec.**

II. CASE INFORMATION

Site facility name: **Windsor Square Auto Repair**
Site facility address: **1900 Lewelling Blvd., San Leandro, CA 94579**
RB LUSTIS Case No: **N/A** Local Case No./LOP Case No.: **3583**
URF filing date: **3/16/92** SWEEPS No: **N/A**

Responsible Parties:	Addresses:	Phone Numbers:
Johnny T. & Amy Lin	P. O. Box 4154, San Leandro, CA 94579	(510)352-5422

Tank No:	Size in gal.:	Contents:	Closed in-place or removed?:	Date:
1	3,000	gasoline	removed	12/85
2	3,000	gasoline	removed	12/85
3	6,000	gasoline	removed	12/85
4	8,000	gasoline	removed	12/85
5	200	waste oil	removed	9/26/90

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and type of release: **unknown**
Site characterization complete? **YES**
Date approved by oversight agency: **April 4, 1994**
Monitoring Wells installed? **YES** Number: **five (5)**
Proper screened interval? **YES**
Highest GW depth below ground surface: **2.48' on 3/15/95 (MW-5)**
Lowest depth: **6.95' on 7/5/94 (MW-1)**
Flow direction: **varies from predominantly southwest to the northwest.**
Most sensitive current use: **commercial**
Are drinking water wells affected? **NO** Aquifer name: **San Leandro Cone**
Is surface water affected? **NO** Nearest affected SW name: **N/A**
Off-site beneficial use impacts (addresses/locations): **N/A**
Report(s) on file? **YES** Where is report(s) filed? **Alameda County**
1131 Harbor Bay Pkwy
Alameda, CA 94502

Treatment and Disposal of Affected Material:

Material	Amount (include units)	Action (Treatment or Disposal w/destination)	Date
Tanks	2-3000 gallon; 1-6000 gallon; and 1-8000 gallon	Unknown	12/85
Tank	1-200 gallon	disposal/H & H Environmental S. San Francisco, CA	9/26/90
Piping			
Free Product			
Soil	60 cubic yards	biotreatment/disposal at Forward Landfill, Stockton, CA	6/21-22/95
Groundwater			
Rinsate	UNK	disposal/Waste Oil Recovery Systems San Leandro, CA	9/26/90

Maximum Documented Contaminant Concentrations - - Before and After Cleanup

Contaminant	Soil (ppm) Before[1]	Soil (ppm) After[2]	Water (ppb) Before[3]	Water (ppb) After[4]
TPH (Gas)	160	<1	5000	160
TPH (Diesel)	NA	60	<50	NA
TPH (motor oil)	9,300	NA	<500	NA
Benzene	0.44	0.019	15	0.6 (MW-5)
Toluene	3.2	0.230	7.9	1.0
Ethyl benzene	1.4	0.300	80	<0.5
Xylenes	8.6	2.3	230	0.6
Oil & Grease	4600	NA	NA	NA
Heavy metals (See Table 1)				
MTBE			600	<10
SVOCs (See Tables 2,3,4 and 5)				
HVOCs (See Tables 2,3,4 and 5)				
PAHs (See Table 1)				
Other (See Table 2)				

NA=Not Analyzed

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[1]"Before" soil results were detected in soil sample S-926-1, collected at a depth of approximately 8 feet below grade from the waste oil excavation.

[2]"After" soil results were quantified for sample SS-1 which was collected at a depth of approximately 9.5' below grade from beneath the southwest end of the waste oil tank. The laboratory reports that although diesel range hydrocarbons were quantified for soil sample SS-1, the chromatogram appears to suggest that the dominant hydrocarbons present contain higher boiling fractions than diesel fuel and therefore, the samples may contain motor oils, lubricating fuels, or other heavier fuels. During the installation of the groundwater monitoring wells (MW-1 through MW-5), shallow boring IB-1 was placed slightly downgradient from the former fuel island and inside the fuel line trench. This soil sample was analyzed and found to contain TPHg and BTEX at concentrations of 6.0 ppm, 1.9 ppm, 0.021 ppm, 0.34 ppm and 0.087 ppm, respectively.

[3]"Before" TPHg and BTEX results were detected in the initial groundwater sample collected from monitoring well MW-3 on 7/5/94. TPHd and TPHmo results from wells MW-2 and MW-5 sampled on 7/5/94 (See Table 4).

[4]"After" groundwater results collected on 8/3/95, from monitoring well MW-3, except where otherwise indicated (See Table 5).

Comments (Depth of Remediation, etc.):

As part of a purchase agreement four (4) gasoline underground storage tanks (USTs) were removed in December 1985. The four gasoline USTs consisted of two 3,000-gallon, one 6,000-gallon and one 8,000-gallon and were removed from a common excavation. Laboratory results for the four soil samples analyzed (four of the 8 collected samples were put on hold pending results) detected concentrations of total petroleum hydrocarbons as gasoline (TPHg) of 270 ppm, 7 ppm, 28 ppm and 450 ppm for samples #1, #3, #6 and #8, respectively (see Figure 1). Three composite soil samples (#1, #2 and #3) collected from the gasoline UST excavation after apparent over excavation contained concentrations of TPHg of 4 ppm, ND and 10 ppm, respectively (see Figure 2). No other analyses other than the volatile fuel hydrocarbons as gasoline were run on these gasoline UST soil samples. The San Leandro Fire Department apparently did not request any further investigation upon receipt of the over-excavation soil sample results.

In 1990, Mr. Lin discovered the existence of one 285-gallon waste oil UST which apparently had not been disclosed by the previous owner during the property transfer. This 285-gallon waste oil UST was removed on September 26, 1990. One soil sample (S-926-1) was collected at an approximate depth of eight (8) feet bg (See Figure WO-1). Black native clay sampled two feet below the base of the excavation reportedly had an obvious petroleum product odor. Groundwater was not encountered in the tank pit excavation. The soil sample was analyzed for TPH as gasoline and diesel (TPHg and TPHd), BTEX, oil & grease, chlorinated hydrocarbons, polynuclear aromatics (PNAs) and the metals cadmium, chromium, lead, nickel and zinc. Laboratory results for the soil sample collected from the waste oil pit excavation are summarized in Table 1.

On January 24, 1991, the waste oil UST pit was over excavated vertically to approximately ten feet in depth, and laterally five feet in a northeast direction, three feet in an southeast direction and three feet in a southwest direction. After re-excavation of the original backfill materials, the UST cavity measured approximately five feet by eight feet by six feet deep. Final excavation pit dimensions were approximately 8' X 15' X 10' deep. Groundwater was not initially present in the excavation pit, however ground water slowly began filling the deepest areas of the excavation to a depth of approximately 9.5 feet below grade. After completion of the over excavation activities two soil samples (SS-1 and SS-2) were collected from the pit floor at depths of 9.5 feet bg at the southwest end and 10.5 feet bg at the northeast end, respectively (See Figure WO-2).

Detectable concentrations of TPHd and BTEX were identified in sample SS-1. However, chromatograms were interpreted as representing heavier hydrocarbons such as motor or lubricating oils. Certain HVOCs and PNAs were also present in this sample (See Table 2).

Approximately 40 cubic yards of contaminated soils removed from the waste oil tank pit were bioremediated on-site. Approximately 40 cubic yards (yd3) of excavated soil was mixed with approximately 15 yd3 of steer manure and spread evenly to make a 1.5 feet thick lift over the entire enclosure and covered with visqueen. The bioremediation of the excavated soils was effective in removing all volatile organic compounds and at least 93% of motor oil-range hydrocarbons. Laboratory analytical results for the bioremediated soils are summarized in Table 3. The bioremediated soils (approximately 60 yd3) were transported to Forward Landfill for ultimate disposal on June 21 and 22, 1995.

See Section VII, Additional Comments, etc...

IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? **YES**
Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? **YES**
Does corrective action protect public health for current land use? **YES**
Site management requirements: **None**
Should corrective action be reviewed if land use changes? **YES**
Monitoring wells Decommissioned: **None, pending closure**
Number Decommissioned: **N/A** Number Retained: **five (5)**
List enforcement actions taken: **None**
List enforcement actions rescinded: **None**

V. LOCAL AGENCY REPRESENTATIVE DATA

Name: **Madhulla Logan** Title: **Hazardous Materials Specialist**

Signature: Madhulla Logan Date: August 12, 1997

Reviewed by

Name: **Barney Chan** Title: **Hazardous Materials Specialist**

Signature: Barney Chan Date: 8/12/97

Name: **Thomas Peacock** Title: **Manager**

Signature: Thomas Peacock Date: 8-12-97

VI. RWQCB NOTIFICATION

Date Submitted to RB: RB Response: Approved

RWQCB Staff Name: **Kevin Graves** Title: **AWRCE**

Signature: K. Graves Date: 8-18-97

VII. ADDITIONAL COMMENTS, DATA, ETC.

On June 27, 1994 six soil borings were advanced and groundwater monitoring well were installed in five of the six soil borings (see Figure 3). Moderate hydrocarbons odors were noted in soils from MW-2 and MW-5 below five feet in depth and moderate to strong hydrocarbons odors were noted in IB-1 at five feet in depth. Slight hydrocarbon odors were noted in native soils below 12 feet bg in MW-3, and slight hydrocarbons odors were noted from four to seven feet in depth in MW-4 soils. Laboratory analysis of initial soil and groundwater samples are summarized in Table 4. Historical groundwater monitoring results are presented in Table 5.

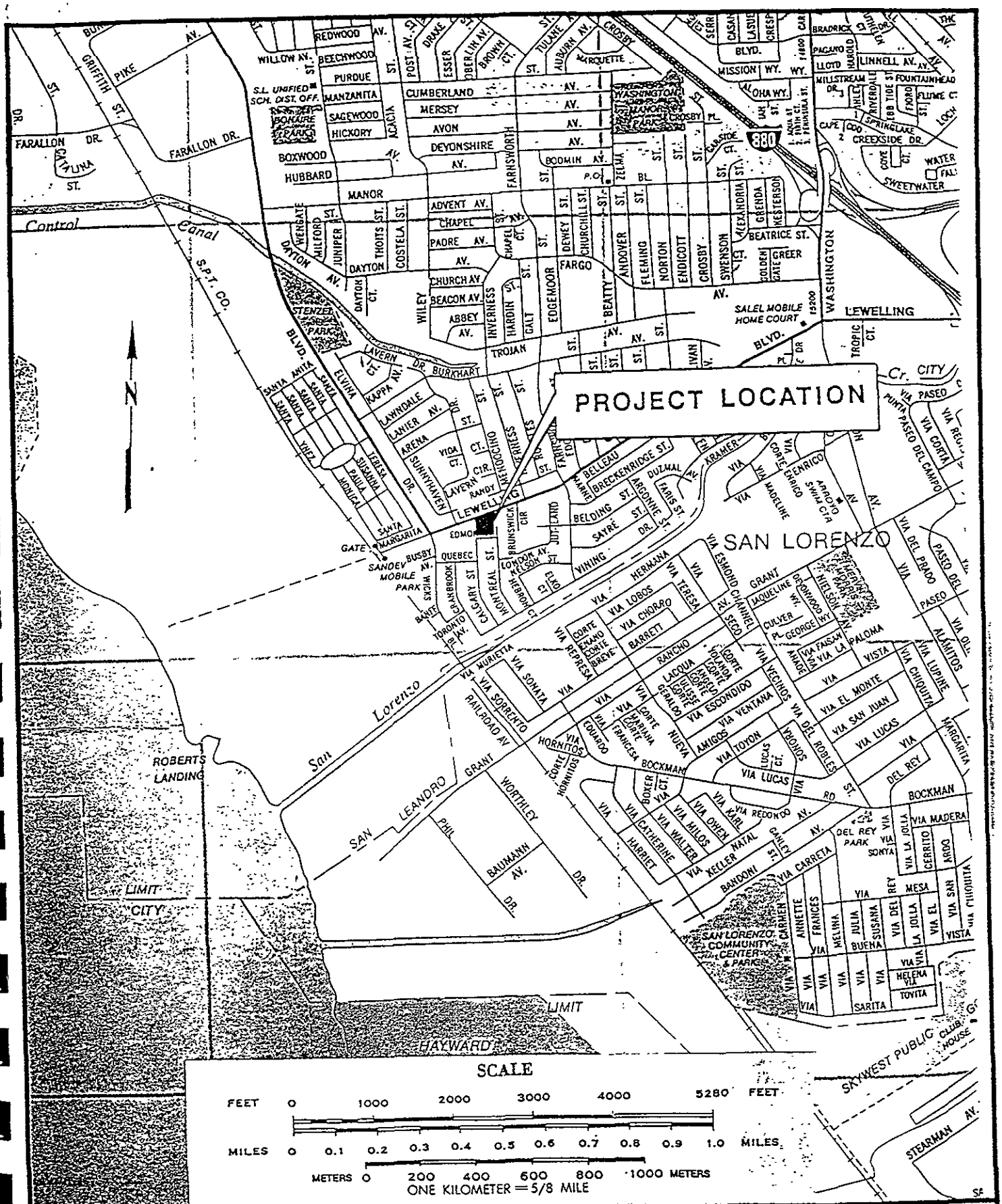
Groundwater was encountered in the five (5) monitoring wells at approximately seven (7) feet below grade.

Groundwater flow direction has shifted from the southwest (1st quarter), northwest (2nd quarter), west-northwest (3rd quarter) and southwest for the fourth quarter, however, analytical results seem to confirm that long-term ground water flow beneath the site is in the southwest direction (see Figures 3 through 6). Therefore, MW-5 appears down gradient from the former gasoline UST's, and MW-2 appears down-gradient from the waste oil UST.

Past releases from the former gasoline USTs located at the site appear not to have significantly impacted ground water beneath the site. Although low levels of gasoline constituents were encountered in ground water sampled from MW-3, located within the former UST excavation pit, only very low to nondetectable levels of gasoline constituents were encountered historically in water sampled from down gradient wells MW-4 and MW-5.

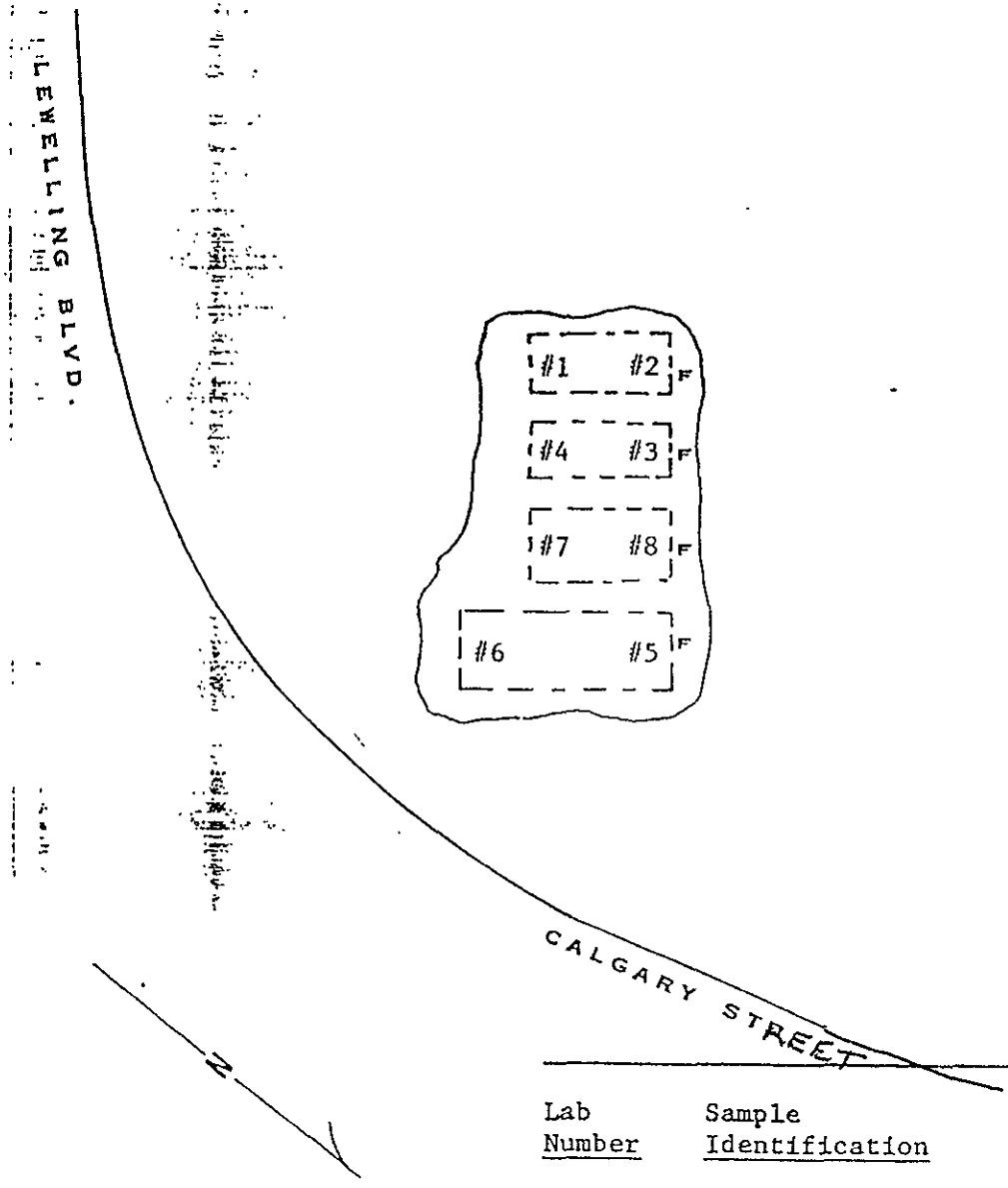
Past releases from the former waste oil UST have not significantly impacted ground water beneath the site. The only hydrocarbon constituents encountered in MW-2 water samples were 600 ppb of methyl-tert-butyl ether (MTBE) during the first quarter, 1.5 ppb of c-1,2-DCE during the second quarter and 25 ppb of c-1,2-DCE and 9.7 ppb of 1,1-DCA during the fourth quarter. The 25 ppb of c-1,2-DCE exceeds the California Department of Health Services Primary MCL (CA MCL) of 6 ppb. The 9.7 ppb of 1,1-DCA exceeds the CA MCL of 5 ppb, but does not exceed the USEPA Preliminary Remediation Goals (PRGs) for tap water of 810 ppb. Thus, the levels of the constituents encountered in MW-2 water samples are only slightly above the MCLs and should not pose a significant risk to the quality of the ground water. Shallow groundwater below this site is not a current source of drinking water. The RBSL for the exposure route "ingestion of water" for 1,2 DCE and 1,1 DCA are 360 ppb and 3600 ppb respectively. Based on the exposure route "indoor inhalation from soils" the RBSL for 1,2 DCE and 1,1 DCA are 400 ppb and 49,000 ppb respectively. The high cleanup numbers are probably because neither of the solvents is a carcinogen. Based on the last quarter data, the solvents do not appear to be a problem. This was evaluated by Madhulla Logan on August 8, 1997.

