REPORT OF GROUND WATER INVESTIGATION

1275 66th Street
Emeryville, California

STID537

Prepared for:

Liquid Sugars, Inc.
P. O. Box 96
Oakland, CA 94604-0096

Prepared by:
Century West Engineering Corporation
7950 Dublin Blvd., Suite 203
Dublin, CA. 94568

June 3, 1993
Project No. 20516-001-04

centurywest
ENGINEERING CORPORATION

June 3, 1993

UST Local Oversight Program
Alameda County Health Agency
Department of Environmental Health
80 Swan Way, Suite 200
Oakland, CA 94621

Attention: Ms. Susan Hugo

Subject: Report of Ground Water Investigation
Liquid Sugars UST Site
1275 66th Street
Emeryville, California
CWEC 20516-001-04

Ladies and Gentlemen:

The enclosed report documents the installation and sampling of two ground water monitoring wells at the subject site in Emeryville California. Sampling was conducted in accordance with the amended workplan submitted to Alameda County UST Local Oversight Program on April 2, 1993. The purpose of these wells was to investigate the extent of fuel hydrocarbons in ground water in a downgradient direction from the three former gasoline and diesel underground storage tanks (USTs) located at the subject site.

Soil analytical results from the two wells indicate that migration of fuel hydrocarbons in subsurface soils has been limited both vertically and laterally. Vertically, fuel hydrocarbons are only present in a relatively thin layer at the ground water table between seven and ten feet in depth. Laterally, soils in the closest well, MW-2, showed elevated levels of gasoline and diesel constituents. However, soils in MW-1, which is located near the downgradient property line, showed levels of fuel hydrocarbons which are below the regulatory action level of 100 ppm.

Although ground water samples from both wells contained fuel hydrocarbon constituents, these levels were substantially lower in MW-1, which is located near the downgradient property line. Furthermore, the levels of gasoline and diesel constituents in the MW-1 ground water sample are relatively low (i.e. below 1 ppm) and do not warrant additional remediation.

7950 Dublin Blvd., Suite 203 Dublin, California 94568 Phone: (510) 551-7774 FAX: (510) 551-7776

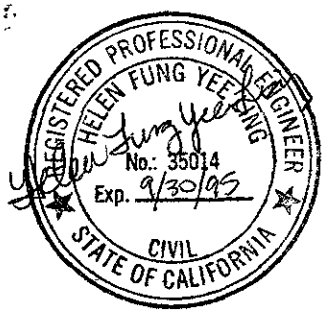
We appreciate the opportunity to present these results for your review. Please contact us if you have questions or require additional information.

Very truly yours,

James E. Gribi
Geologist

Ted Zaferatos
Vice President

Helen Ling
California Registered
Civil Engineer



JEG/HL:cc
Enclosure

TABLE OF CONTENTS

1.0 INTRODUCTION

Century West Engineering was retained by Liquid Sugars, Inc. to prepare and implement an amended Workplan related to underground storage tank (UST) closure at its facility located at 1275 66th Street in Emeryville, California (see Figure 1 for site location). This report documents the implementation of the amended Workplan, which included the installation and sampling of two ground water monitoring wells.

1.1 Site Background

The Liquid Sugars facility formerly contained two 1,000-gallon gasoline USTs and one 10,000-gallon diesel UST, located on the southwest side of the site (see Figure 2). (Historical information indicates that this portion of the site was formerly occupied by a Mohawk Oil Company bulk fuel facility.) The following is a brief chronology of key events related to removal of the USTs.

November 2, 1990	Two 1,000-gallon gasoline USTs and one 10,000-gallon diesel UST were removed by VCI of California. Several holes were visible at the seam at either end of the diesel tank; no apparent holes in the gasoline tanks. Soil samples taken beneath the USTs contained TPH-D levels ranging from 17 ppm to 10,300 ppm, and TPH-G levels ranging from 710 ppm to 3,400 ppm. Benzene levels in the soil samples ranged from 0.008 ppm to 33 ppm. Consultant: Environmental Geotechnical Consultants, Inc.
January 1991	LSI submitted *Workplan for a Preliminary Site Assessment, 1275 66th Street, Emeryville, California* to Alameda County Health Agency. This Workplan proposed to: (1) Excavate fuel laden soil from the bottom and sides of the excavation to the extent possible; (2) Collect verification samples for TPH-G, TPH-D, and BTXE analysis; (3) Treat fuel laden soil onsite by enhanced bioremediation followed by Class III landfill disposal; and (4) Install and sample one downgradient ground water monitoring well. Consultant: Baseline Environmental Consulting.
March 12, 1991	LSI received approval of Workplan from Alameda County Health Care Services with the provision that LSI must install three ground water monitoring wells rather than one as originally proposed.
July 12, 1991	LSI submitted *Amended Workplan For a Preliminary Site Assessment, Liquid Sugars, Inc., 1275 66th Street, Emeryville, California* to Alameda County Health Agency. The amended Workplan contained the following elements: (1) Backfill the excavation pit; (2) Remediate and/or dispose of stockpiled soil; (3) Drill and sample five soil borings; (4) Remediate fuel laden soil above ground water table; and (5) Install and sample three ground water monitoring wells. Consultant: Century West Engineering.
July 29, 1991	Received verbal approval from Alameda County Health Agency to proceed with amended Workplan.

July 30, 1991	Visqueen was placed in UST excavation pit, and pit was backfilled and compacted using clean material. Prior to backfilling, two soil samples were collected from the west sidewall at a depth of approximately five feet below grade. Samples contained 10 ppm and 19 ppm of TPH-motor oil. Other fuel constituents were nondetectable. Consultant: Century West Engineering.
August 5, 1991	Collected five discrete soil samples from the soil stockpile for compositing into one sample. Composite sample was analyzed for TPH-gas, TPH-diesel, BTXE, RCI, and 17 CAM Metals. Sample contained 590 ppm of TPH-diesel and 560 ppm of TPH-motor oil. Consultant: Century West Engineering.
September 14, 1991	Stockpiled soil was hauled to Vasco Road Sanitary Landfill in Livermore, California for disposal.
November 7, 1991	Eight soil borings were drilled and sampled around the backfilled UST pit to assess lateral and vertical extent of fuel constituents in soil. Consultant: Century West Engineering.

1.2 Scope of Work

Century West Engineering was retained by Liquid Sugars, Inc. to conduct the following tasks:

Task 1: Drill and Install Two Ground Water Monitoring Wells.

Task 2: Develop and Sample Two Monitoring Wells

Task 3: Provide Laboratory Analysis of Soil and Ground Water Samples

Task 4: Prepare Report of Findings

With the submittal of this report, we have completed the tasks listed above.

1.3 Limitations

This report has been prepared for the exclusive use of Liquid Sugars, Inc. with specific application to the site located at 1275 66th Street in Emeryville, California. The use of this report, its contents, or any part of it by a party, or its agents, other than for whom this report was prepared, is herewith disallowed.

In part, these findings, conclusions, and recommendations are based on the best available information known or made available by the site owner, regulators, other consultants, or other sources. Over time, the surficial evidence of some activities are obscured or obliterated entirely. It is possible that certain adverse conditions could exist at the site which were not detected in this evaluation.