Analytical results suggest that the hydrocarbon plume is being attenuated and that the plume is very small in lateral extent, therefore, continued groundwater monitoring does not appear to be warranted (see Table 5).



DESIGNED BY:	CHECKED BY:	[redacted]	DATE:	FIGURE:
DRAWN BY:	SCALE:	SITE VICINITY MAP	CENTURY WEST ENGINEERING	
DWG. NO.:		CWEC: 20507-001-01		

FIGURE 1



MAP REF: THOMAS BROS. SAN MATEO COUNTY P. 27 B-6

SCALE: 1/10" = 2'

LEGEND: F = FILL PIPE

(#1) SOIL FROM 12' ANALYSIS FOR VOLATILE HYDROCARBONS DUE TO GASOLINE AT IT CORPORATION SANTA CLARA REGIONAL OFFICE ITSC LAB NO. 34924

#2 SOIL FROM 12' ANALYSIS FOR GASOLINE ITSC LAB NO. 34925 SAMPLE PLACED ON 'HOLD'

(#3) SOIL FROM 12' ANALYSIS FOR GASOLINE ITSC LAB NO. 34926

#4 SOIL FROM 13'6" ANALYSIS FOR GASOLINE ITSC LAB NO. 34927 SAMPLE PLACED ON 'HOLD'

#5 SOIL FROM 13' ANALYSIS FOR GASOLINE ITSC LAB NO. 34928 SAMPLE PLACED ON 'HOLD'

(#6) SOIL FROM 13'4" ANALYSIS FOR GASOLINE ITSC LAB NO. 34929

#7 SOIL FROM 13' ANALYSIS FOR GASOLINE ITSC LAB NO. 34930 SAMPLE PLACED ON 'HOLD'

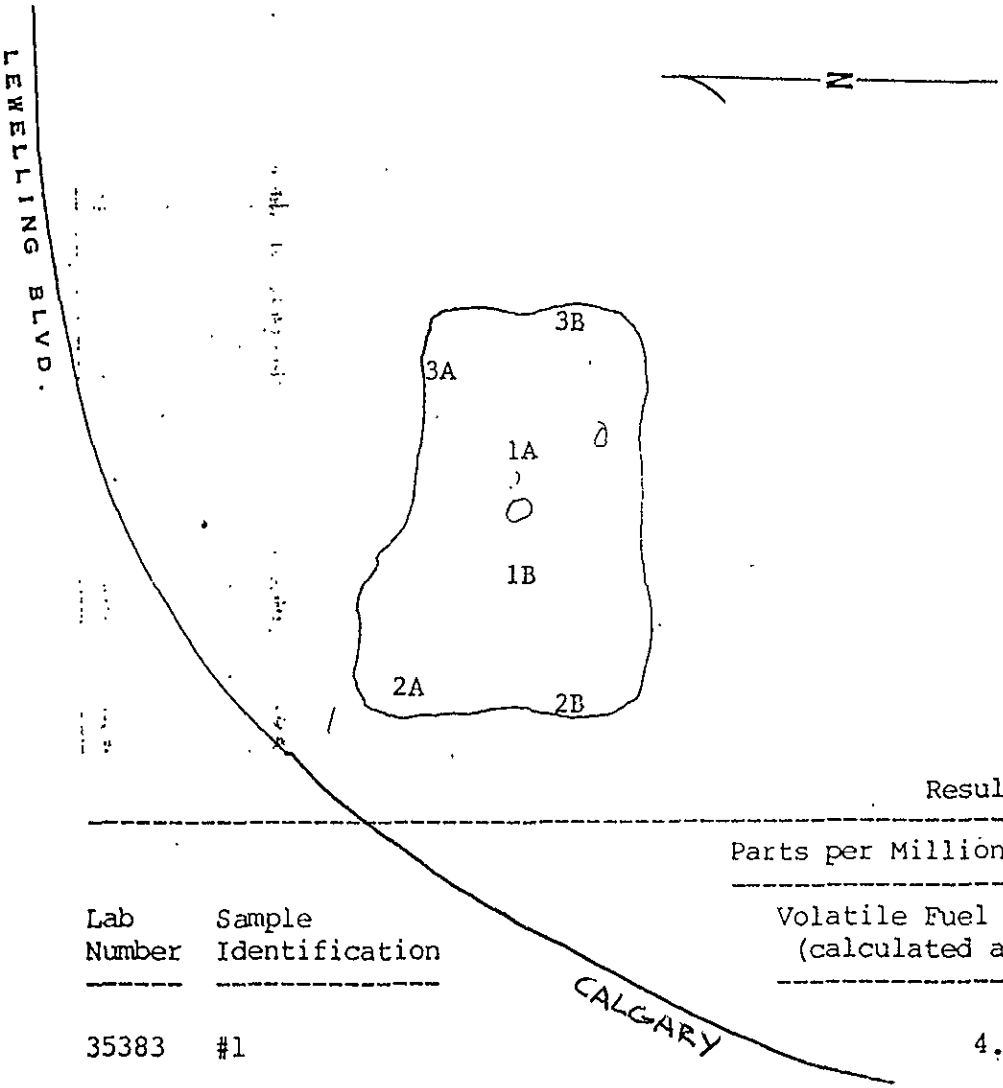
(#8) SOIL FROM 13'6" ANALYSIS FOR GASOLINE ITSC LAB NO. 34931 SAMPLE PLACED ON 'HOLD'

Lab Number	Sample Identification	Results Parts per Million (dry soil basis) Volatile Fuel Hydrocarbons (calculated as gasoline)
34924	#1	270.
34926	#3	7.
34929	#6	28.
34931	#8	450.