The services provided under this contract, as described in this report, include professional opinions and judgements based on data collected. These services have been

performed according to generally accepted engineering practices. The opinions and conclusions contained in this report are typically based on information obtained from:

1. Observations and measurements by our field staff.
2. Contacts and discussions with regulatory agencies and others.
3. Opinions and judgments of Century West Engineering based on information available.

2.0 REGULATORY APPROVAL

Century West Engineering obtained verbal approval from Ms. Susan Hugo to implement the amended workplan. Ms. Hugo indicated that additional work may be required based on the results of this investigation.

A well permit was obtained from Alameda County Flood Control and Water Conservation District (Zone 7). A copy of this permit is contained in Appendix A.

A Site Safety Plan was issued to the drilling contractor, and a tailgate safety meeting was conducted prior to field activities.

3.0 DESCRIPTION OF FIELD ACTIVITIES

3.1 Location of Monitoring Wells

The two monitoring wells (MW-1 and MW-2) were sited based on: (1) The west-southwest ground water gradient direction, as documented at the Oliver Tire UST site (see Appendix B); and (2) The results of the November 1991 soil boring investigation, which appear to confirm a west-southwest ground water flow gradient based on soil samples taken at approximate ground water depth. Based on these criteria, one well was located approximately eight feet west-southwest from the backfilled UST pit, near the soil boring TB-2. The second boring was located approximately 25 feet west-southwest from the backfilled UST pit, near the LSI property line.

3.2 Drilling of Well Borings

The two well borings were drilled by Gregg Drilling using hollow stem auger equipment. MW-1 was drilled to a depth of 25 feet, and MW-2 was drilled to a depth of 21 feet below grade.

Subsurface soils were logged and field evaluated for the presence of hydrocarbons using sight and smell. Boring logs for both well borings are contained in Appendix C. Undisturbed soils were sampled in advance of the auger at approximate five-foot intervals down to the ground water table and at areas of obvious contamination using a split spoon sampler with brass liners. Soils were sampled as follows: (1) A two-inch inside diameter California-style split spoon sampler was driven into undisturbed soil

ahead of the drill bit; (2) The sampler was raised quickly to the surface and the brass liners exposed; (3) One of the brass liners (the one containing the most undisturbed soil) was quickly sealed with aluminum foil and plastic end caps, labeled, and wrapped tightly with tape; and (4) The sealed soil sample was immediately placed in cold storage for transport to the laboratory under formal chain-of-custody. All sampling equipment was thoroughly cleaned and decontaminated between each sample collection by triple-rinsing first with water, then with dilute tri-sodium phosphate solution, and finally with distilled water.

3.3 Installation of Ground Water Monitoring Wells

The two wells were constructed in accordance with the following specifications. Well construction diagrams for both wells are contained in Appendix D.

- The closer downgradient well (MW-2) was constructed using four-inch diameter casing, and the farther downgradient well (MW-1) was constructed using two-inch diameter casing. Well casing consisted of Schedule 40 threaded PVC. 0.020-inch slotted well screen was placed from approximately twenty feet to five feet in depth, and blank casing was placed from a depth of approximately five feet to ground level.

- Number 3 Lonestar silica sand was placed around the casing to a depth of approximately four feet below grade.

- A hydrated bentonite seal was placed around the casing from approximately four feet to three feet in depth.

- The remaining three feet of annulus was grouted using a cement/sand slurry (bentonite less than 5 percent).

- The top of the well was sealed in a traffic rated locking box set in concrete slightly raised above grade.

3.3 Development and Sampling of Two Monitoring Wells.

Century West Engineering developed and sampled each well as follows:

- After the cement was cured in each of the wells for a minimum of 48 hours, the ground water depth in each of the wells was measured to the nearest 0.01 foot using an electronic probe. A single bail of fluid was taken using a disposable PVC bailer to check for hydrocarbon sheen and odor.

- Each of the wells was developed by bailing each well of at least three well volumes, periodically monitoring the purged ground water for free-floating

product thickness, pH, specific conductance, temperature and visible clarity in accordance with approved protocols.

- After these parameters had stabilized, the wells were sampled using a disposable PVC bailer as follows: (1) Three 40-ml glass VOC vials and two 1-liter glass amber bottles were completely filled directly from the bailer with a minimum of agitation; (2) After making sure that no air bubbles were present, each container was tightly sealed with a teflon-lined septum; and (3) Each container was labeled and placed in cold storage for transport to the analytical laboratory.

- All sampling equipment was thoroughly cleaned and decontaminated between each sample collection by triple-rinsing as described above.

4.0 LABORATORY ANALYSIS OF SOIL AND WATER SAMPLES

Four soil samples and two ground water samples were analyzed at National Environmental Testing Inc., a State-certified analytical laboratory. Each sample was be analyzed for TPH-G, TPH-D, and BTXE.

These results are summarized in Table 1. Laboratory data reports for these analyses are included in Appendix E.

Table 1
SUMMARY OF ANALYTICAL RESULTS
Liquid Sugars UST Site

Sample ID	*Sample Matrix*	*Sample Depth*	*Concentration (parts per million)*					
			TPH-G	*TPH-D*	*B*	*T*	*X*	*E*
Monitoring Well No. 1 (MW-1)								
MW-1.1	Soil	5.5 ft	ND(1)[1]	ND(10)	ND(.0025)	ND(.0025)	ND(.0025)	ND(.0025)
MW-1.2	Soil	10.5 ft	23	27[2]	ND(.0025)	ND(.0025)	0.22	0.11
MW-1.1W	Water	6.72 ft[3]	0.64[4]	0.99[2]	0.0063	ND(.0005)	0.0025	0.0056
Monitoring Well No. 2 (MW-2)								
MW-2.1	Soil	5.5 ft	ND(1)	ND(10)	0.047	0.0038	ND(.0025)	ND(.0025)
MW-2.2	Soil	10.5 ft	670	940[2]	0.74	0.94	3.40	1.60
MW-2.1W	Water	6.73 ft[3]	1.1[4]	2.1[2]	0.032	0.0065	0.013	0.0082

[1] - Not detected above the value expressed in the parentheses.
[2] - NET Pacific lab report states "The positive result for Petroleum Hydrocarbons as Diesel appears to be

due to a combination of lighter hydrocarbons and Diesel".

[3] - Water level measured in well prior to sampling on April 23, 1993.

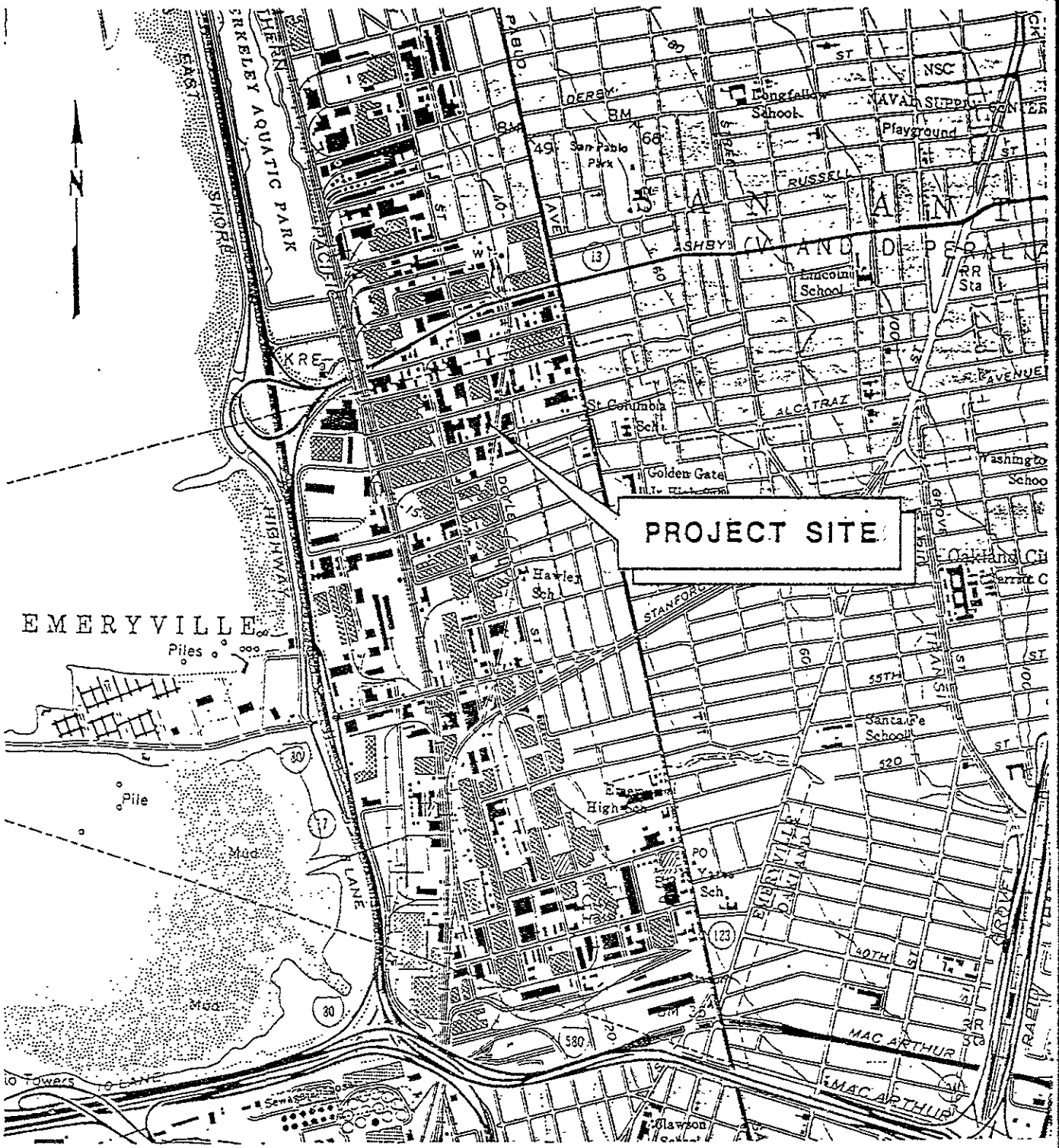
[4] - NET Pacific lab report states "The positive result for Petroleum Hydrocarbons as Gasoline does not appear to have a typical Gasoline pattern".

5.0 CONCLUSIONS

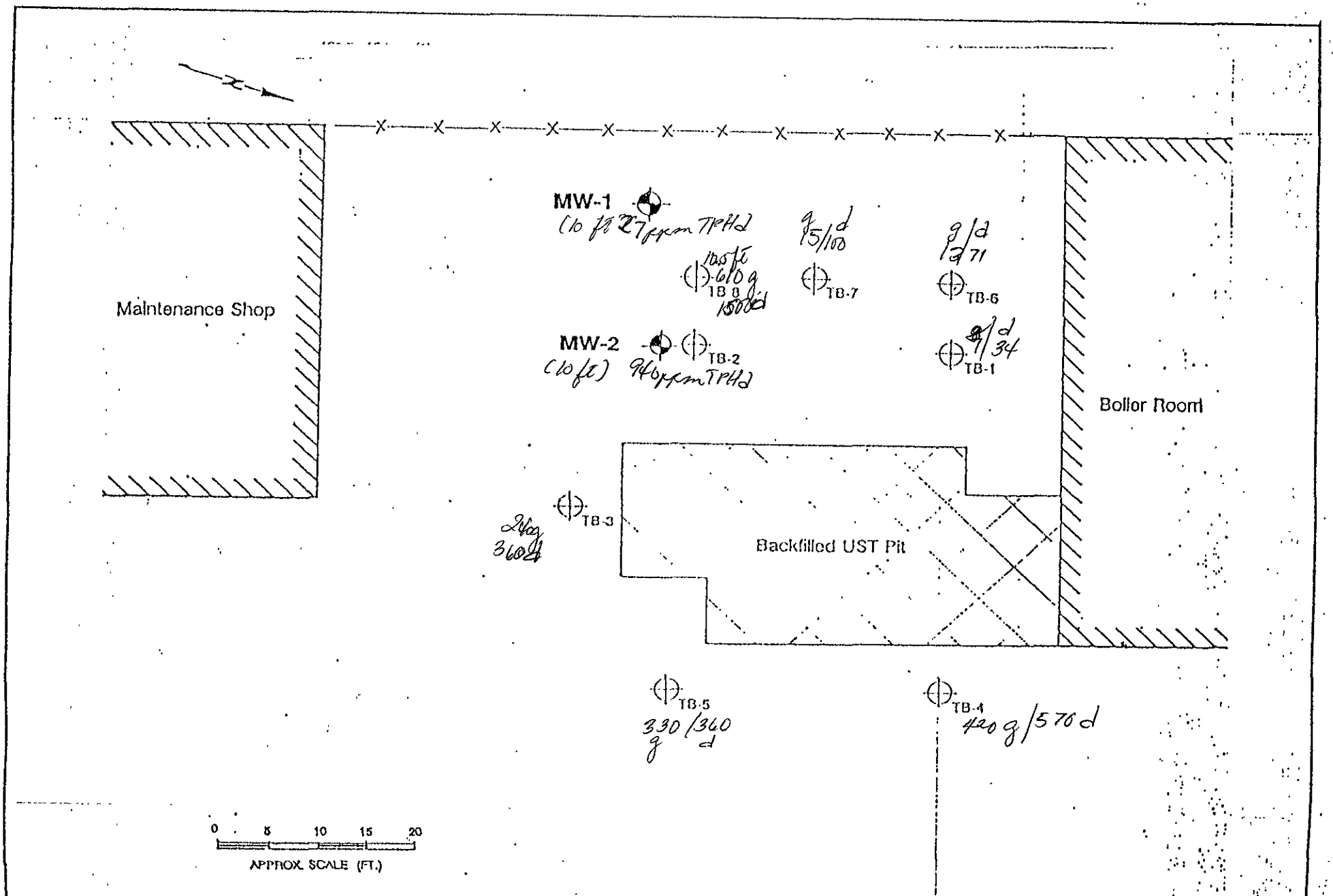
Soil analytical results indicate that migration of fuel hydrocarbons in subsurface soils has been limited both vertically and laterally. Vertically, fuel hydrocarbons are only present in a relatively thin layer at the ground water table between seven and ten feet in depth. Laterally, soils in the closest well, MW-2, showed elevated levels of gasoline and diesel constituents. However, soils in MW-1, which is located near the downgradient property line, showed levels of fuel hydrocarbons which are below the regulatory action level of 100 ppm.