BLAIN TECH SERVICES

SAMPLING REPORT 85364M1 12-30-85 CAMPANELLA DEMOLITION, 1900 LEWELING BLVD., SAN LEANDRO, CA

FIGURE 2



SCALE: 1/10" = 2'

MAP REF: THOMAS BROS. ALAMEDA COUNTY P. 27 B-6

#1 COMPOSITE SOIL SAMPLE FROM POINTS A & B AT 15'
ANALYSIS FOR VOLATILE HYDROCARBONS DUE TO GASOLINE AT IT CORPORATION SANTA CLARA REGIONAL OFFICE
ITSC LAB NO. 35383

#2 COMPOSITE SOIL SAMPLE FROM POINTS A & B AT 10'
ANALYSIS FOR GASOLINE
ITSC LAB NO. 35384

#3 COMPOSITE SOIL SAMPLE FROM POINTS A & B AT 10-11'
ANALYSIS FOR GASOLINE
ITSC LAB NO. 35385

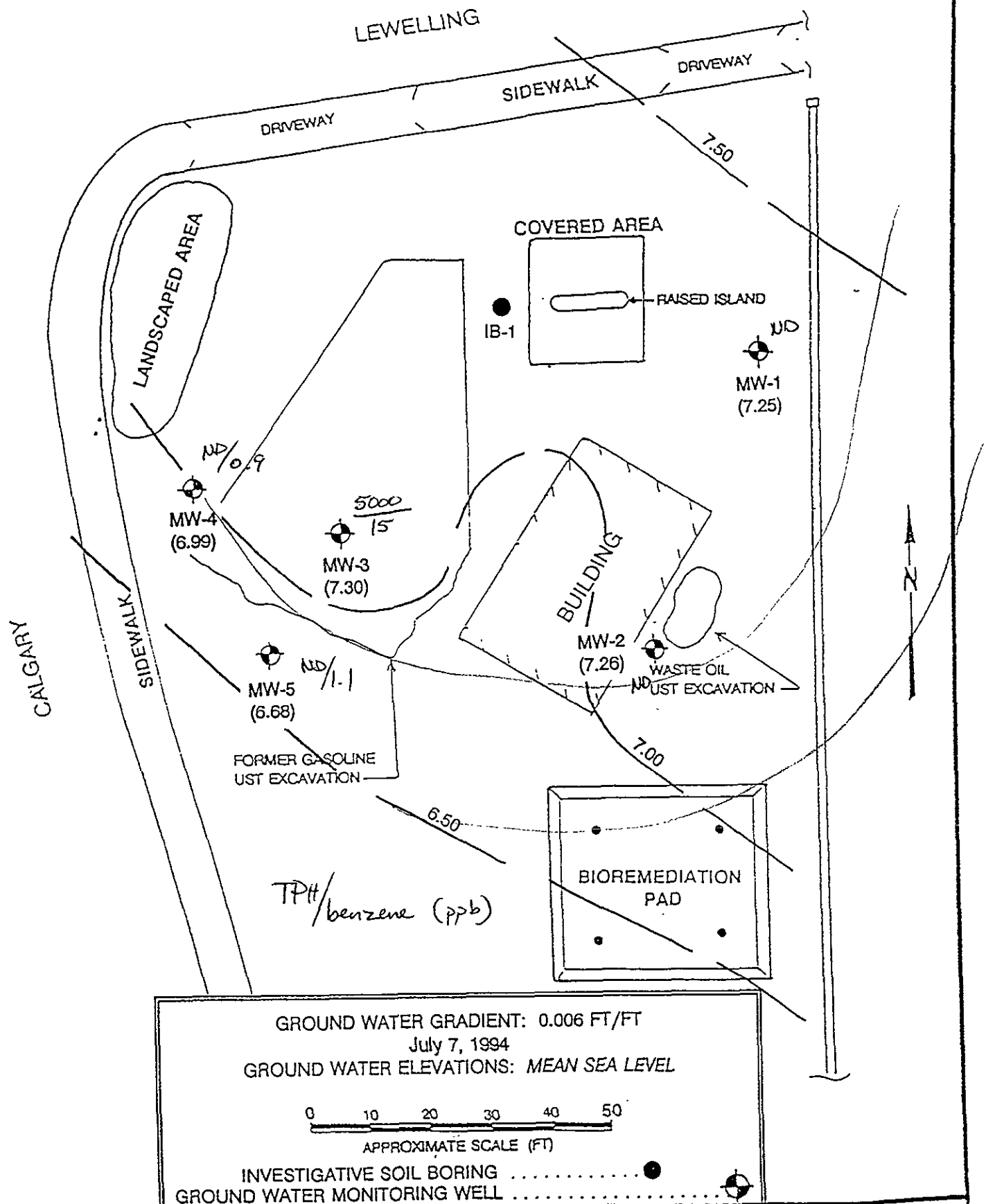
SAMPLING PERFORMED BY HELEN MAWHINNEY

DIAGRAM PREPARED BY TAMMIE STALLINGS

Results

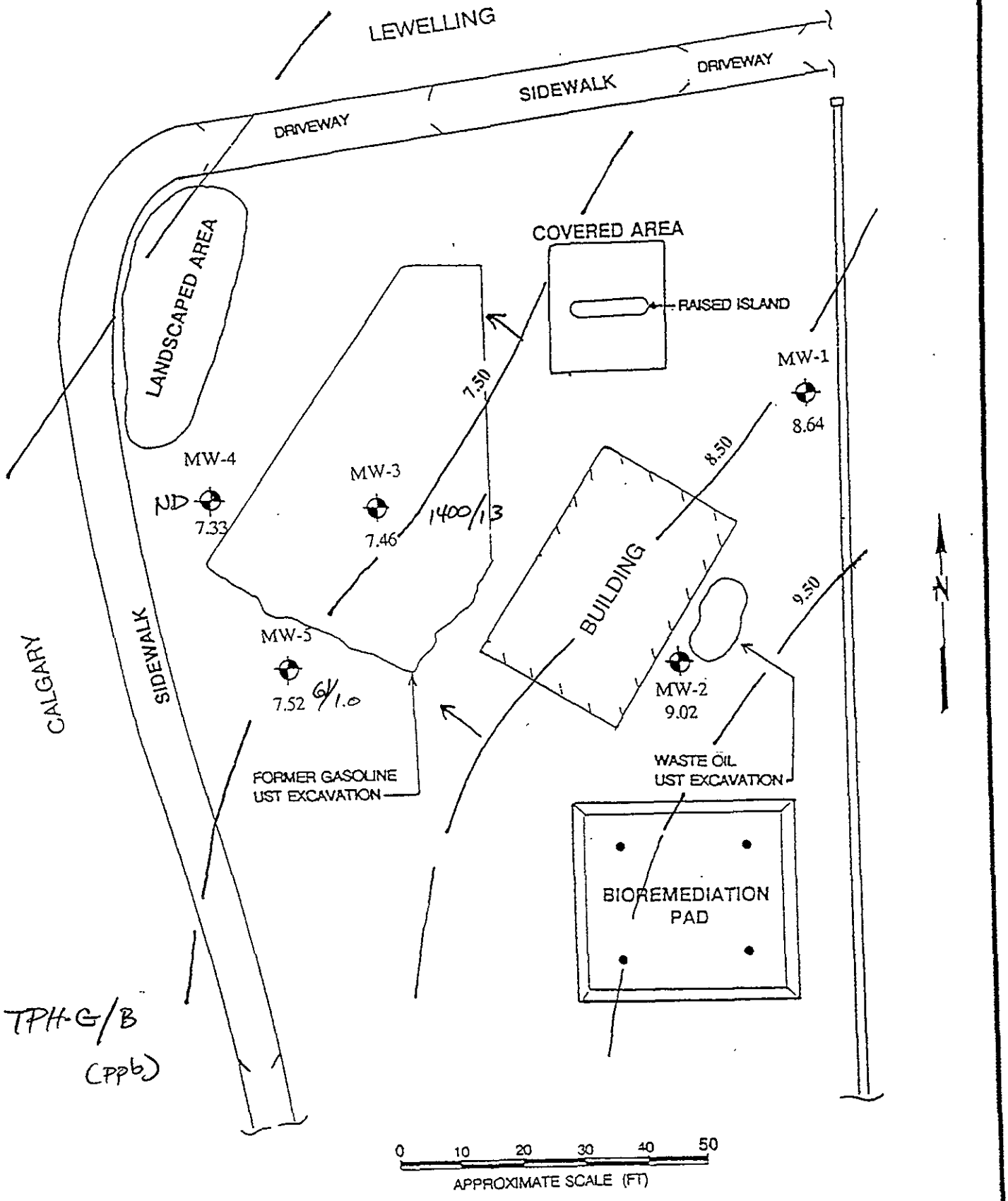
Lab Number	Sample Identification	Parts per Million- dry soil basis Volatile Fuel Hydrocarbons (calculated as gasoline)
35383	#1	4.
35384	#2	None Detected
35385	#3	10.
Detection Limit		2.