Although ground water samples from both wells contained fuel hydrocarbon constituents, these levels were substantially lower in MW-1, which is located near the downgradient property line. Furthermore, the levels of gasoline and diesel constituents in the MW-1 ground water sample are relatively low (i.e. below 1 ppm) and do not warrant additional remediation.

Based on these results, Liquid Sugars proposes to monitor ground water quality in the two wells quarterly for at least one year to further assess ground water impacts.



DESIGNED BY:	CHECKED BY:	Figure 1 SITE VICINITY MAP CWEC 20516-001-03	DATE:	FIGURE:
DRAWN BY:	SCALE:		CENTURY WEST ENGINEERING	
DWG. NO.:				



DESIGNED BY :	DATE :	CENTURY WEST ENGINEERING	DRAWING NO.
DRAWN BY :	SCALE :		
CHECKED BY :	SEC. :		SHEET NO.
DRAWING NO. :			

FIGURE 2
PROPOSED WELL LOCATIONS

CWEC 20516-001-04

APPENDIX A

ALAMEDA COUNTY WELL PERMIT

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94588 • (510) 484-2600

12 April 1993

Century West Engineering
7950 Dublin Boulevard, Suite 203
Dublin, CA 94568

Gentlemen:

Enclosed is drilling permit 93179 for a monitoring well construction project at 1275 - 66th Street in Emeryville for Liquid Sugars, Inc.

Please note that permit condition A-2 requires that a well construction report be submitted after completion of the work. The report should include drilling and completion logs, location sketch, and permit number.

If you have any questions, please contact Wyman Hong or me at 484-2600.

Very truly yours,

Craig A. Mayfield

Craig A. Mayfield
Water Resources Engineer III

WH:mm
Enc.

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 1275 66th Street
Emeryville, CA

CLIENT
Name Liquid Sugars, INC
Address PO Box 96 Phone (510) 420-7100
City DAKLAND CA: Zip 94604

APPLICANT
Name Jim Gribi
Century West Engineering
Address 7950 Dublin Blvd #203 Phone (510) 551-7774
City Dublin CA Zip 94568

TYPE OF PROJECT
Well Construction
Cathodic Protection
Water Supply
Monitoring
Geotechnical Investigation
General
Contamination X
Well Destruction

PROPOSED WATER SUPPLY WELL USE
Domestic Industrial Other
Municipal Irrigation

DRILLING METHOD:
Mud Rotary Air Rotary Auger X
Cable Other

DRILLER'S LICENSE NO. 485-165

WELL PROJECTS
Drill Hole Diameter 8 7/10 in. Maximum
Casing Diameter 2 7/4 in. Depth 20 ft.
Surface Seal Depth 5 ft. Number 2

GEOTECHNICAL PROJECTS
Number of Borings Maximum
Hole Diameter in. Depth ft.

ESTIMATED STARTING DATE 4-14-93
ESTIMATED COMPLETION DATE 4-14-93

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE James Gribi Date 4-9-93

FOR OFFICE USE

PERMIT NUMBER 93179
LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

A. GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

B. WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

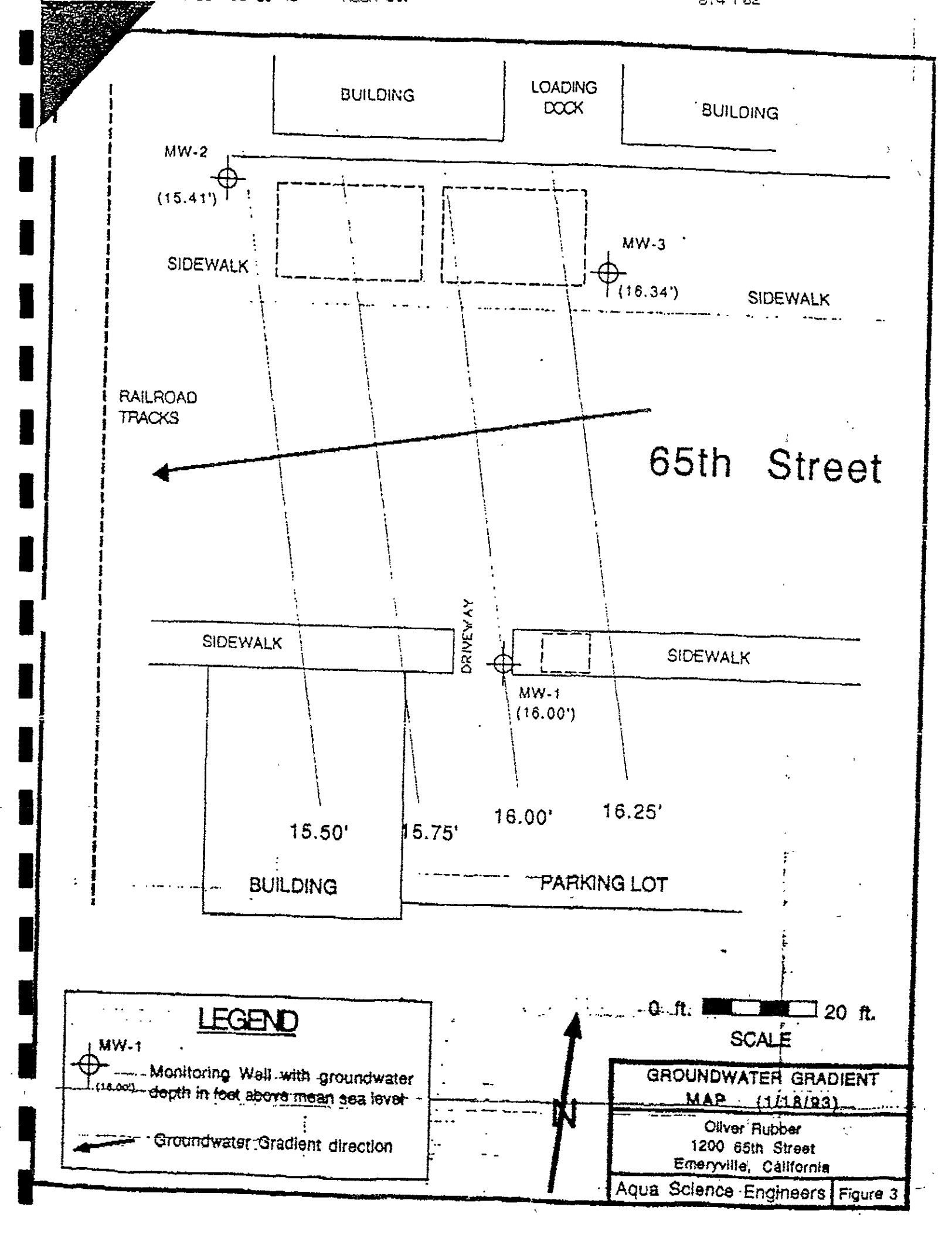
E. WELL DESTRUCTION. See attached

Approved Wyman Hong Date 12 Apr 93
Wyman Hong

31992

APPENDIX B

OLIVER TIRE GRADIENT MAP



GROUNDWATER GRADIENT MAP (1/18/93)

Oliver Rubber
1200 65th Street
Emeryville, California

Aqua Science Engineers | Figure 3

APPENDIX C

BORING LOGS

SOIL BORING LOG MW-1

Century West Engineering

Site Location: 1275 66th Street, Emeryville Ca.	Boring ID: MW-1	Total Depth: 25 ft
Boring Location: 25 ft west of the UST	Elevation: NA	Initial GW Depth: 18 ft
Purpose: Ground water monitoring	Logged By: Jim Gribi	Final GW Depth:
Date: April 15, 1993	Blank Casing: 2-inch Sch 40	From: 4.56 ft To: 0 (TDC)
Consulting Firm: Century West Engineering	Perforations: 0.020 inch	From: 24.56 ft To: 4.56 ft
Project Number: 20516-001-04	Filter Sand: Lonestar	From: 25 ft To: 4 ft
Drilling Contractor: Gregg Drilling and Testing	Bentonite: Hydrated pellets	From: 4 ft To: 3 ft
Drilling Method: Hollow stem auger	Grout: Cement slurry (bent. <5%)	From: 3 ft To: .5 ft

Depth	Sample ID	Blow Counts	Profile	Soil Description	Remarks
01 02 03 04 05				0.0 - 1.0 ft Concrete 1.0 - 9.0 ft Dark grey, firm, moist clay; gravel stringer at 4.5 ft., strong hydrocarbon odor at 5.0 ft.	USCS Classification CL
06 07 08 09 10	MW-1.1	6 11 20			
11 12 13 14 15	MW-1.2 MW-1.3	8 10 14 10 22 27		9.0 - 13.0 ft. Grey green to brown firm, moist to wet, silty clay; moderate to strong hydrocarbon odor	CH
16 17 18 19 20			▽	13.0 - 25.0 ft Reddish brown clayey silt; moist to wet with strong hydrocarbon odor. Hard from 21.0 to 25.0 ft.; ground water at 18 ft.	CH
21 22 23 24 25				Final Auger Depth - 25 feet Ground Water Depth - 18 feet	

SOIL BORING LOG MW-2

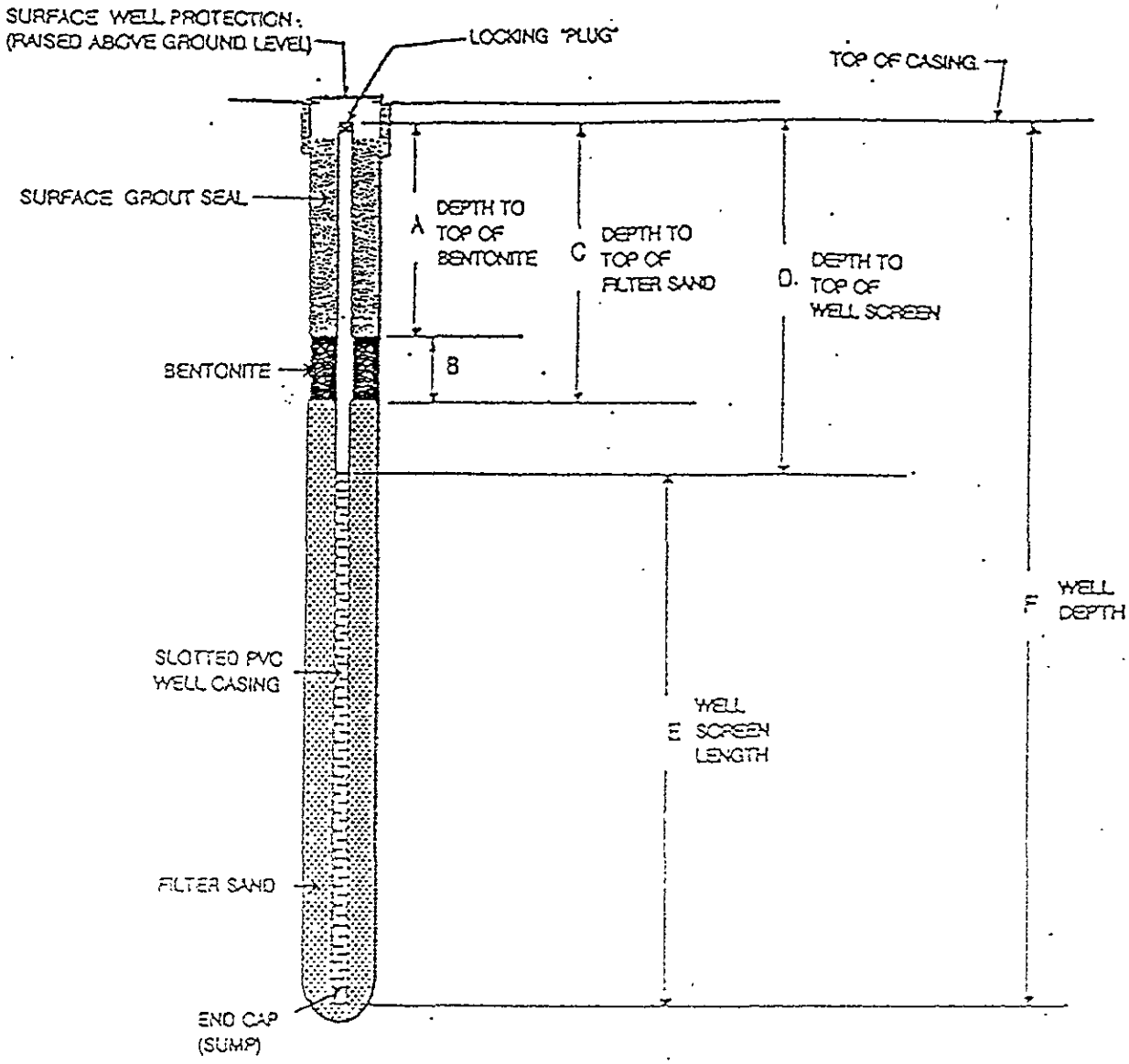
Century West Engineering

Site Location: 1275 66th Street, Emeryville Ca.	Boring ID: MW-2	Total Depth: 21 ft
Boring Location: 10 ft west of the UST	Elevation: NA	Initial GW Depth: 18 ft
Purpose: Ground water monitoring	Logged By: Jim Gribi	Final GW Depth:
Date: April 15, 1993	Blank Casing: 4-inch Sch 40	From: 5.1 ft To: 0 (TDC)
Consulting Firm: Century West Engineering	Perforations: 0.020 inch	From: 21 ft To: 5.1 ft
Project Number: 20516-001-04	Filter Sand: Lonestar	From: 21 ft To: 3.5 ft
Drilling Contractor: Gregg Drilling and Testing	Bentonite: Hydrated pellets	From: 3.5 ft To: 2.5 ft
Drilling Method: Hollow stem auger	Grout: Cement slurry (bent. <5%)	From: 2.5 ft To: .5 ft