FIGURE 3



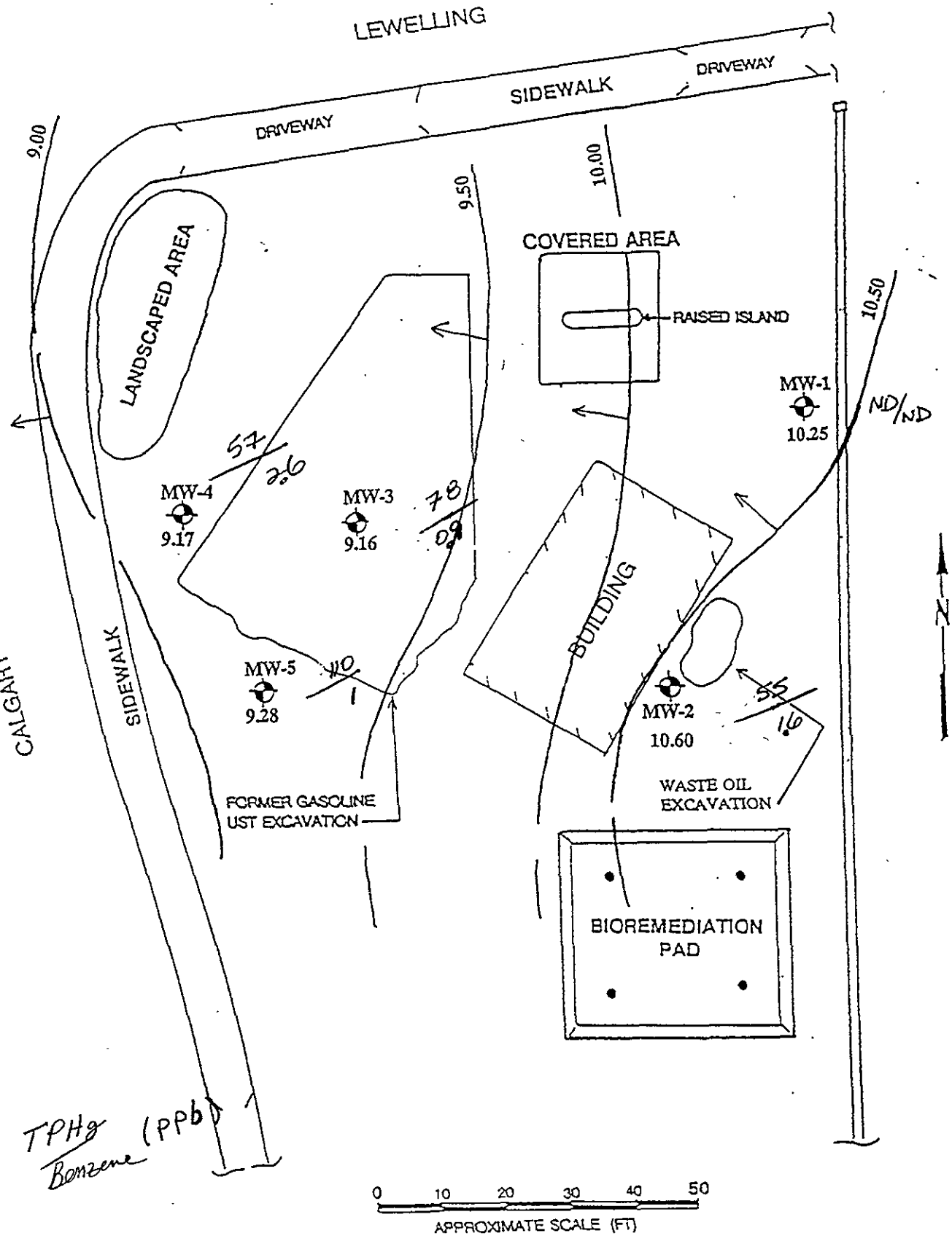
DESIGNED BY:	CHECKED BY:	FIGURE 2 SITE PLAN/GRADIENT MAP	DATE:	FIGURE:
DRAWN BY:	SCALE:		CENTURY WEST ENGINEERING	
DWG. NO.:		CWEC: 20507-001-02		

FIGURE 4



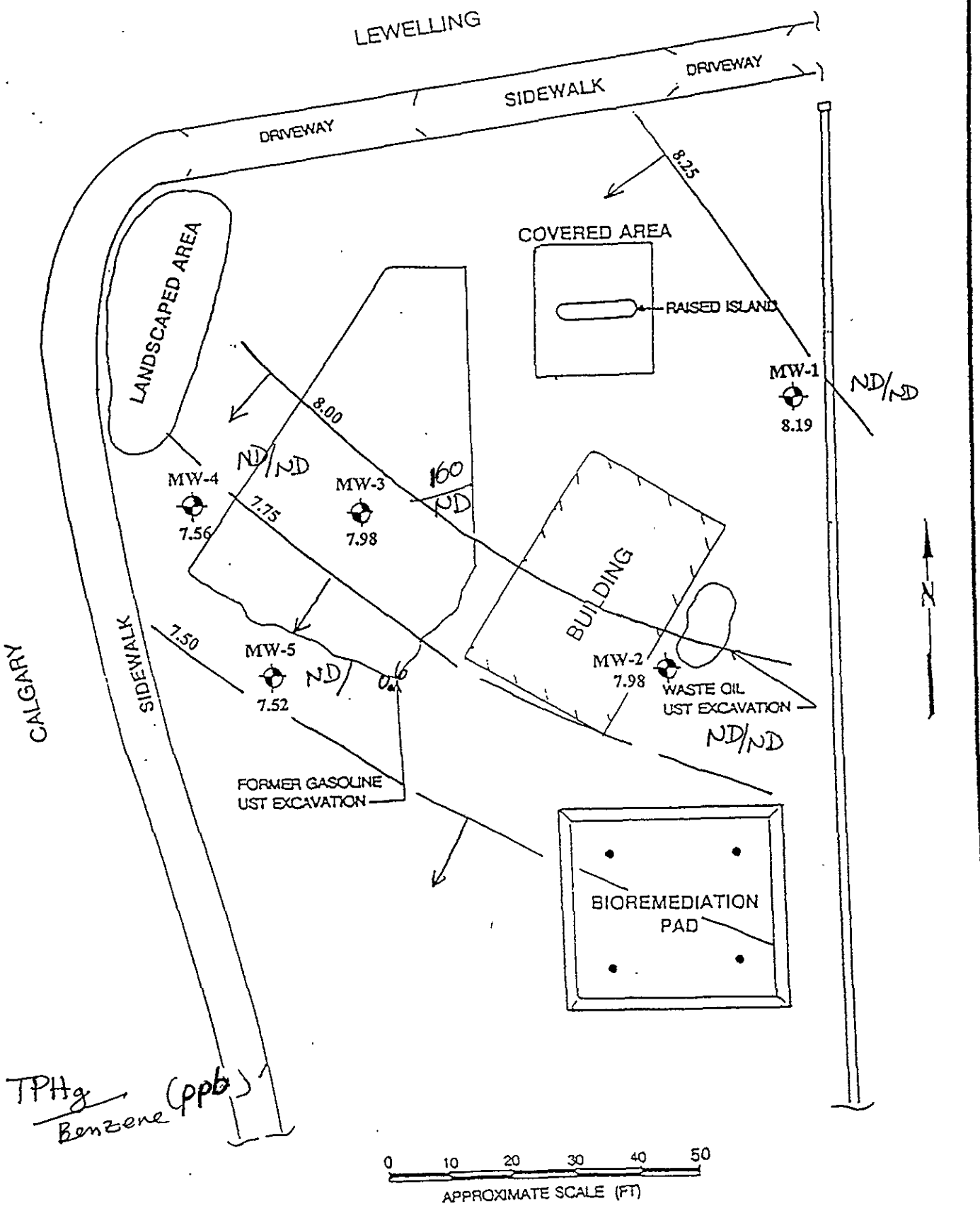
DESIGNED BY:	CHECKED BY:	FIGURE 2 SITE PLAN/GRADIENT MAP GRADIENT = 0.03 (ft/ft) 12/15/94	DATE:	FIGURE:
DRAWN BY:	SCALE:		CENTURY WEST ENGINEERING	
DWG. NO.:				

FIGURE 5



DESIGNED BY:	CHECKED BY:	FIGURE 2 03/15/95 GROUND WATER FLOW MAP CWEC: 20507-001-03	DATE:	FIGURE:
DRAWN BY:	SCALE:		CENTURY WEST ENGINEERING	
DWG. NO.:				

FIGURE 6



DESIGNED BY:	CHECKED BY:	FIGURE 3 08/03/95 GROUND WATER FLOW MAP CWEC: 20507-001-03	DATE:	FIGURE:
DRAWN BY:	SCALE:		CENTURY WEST ENGINEERING	
DWG. NO.:				

120619

1 WASTE OIL UST INIT

SAMPLE LOCATION

)TES

L E W. E MAP BASED ON APPROXIMATE FIELD MEASUREMENTS (09/26/90).