Depth	Sample ID	Blow Counts	Profile	Soil Description	Remarks
01					USCS Classification
02				0.0 - 1.0 ft Concrete	
03				1.0 - 8.0 ft Dark grey, moist to wet firm clay; slight to moderate hydrocarbon odor	CH
04					
05					
06	MW-2.1	9 12 25	▽		
07					
08				8.0 - 12.0 ft. Grey green, moist to wet, gravelly clay containing 1/4 to 1 inch clasts; moderate to strong hydrocarbon odor	CL
09					
10					
11	MW-2.2	20 24 29			
12					
13				12.0 - 21.0 ft Brown, firm and wet clayey silt containing some gravels; slight to moderate hydrocarbon odor.	CL
14					
15					
16					
17					
18					
19					
20					
21				Final auger depth 21.0 ft Ground Water Depth - 6.73 feet	

APPENDIX D

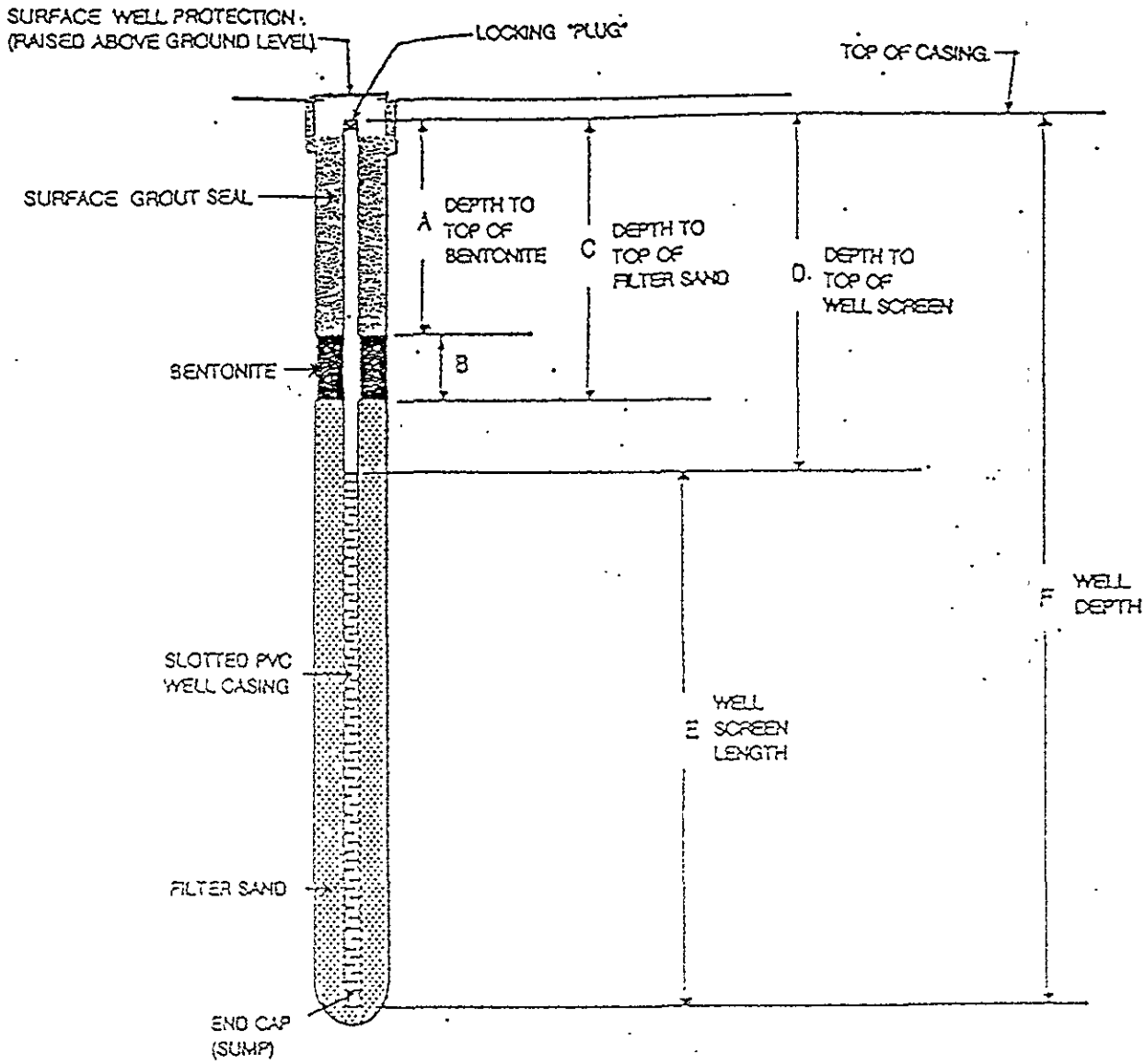
WELL CONSTRUCTION DIAGRAMS



MW-1 WELL SPECIFICATIONS

WELL CASING:	Two-inch Sch. 40 PVC	A	3 feet
WELL SLOT SIZE:	0.020 inch	B	1 feet
BENTONITE:	Hydrated pellets	C	4 feet
SURFACE SEAL:	Cement slurry (bent. < 5%)	D	4.56 feet
WELL PLUG:	Locking expandable cap	E	20.00 feet
SURFACE PROTECTION:	Traffic rated, water tight	F	24.56 feet

DESIGN BY		CHECKED BY		WELL CONSTRUCTION DIAGRAM	APPROVED
SURVEY BY		SCALE	NO SCALE		DATE
DRAWN BY	JEG	DWG. NO.			CENTURY WEST ENGINEERING CORPORATION



MW-2 WELL SPECIFICATIONS

WELL CASING:	Four-inch Sch. 40 PVC	A	2.5 feet
WELL SLOT SIZE:	0.020 inch	B	1 feet
BENTONITE:	Hydrated pellets	C	3.5 feet
SURFACE SEAL:	Cement slurry (bent. < 5%)	D	5.1 feet
WELL PLUG:	Locking expandable cap	E	15.00 feet
SURFACE PROTECTION:	Traffic rated, water tight	F	20.10 feet

DESIGN BY		CHECKED BY		WELL CONSTRUCTION DIAGRAM	APPROVED
SURVEY BY		SCALE	NO SCALE		DATE
DRAWN BY	JEG	DWG NO.			CENTURY WEST ENGINEERING CORPORATION

APPENDIX E

LABORATORY DATA REPORTS AND CHAIN OF CUSTODY RECORDS

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

Jim Gribi
Century West Engineering
7950 Dublin Blvd., Ste 210
Dublin, CA 94568

Date: 05/12/1993
NET Client Acct No: 75300
NET Pacific Job No: 93.01564
Received: 04/24/1993

Client Reference Information

LSI/Emeryville, Project No: 20516-001-04

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Jules Skamarack
Laboratory Manager