N

B

'PLANATION

APPROXIMATE SOIL SAMPLE LOCATION

APPROXIMATE FORMER TANK LOCATION

A

0 10 20 FT

APPROXIMATE SCALE

NO.	DATE	ZONE	DESCRIPTION	DRA

REVISIONS

EGC ENVIRONMENTAL GEOTECHNICAL CONSULTANTS, INC.
CONSULTANTS IN APPLIED EARTH SCIENCE

SITE PLAN AND SOIL SAMPLE LOCATION MAP

WINDSOR SQUARE
1900 LEWELLING BLVD, SAN LEANDRO, CA

VERL'S CONSTRUCTION INC.

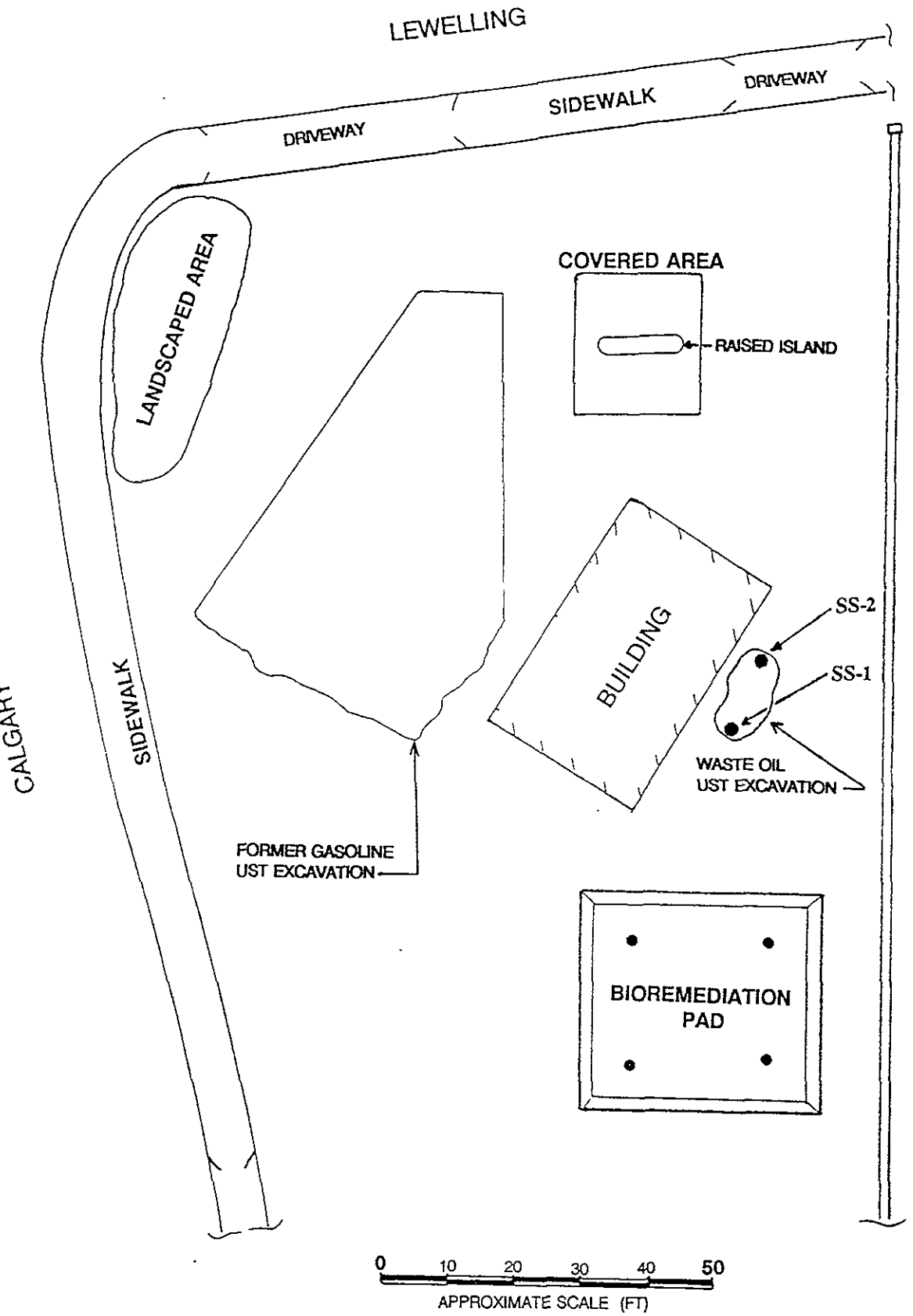
FIGURE NO. WO-

REV NO.

4

1

WASTE OIL UST
OVEREXCATION
SAMPLE LOCATIONS



DESIGNED BY:	CHECKED BY:	FIGURE 2 SITE PLAN	DATE:	FIGURE: WO-2
DRAWN BY:	SCALE:		CENTURY WEST ENGINEERING	
DWG. NO.:		CWEC: 20507-001-02		

TABLE 1

WASTE OIL UST SOIL SAMPLE

SUMMARY OF RESULTS

Analyses in micrograms/liter (ppb) unless otherwise noted.

Analysis	Sample No. S-926-1
TPH-D (ppm)	ND
TPH-G (ppm)	160
B	440
T	3,200
E	1,400
X	8,600
Oil/Grease (ppm)	4,600 (TOTAL)
TPH mo (PPM) METHOL GC/FID	9,300
Chlorinated Hydrocarbons 3550	
Benzene	170
Acetone	150
Carbon disulfide	32
Ethyl benzene	900
Tetrachloroethane	210
Toluene	1,700
1,1,1-Trichloroethane	210
Xylenes, total	5,800
Additional Analyses	
PCP	ND
PCB	ND
Polynuclear Aromatics	
2-Methylnaphthalene	20,000
Naphthalene	12,000
Phenanthrene	2,400
Creosote	ND
Cadmium	ND
Chromium (ppm)	26
Lead (ppm)	15
Nickel (ppm)	28
Zinc (ppm)	29

METHOD 8270
bis(2-ethylhexyl)phthalate 7,300ug

ND = Analyte not present above laboratory detection limits
Laboratory results are included as Appendix B.

Table 2 WASTE OIL UST
SUMMARY OF UST PIT SOIL SAMPLE ANALYSES
Johnny Lin UST Site

Constituent	Concentration (parts per million)	
	SS-1 (SW)	SS-2 (NE)
TPH-diesel	60[1]	ND(1)[2]
TPH-gasoline	ND(1)	ND(1)
BTXE Constituents:		
Benzene	0.019	ND(.001)
Toluene	0.230	ND(.001)
Ethylbenzene	0.300	ND(.001)
Xylenes	2.300	ND(.001)
Chlorinated Hydrocarbons:		
1,1-Dichloroethane	0.005	ND(.005)
1,2-Dichloroethene (total)	0.009	ND(.005)
1,1,1,-Trichloroethane	0.030	ND(.005)
1,1,2,2-Tetrachloroethane	0.047	ND(.005)
Semi-Volatiles[3]:		
2-Methylnaphthalene	0.120	ND(.100)
Bis(2-Ethylhexyl)phthalate	0.150•	0.110
Di-N-Butylphthalate	4.400•	4.700
Butylbenzylphthalate	ND(.100)	0.250

1 - The lab report states, "Diesel range hydrocarbons were quantitated for samples 6849-1 [SS-1] and 6849-3,4,5,6 [SS-3.1,2,3,4] samples. However, the chromatogram appears to suggest that the dominant hydrocarbons present are larger than the diesel fuels and therefore, the samples may contain motor oils, lubricating fuels, or other heavier fuels".

2 - Not detected above the value expressed in the parentheses.

3 - In addition to the EPA Method 8270 analytes listed in the table, the laboratory report lists "other compounds" for samples SS-1, SS-2 and composite sample SS-3.1,2,3,4. These other compounds are tentatively identified compounds, with estimated concentrations, which are not 8270 analytes. Because the identification of these compounds is tentative, and because the TPH-diesel and TOG would also detect these compounds, these other compounds are not quantified in the summary tables.