JS:rct
Enclosure(s)

Ref: LSI/Emeryville, Project No: 20516-001-04

Descriptor, Lab No. and Results

Parameter	MW-1.1W 04/23/1993 155405	MW-2.1W 04/23/1993 155406	Reporting Limit	Units	Method
TPH (Gas/BTXE,Liquid)					
METHOD 5030 (GC,FID)	--	--			
DATE ANALYZED	04-26-93	04-26-93			
DILUTION FACTOR*	1	1			
as Gasoline	0.64***	1.1***	0.05	mg/L	5030
METHOD 8020 (GC,Liquid)	--	--			
DATE ANALYZED	04-26-93	04-26-93			
DILUTION FACTOR*	1	1			
Benzene	6.3	32	0.5	ug/L	8020
Ethylbenzene	5.6	8.2	0.5	ug/L	8020
Toluene	ND	6.5	0.5	ug/L	8020
Xylenes (Total)	2.5	13	0.5	ug/L	8020
SURROGATE RESULTS	--	--			
Bromofluorobenzene	MI	MI		% Rec.	5030
METHOD 3510 (GC,FID)					
DILUTION FACTOR*	1	1			
DATE EXTRACTED	04-28-93	04-28-93			
DATE ANALYZED	04-28-93	04-28-93			
as Diesel	0.99**	2.1**	0.05	mg/L	3510

** The positive result for Petroleum Hydrocarbons as Diesel appears to be due to a combiantion of lighter hydrocarbons and Diesel.

*** The positive result for Petroleum Hydrocarbons as Gasoline does not appear to have a typical Gasoline pattern.

MI - Matrix interference.

Ref: LSI/Emeryville, Project No: 20516-001-04

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	0.05	mg/L	100	ND	104	104	<1
Benzene	0.5	ug/L	108	ND	104	99	4.6
Toluene	0.5	ug/L	100	ND	104	101	3.2
Diesel	0.05	mg/L	99	ND	70	69	1.0

COMMENT: Blank Results were ND on other analytes tested.

NET®

KEY TO ABBREVIATIONS and METHOD REFERENCES

<	:	Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
*	:	Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values).
ICVS	:	Initial Calibration Verification Standard (External Standard).
mean	:	Average; sum of measurements divided by number of measurements.
mg/Kg (ppm)	:	Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million).
mg/L	:	Concentration in units of milligrams of analyte per liter of sample.
mL/L/hr	:	Milliliters per liter per hour.
MPN/100 mL	:	Most probable number of bacteria per one hundred milliliters of sample.
N/A	:	Not applicable.
NA	:	Not analyzed.
ND	:	Not detected; the analyte concentration is less than applicable listed reporting limit.
NTU	:	Nephelometric turbidity units.
RPD	:	Relative percent difference, 100 [Value 1 - Value 2]/mean value.
SNA	:	Standard not available.
ug/Kg (ppb)	:	Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion).
ug/L	:	Concentration in units of micrograms of analyte per liter of sample.
umhos/cm	:	Micromhos per centimeter.

Method References

Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, rev. 1983.

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986.

SM: see "Standard Methods for the Examination of Water & Wastewater, 17th Edition, APHA, 1989.

NET® NATIONAL ENVIRONMENTAL TESTING, INC.

700 S. Flower St.
Burbank, CA 91502
213-849-6595 • Fax 818-567-6477

Chain of Custody / Request for Analysis

Client: Century West ENG
Address (line 1):
Address (line 2):
Contact: Jim Gribi

Project: # LS1/emeryville
P.O.#: 20516-001-04
Phone #: 510/551-7774
Fax #:

Additional Reports to:
Attn:
Fax #:

Send Invoice to:
Attn:
Phone #:

LAB USE ONLY
Job #: 3176
Report Format:
Storage Location:

Sample Identification	Matrix: Soil	Matrix: Water	Matrix: Other	Container #/Type	1) HNO_3 2) H_2SO_4 3) Na OH 4) Other (Specify)	Grab	Composite	Sampling Information: Date	Sampling Information: Time	Analyses Requested: TPH-G	BTXE	TTPH-D
MW-1.1W		X						4/23		X	X	X
MW-2.1W		X						"		X	X	X

Method of shipment:
NET Courier ☐
Fed. Ex. ☐
UPS ☐
Other ☐
Hand Deliver ☐
Airbill #:
Remarks:

Comments:

Special QA/QC:

Special Detection Limits:
CUSTODY SEALED 4/23 @ 1730
seals intact. A.C.

Subcontracting allowed: Yes☐ no☐ with approval☐
Turnaround time: Fax☐ Verbal☐ Final☐
Priority Rush 1 Business Day ☐ Date/Time
Rush 2 Business Days ☐ Date/Time
5 Business Days ☐ Date/Time
10 Business Days ☐ Date/Time

Condition of sample: Bottles Intact? yes / no COC seals present and intact? yes / no Temperatures upon receipt: Volatiles free of headspace? yes / no

Sampled by: (print name)	Date:	Time:	Received by:	Date:	Time:
Jim Gribi					
Relinquished by:	Date: 4/23/93	Time: 2:50	Received by: Andy Mackay	Date: 4-23-93	Time: 1450
Relinquished by: Andy Mackay	Date: 4-23-93	Time: 1730	Received by laboratory: Lope	Date: 4/24/93	Time: 10:30

Distribution: White-Laboratory; Canary-Invoicing; Pink-Client

NATIONAL
ENVIRONMENTAL
TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

Jim Gribi
Century West Engineering
7950 Dublin Blvd., Ste 210
Dublin, CA 94568

Date: 04/27/1993
NET Client Acct. No: 75300
NET Pacific Job No: 93.01464
Received: 04/17/1993

Client Reference Information

LSI-Emeryville, P.O. No: 20516-001-04

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Jules Skamarack
Laboratory Manager

FIR:

Enclosure(s)

Ref: LSI-Emeryville, P.O. No: 20516-001-04

SAMPLE DESCRIPTION: MW-1.1
Date Taken: 04/15/1993
Time Taken:
LAB Job No: (-155048)

Parameter	Results	Reporting Limit	Units	Method
TPH (Gas/BTXE,Solid)				
METHOD 5030 (GC,FID)	--			
DATE ANALYZED	04-19-93			
DILUTION FACTOR*	1			
as Gasoline	ND	1	mg/kg	5030
METHOD 8020 (GC,Solid)	--			
DATE ANALYZED	04-19-93			
DILUTION FACTOR*	1			
Benzene	ND	2.5	ug/kg	8020
Ethylbenzene	ND	2.5	ug/kg	8020
Toluene	ND	2.5	ug/kg	8020
Xylenes (Total)	ND	2.5	ug/kg	8020
SURROGATE RESULTS	--			
Bromofluorobenzene	84		% Rec.	5030
METHOD 3550 (GC,FID)				
DILUTION FACTOR*	1			
DATE EXTRACTED	04-19-93			
DATE ANALYZED	04-22-93			
as Diesel	ND	1	mg/kg	3550
as Motor Oil	ND	10	mg/kg	3550