OTHER COMPOUNDS DETECTED IN SOIL SAMPLE SS-1
UNKNOWN COMPOUND - 200 MG/KG
4-PIPERIDINONE, 2,2,6,6-TETRAMETHYL - 130 MG/KG
NAPHTHALENE, 1-METHYL - 2200 MG/KG

OTHER COMPOUNDS DETECTED IN SOIL SAMPLE SS-2
UNKNOWN COMPOUND - 110 MG/KG
4-PIPERIDINONE, 2,2,6,6-TETRAMETHYL - 190 MG/KG
SULFUR (S7) - 130 MG/KG SULFUR (S8) - 6700 MG/KG
ALKANE - 470 MG/KG

REPORT DATED MARCH 30, 1994

Table 3
SUMMARY OF BIOREMEDIATION PAD MONITORING
Johnny Lin UST Site

Constituent	Concentration (parts per million) SS-3.1-4 01-24-91	SS-4.1-4 03-15-91	SS-5.1-4 06-27-91	SS-6.1-4 10-03-91	SS-7.1-4 07-09-93	SP-2.1-4 11-16-93 (final sample)
TOG (non-polar)	12,000	5,300	4,500	4,300	1,200	--[1]
TPH-diesel	6,800[2]	--	--	--	--	--
TPH-gasoline	160	--	--	--	--	--
TPH-motor oil	--	--	--	--	--	800
Volatiles:						
Benzene	0.029	--	--	--	--	ND(.005)[3]
Toluene	0.680	--	--	--	--	ND(.005)
Ethylbenzene	0.530	--	--	--	--	ND(.005)
Xylenes	5.400	--	--	--	--	ND(.005)
1,1-Dichloroethene	0.007	--	--	--	--	ND(.005)
1,1,1-Trichloroethane	0.030	--	--	--	--	ND(.005)
Tetrachloroethane	0.083	--	--	--	--	ND(.005)
Semi-Volatiles:						
Napthalene	2.70	--	--	--	--	ND(.330)
2-Methylnaphthalene	2.90	--	--	--	--	ND(.330)
Phenanthrene	0.38	--	--	--	--	ND(.330)
Di-N-Butylphthalate	1.20	--	--	--	--	ND(.330)
Bis(2-Ethylhexyl)phthalate	4.50	--	--	--	--	ND(.330)

1 - Not analyzed for this constituent

2 - The lab report states, "Diesel range hydrocarbons were quantitated for samples 6849-1 [SS-1] and 6849-3,4,5,6 [SS-3.1,2,3,4] samples. However, the chromatogram appears to suggest that the dominant hydrocarbons present are larger than the diesel fuels and therefore, the samples may contain motor oils, lubricating fuels, or other heavier fuels".

3 - Not detected above the value expressed in the parentheses.

In order to determine if the bioremediated soil was acceptable for at a Class II landfill disposal,the final composite sample, SP-2.1,2,3,4, was also analyzed for the following constituents.

- CAM 17 Metals using TTLC
- ICP Metals Scan for five metals (Sb, Be, Pb, Hg, Tl) to achieve lower detection levels required by the landfill.
- Reactivity, Corrosivity, Ignitablility (RCI)

Table 4

SUMMARY OF SOIL AND GROUND WATER ANALYTICAL RESULTS

Windsor Square Auto Repair UST Site

Sample ID	Sample Depth	Concentration (ppm)									
		TPH-G	TPH-D	TPH-MO	B	T	E	X	VOCS[1]	SVOCS[2]	PB
Soil Samples											
MW-1.1	6.0 ft	ND(1)[3]	ND(10)	ND(10)	ND(0.005)	ND(0.015)	ND(0.015)	ND(0.015)	ND(0.015)	0.340[4]	--[5]
MW-2.1	6.0 ft	ND(1)	ND(10)	ND(10)	ND(0.005)	ND(0.015)	ND(0.015)	ND(0.015)	ND(0.015)	ND(0.300)	--
MW-2.2	11.0 ft	ND(1)	--	--	ND(0.005)	ND(0.015)	ND(0.015)	ND(0.015)	ND(0.015)	ND(0.300)	--
MW-3.1	7.0 ft	ND(1)	--	--	0.008	ND(0.005)	ND(0.005)	ND(0.005)	--	--	--
MW-3.2	13.0 ft	3.0	--	--	0.72	0.029	0.048	0.61	--	--	--
MW-4.1	6.0 ft	ND(1)	--	--	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	--	--	--
MW-4.2	11.0 ft	ND(1)	--	--	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	--	--	--
MW-5.1	6.0 ft	ND(1)	ND(10)	ND(10)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	--	--	ND(5)
MW-5.2	11.0 ft	ND(1)	--	--	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	--	--	--
IB-1.1	6.0 ft	6.0	ND(10)	ND(10)	1.9	0.021	0.34	0.087	--	--	5
Ground Water Samples											
MW-1	---	ND(0.05)	--	--	ND(.001)	ND(.003)	ND(.003)	ND(.003)	ND(.003)	ND(.010)	--
MW-2	---	ND(0.05)	ND(0.05)	ND(0.5)	ND(.001)	ND(.003)	ND(.003)	ND(.003)	0.600[6]	ND(.010)	--
MW-3	---	5.0	--	--	0.015	0.0079	0.08	0.23	--	--	--
MW-4	---	ND(0.05)	--	--	0.0009	ND(.0005)	ND(.0005)	ND(.0005)	--	--	--
MW-5	---	ND(0.05)	ND(0.05)	ND(0.5)	0.0011	ND(.0005)	ND(.0005)	ND(.0005)	--	--	--

Notes:

1 - Volatile organic compounds. Includes analysis for approximately 40 individual compounds. The detection limits vary for some compounds; however, the detection limit listed below is the most prevalent for this method.
2 - Semi-volatile organic compounds. Includes analysis for approximately 70 individual compounds. The detection limits are the same for all compounds.
3 - Not detected above the value expressed in the parentheses.
4 - 0.340 ppm as di-n-butylphthlate (detection level = 0.300 ppm); no other semi-volatile organic compounds were detected in the sample.
5 - Not analyzed.
6 - 0.600 ppm as methyl-t-butylether; no other volatile organic compounds were detected in the sample.
MTBE

centurywest
ENGINEERING CORPORATION

AS DOCUMENTED IN AUGUST 17, 1994 REPORT

WELL BORING LOG MW-5

Century West Engineering

Site Location: 1900 Lewelling Blvd.	Boring ID: MW-5
Boring Location: Downgradient Well	Elevation:
Purpose: Subsurface Investigation	Logged By: Bob Bogar
Date: 06/27/94	Blank Casing: From: 0.0 To: 2.95
Consulting Firm: Century West Engineering	Perforations: From: 2.95 To: 17.33
Project Number: 20507-001-02	Filter Sand: From: 17.7 To: 2.5
Drilling Contractor: Exploration Geoservices	Bentonite: From: 2.5 To: 2.0
Drilling Method: Hollow Stem Auger	Grout: From: 2.0 To: 0.5

Depth	Sample Interval	Sample ID	Blow Counts	Profile	Soil Description	Remarks
01 02 03 04 05					0 - 0.5 ft Asphalt 0.5 - 3.5 ft Light brown silty fine SAND; moist,soft; no hydrocarbon odor or discoloration. 3.5 - 5.0 ft Dark grey to dark green, fine SAND to SILT; moist to wet; moderate hydrocarbon odors	
06 07 08 09 10	T ⊥	MW-5.1	8 6 6		5.0 - 18.0 ft Dark grey to dark green, SILT; saturated; moderate hydrocarbon odor.	
11 12 13 14 15	T ⊥	MW-5.2	5 5 6			
16 17 18					Ground Water Depth - Not measured Final Auger Depth - 18 feet	

Table 5
SUMMARY OF GROUND WATER ANALYTICAL RESULTS
Windsor Square Auto Repair UST Site