Ref: LSI-Emeryville, P.O. No: 20516-001-04

SAMPLE DESCRIPTION: MW-1.2
Date Taken: 04/15/1993
Time Taken:
LAB Job No: (-155049)

Parameter	Results	Reporting Limit	Units	Method
TPH (Gas/BTXE,Solid)				
METHOD 5030 (GC,FID)	--			
DATE ANALYZED	04-19-93			
DILUTION FACTOR*	10			
as Gasoline	23	1	mg/kg	5030
METHOD 8020 (GC,Solid)	--			
DATE ANALYZED	04-19-93			
DILUTION FACTOR*	10			
Benzene	ND	2.5	ug/kg	8020
Ethylbenzene	110	2.5	ug/kg	8020
Toluene	ND	2.5	ug/kg	8020
Xylenes (Total)	220	2.5	ug/kg	8020
SURROGATE RESULTS	--			
Bromofluorobenzene	101		% Rec.	5030
METHOD 3550 (GC,FID)				
DILUTION FACTOR*	1			
DATE EXTRACTED	04-19-93			
DATE ANALYZED	04-22-93			
as Diesel	27**	1	mg/kg	3550
as Motor Oil	ND	10	mg/kg	3550

** The positive result for Petroleum Hydrocarbons as Diesel appears to be due to a combination of lighter hydrocarbons and Diesel.

Ref: LSI-Emeryville, P.O. No: 20516-001-04

SAMPLE DESCRIPTION: MW-2.1
Date Taken: 04/15/1993
Time Taken:
LAB Job No: (-155050)

Parameter	Results	Reporting Limit	Units	Method
TPH (Gas/BTXE,Solid)				
METHOD 5030 (GC,FID)	--			
DATE ANALYZED	04-20-93			
DILUTION FACTOR*	1			
as Gasoline	ND	1	mg/kg	5030
METHOD 8020 (GC,Solid)	--			
DATE ANALYZED	04-20-93			
DILUTION FACTOR*	1			
Benzene	47	2.5	ug/kg	8020
Ethylbenzene	ND	2.5	ug/kg	8020
Toluene	3.8	2.5	ug/kg	8020
Xylenes (Total)	ND	2.5	ug/kg	8020
SURROGATE RESULTS	--			
Bromofluorobenzene	89		% Rec.	5030
METHOD 3550 (GC,FID)				
DILUTION FACTOR*	1			
DATE EXTRACTED	04-19-93			
DATE ANALYZED	04-22-93			
as Diesel	ND	1	mg/kg	3550
as Motor Oil	ND	10	mg/kg	3550

Ref: LSI-Emeryville, P.O. No: 20516-001-04

SAMPLE DESCRIPTION: MW-2.2
Date Taken: 04/15/1993
Time Taken:
LAB Job No: (-155051)

Parameter	Results	Reporting Limit	Units	Method
TPH (Gas/BTXE,Solid)				
METHOD 5030 (GC,FID)	--			
DATE ANALYZED	04-19-93			
DILUTION FACTOR*	100			
as Gasoline	670	1	mg/kg	5030
METHOD 8020 (GC,Solid)	--			
DATE ANALYZED	04-19-93			
DILUTION FACTOR*	100			
Benzene	740	2.5	ug/kg	8020
Ethylbenzene	1,600	2.5	ug/kg	8020
Toluene	940	2.5	ug/kg	8020
Xylenes (Total)	3,400	2.5	ug/kg	8020
SURROGATE RESULTS	--			
Bromofluorobenzene	104		% Rec.	5030
METHOD 3550 (GC,FID)				
DILUTION FACTOR*	50			
DATE EXTRACTED	04-19-93			
DATE ANALYZED	04-22-93			
as Diesel	940**	1	mg/kg	3550
as Motor Oil	ND	10	mg/kg	3550

** The positive result for Petroleum Hydrocarbons as Diesel appears to be due to a combination of lighter hydrocarbons and Diesel.

Ref: LSI-Emeryville, P.O. No: 20516-001-04

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	1.0	mg/kg	107	ND	107	90	17
Benzene	2.5	ug/kg	101	ND	101	87	15
Toluene	2.5	ug/kg	97	ND	97	88	10
Gasoline	1.0	mg/kg	110	ND	104	104	<1
Benzene	2.5	ug/kg	99	ND	95	94	<1
Toluene	2.5	ug/kg	98	ND	93	94	<1
Diesel	1	mg/kg	98	ND	N/A	N/A	14
Motor Oil	10	mg/kg	86	ND	N/A	N/A	N/A

COMMENT: Blank Results were ND on other analytes tested.

KEY TO ABBREVIATIONS and METHOD REFERENCES

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700 S. Flower St.
Burbank, CA 91502
213-849-6595 • Fax 818-567-6477

Chain of Custody / Request for Analysis

3066

Client: Century West Engineering	Project: LSI-Emeryville	Additional Reports to:	Send Invoice to:
Address (line 1): 7950 Dublin Blvd, #203	P.O. #: 20516-001-04		
Address (line 2): Dublin CA 94568	Phone #: (510) 551-7774	Attn:	Attn:
Contact: Jim Gribi	Fax #: (510) 551-7776	Fax #:	Phone #:

LAB USE ONLY

Job #:
Report Format:
Storage Location:

Sample Identification	Matrix: Soil	Water	Other	Container: Depth / #/Type	1) HNO_3 2) H_2SO_4 3) Na OH 4) Other (Specify)	Grab	Composite	Sampling Information: Date	Time	Analyses Requested: TPH-G	BTXE	TPH-D/MC
MW-1.1	X				ICE			4/15/93		X	X	X
MW-1.2	X									X	X	X
MW-2.1	X									X	X	X
MW-2.2	X									X	X	X
MW-1.3												

HOLD per Jim Gribi 4/19/93 to S. Long

Method of shipment:
NET Courier ☐
Fed. Ex. ☐
UPS ☐
Other ☐
Hand Deliver ☐

Airbill #:

Remarks:
Received extra Soil, I.D. MW-1.3
Same job #.
A.L.

Comments:

Special QA/QC:

Special Detection Limits:

CUSTODY SEALED 4/16 @1700 MD
seals intact. JY

Subcontracting allowed: Yes☐ no☐ with approval☐

Turnaround time
Fax☐ Verbal☐ Final☐

Priority Rush
1 Business Day ☐
Date/Time

Rush
2 Business Days ☐
Date/Time
5 Business Days ☐
Date/Time
10 Business Days ☐
Date/Time

Condition of sample: Bottles Intact? yes / no COC seals present and intact? yes / no Temperatures upon receipt: Volatiles free of headspace? yes / no

Sampled by: (print name)	Date:	Time:	Received by:	Date:	Time:
Relinquished by: Megan L. Crackel	Date: 4/16/93	Time: 11:12 AM	Received by: Andy Mackey	Date: 4-16-93	Time: 1112
Relinquished by: Andy Mackey	Date: 4-16-93	Time: 1700	Received by laboratory: Jeanine Young	Date: 4-17-93	Time: 1235

Distribution: White-Laboratory; Canary-Invoicing; Pink-Client