Sample ID	Sample Date	Ground Water Elevation[1]	Concentration (ppm)						
			TPH-G	B	T	E	X	HVOCs[2]	SVOCs[3]
MW-1	07/05/94	7.25	ND(0.05)[4]	ND(.001)	ND(.003)	ND(.003)	ND(.003)	–[6]	–
(14.20)[5]	12/15/94	8.64	ND(0.05)	ND(.0005)	ND(.0005)	ND(.0005)	ND(.0005)	–	–
	03/15/95	10.25	ND(0.05)	ND(.0005)	ND(.0005)	ND(.0005)	ND(.0005)	–	–
	08/03/95	8.19	ND(0.05)	ND(.0005)	ND(.0005)	ND(.0005)	ND(.0005)	–	–
MW-2	07/05/94	7.26	ND(0.05)	ND(.001)	ND(.003)	ND(.003)	ND(.003)	0.600[7]	ND(.010)
(13.70)	12/15/94	9.02	ND(0.05)	ND(.0005)	ND(.0005)	ND(.0005)	ND(.0005)	0.0015[8]	ND(.010)
	03/15/95	10.60	0.055	0.0016	0.0010	0.0010	0.0037	ND(.0005)	–[9]
	08/03/95	7.98	ND(0.05)	ND(.0005)	ND(.0005)	ND(.0005)	ND(.0005)	0.0347[10]	ND(.010)
MW-3	07/05/94	7.30	5.0	0.015	0.0079	0.080	0.230	–	–
(12.41)	12/15/94	7.46	1.40	0.013	0.0070	0.0011	0.0061	–	–
	03/15/95	9.16	0.078	0.0009	0.0012	0.0009	0.0022	–	–
	08/03/95	7.98	0.160	ND(.0005)	0.0010	ND(.0005)	0.0006	–	–
MW-4	07/05/94	6.99	ND(0.05)	0.0009	ND(.0005)	ND(.0005)	ND(.0005)	–	–
(12.56)	12/15/94	7.33	ND(0.05)	ND(.0005)	ND(.0005)	ND(.0005)	ND(.0005)	–	–
	03/15/95	9.17	0.057	0.0026	0.0028	0.0025	0.0080	–	–
	08/03/95	7.56	ND(0.05)	ND(.0005)	ND(.0005)	ND(.0005)	ND(.0005)	–	–
MW-5	07/05/94	6.88	ND(0.05)	0.0011	ND(.0005)	ND(.0005)	ND(.0005)	–	–
(11.76)	12/15/94	7.52	0.061	0.001	ND(.0005)	ND(.0005)	ND(.0005)	–	–
	03/15/95	9.28	0.110	0.001	0.0008	0.0009	0.0016	–	–
	08/03/95	7.52	ND(0.05)	0.0006	ND(.0005)	ND(.0005)	ND(.0005)	–	–

1 - Ground water table elevation in feet above mean sea level.
2 - Halogenated volatile organic compounds. Includes analysis for approximately 60 individual compounds. The detection limits vary for some compounds; however, the detection limit listed below is the most prevalent for this method.
3 - Semi-volatile organic compounds. Includes analysis for approximately 70 individual compounds. The detection limits are the same for all compounds.
4 - Not detected above the value expressed in the parentheses.
5 - Surveyed top of casing elevation in feet above mean sea level.
6 - Not analyzed.
7 - 0.600 ppm as methyl-t-butylether; no other halogenated volatile organic compounds were detected in the sample.
8 - 0.0015 ppm as c-1,2-dichloroethane; no other halogenated volatile organic compounds were detected in the sample.
9 - SVOC were not reported by the analytical laboratory because an emulsion formed during laboratory sample extraction which did not allow completion of the test.
10 - 0.0097 ppm as 1,1-dichloroethane and 0.025 ppm as c-1,2-dichloroethene; no other halogenated volatile organic compounds were detected in the sample.

WELL BORING LOG MW-1

Century West Engineering

Site Location: 1900 Lewelling Blvd.	Boring ID: MW-1
Boring Location: Upgradient well	Elevation:
Purpose: Subsurface Investigation	Logged By: Bob Bogar
Date: 06/27/94	Blank Casing: From: 0.0 To: 4.64
Consulting Firm: Century West Engineering	Perforations: From: 5.01 To: 19.63
Project Number: 20507-001-02	Filter Sand: From: 19.6 To: 4.0
Drilling Contractor: Exploration Geoservices	Bentonite: From: 4.0 To: 3.0
Drilling Method: Hollow Stem Auger	Grout: From: 3.0 To: 0.5

Depth	Sample Interval	Sample ID	Blow Counts	Profile	Soil Description		Remarks
01 02 03 04 05					0 - 0.5 ft	Asphalt	
					0.5 - 4.0 ft	Medium brown, silty, gravelly SAND; some clayey, clasts to 2 cm in gravels, soft; no hydrocarbon odor or discoloration.	
06 07 08 09 10	T ⊥	MW-1.1	2 2 3	▽	4.0 - 10.0 ft	Light to medium grey, silty fine SAND; moist to saturated; no hydrocarbon odor or discoloration.	
11 12 13 14 15	T ⊥	MW-1.2	3 3 5		10.0 - 20.0 ft	Medium grey SILT; wet to saturated; no hydrocarbon odor or discoloration.	
16 17 18 19 20					Approximate Ground Water Depth - 7.0 feet Final Auger Depth - 20 feet		

WELL BORING LOG MW-2

Century West Engineering

Site Location: 1900 Lewelling Blvd.	Boring ID: MW-2
Boring Location: Adjacent to waste oil tank	Elevation:
Purpose: Subsurface Investigation	Logged By: Bob Bogar
Date: 06/27/94	Blank Casing: From: 0.0 To: 3.92
Consulting Firm: Century West Engineering	Perforations: From: 3.94 To: 18.68
Project Number: 20507-001-02	Filter Sand: From: 19.0 To: 3.5
Drilling Contractor: Exploration Geoservices	Bentonite: From: 3.5 To: 2.5
Drilling Method: Hollow Stem Auger	Grout: From: 2.5 To: 0.5

Depth	Sample Interval	Sample ID	Blow Counts	Profile	Soil Description		Remarks
01 02 03 04 05					0 - 0.5 ft 0.5 - 4.0 ft	Asphalt Light brown, clayey SILT; moist, soft; no hydrocarbon odor or discoloration.	
06 07 08 09 10	T ⊥	MW-2.1	6 10 9	▽	4.0 - 10.0 ft	Light to dark brown, silty, fine SAND; moist to saturated; slight to moderate hydrocarbon odor.	
11 12 13 14 15	T ⊥	MW-2.2	3 3 6		10.0 - 20.0 ft	Light to dark grey, clayey, silty, fine SAND; saturated, soft, color change to dark grey at approx. 15 feet; no hydrocarbon odor.	
16 17 18 19					Approximate Ground Water Depth - 7.0 feet Final Auger Depth - 19 feet		

WELL BORING LOG MW-3

Century West Engineering

Site Location: 1900 Lewelling Blvd.	Boring ID: MW-3	
Boring Location: Center of Excavation	Elevation:	
Purpose: Subsurface Investigation	Logged By: Bob Bogar	
Date: 06/27/94	Blank Casing:	From: 0.0 To: 2.99
Consulting Firm: Century West Engineering	Perforations:	From: 2.98 To: 17.29
Project Number: 20507-001-02	Filter Sand:	From: 17.6 To: 2.5
Drilling Contractor: Exploration Geoservices	Bentonite:	From: 2.5 To: 2.0
Drilling Method: Hollow Stem Auger	Grout:	From: 2.0 To: 0.5

Depth	Sample Interval	Sample ID	Blow Counts	Profile	Soil Description	Remarks
01 02 03 04 05					0 - 0.5 ft Asphalt 0.5 - 12.0 ft Light brown to medium grey (when wet), clean silty, SAND; clasts to 2 cms; no hydrocarbon odor or discoloration; non-native material (backfill).	
06 07 08 09 10	T ⊥	MW-3.1	2 3 9			
11 12 13 14 15	T ⊥	MW-3.2	5 6 7		12.0 - 18.0 ft Medium to dark grey, SILT; soft, saturated; slightly greenish discoloration, slight odor.	
16 17 18					Ground Water Depth - Not measured Final Auger Depth - 18 feet	

WELL BORING LOG MW-4

Century West Engineering

Site Location: 1900 Lewelling Blvd.	Boring ID: MW-4
Boring Location: Next to landscaped area	Elevation:
Purpose: Subsurface Investigation	Logged By: Bob Bogar
Date: 06/27/94	Blank Casing: From: 0.0 To: 3.03
Consulting Firm: Century West Engineering	Perforations: From: 3.03 To: 17.29
Project Number: 20507-001-02	Filter Sand: From: 17.7 To: 2.5
Drilling Contractor: Exploration Geoservices	Bentonite: From: 2.5 To: 2.0
Drilling Method: Hollow Stem Auger	Grout: From: 2.0 To: 0.5

Depth	Sample Interval	Sample ID	Blow Counts	Profile	Soil Description	Remarks
01					0 - 0.5 ft Asphalt	
02					0.5 - 3.5 ft Light brown, sandy SILT; cobbles to 2cms; no hydrocarbon odor or discoloration.	
03						
04					3.5 - 7.0 ft Dark grey to dark green silt to fine SAND; slight hydrocarbon odors.	
05						
06	T ⊥	MW-4.1	3 6 7			
07						
08					7.0 - 18.0 ft Dark grey, SILT to fine SAND; wet to saturated; no hydrocarbon odor.	
09						
10						
11	T ⊥	MW-4.2	6 6 8			
12						
13						
14						
15						
16					Ground Water Depth - Not measured Final Auger Depth - 18 feet	
17						
18						