ENGEO
INCORPORATED

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
MATERIALS TESTING

RO-188

DEC 11 2001

Project No.
3174.3.050.03

November 7, 2001

Mr. George Muniz
Livermore Valley Joint Unified School District
685 East Jack London Boulevard
Livermore, CA 94550

Subject: Maintenance Yard
2900 Ladd Avenue
Livermore, California

REPORT ON GROUNDWATER SAMPLING

Dear Mr. Muniz:

ENGEO Incorporated is pleased to provide the results from the most recent sampling and laboratory testing of groundwater Monitoring Well MW-5 located at 2900 Ladd Avenue in Livermore, California. Monitoring Wells MW-2, 3 and 4 were not sampled as part of this study. MW-1 was destroyed in July 1992. This report presents the results of the October 2001 sampling event. The scope of services included the following:

- Purging of the monitoring well with the recovery of a groundwater sample from the well.
- Laboratory analysis of the groundwater samples for TVPH as gasoline, benzene, toluene, ethyl benzene and xylenes (BTEX) and methyl t-butyl ether (MtBE).
- Preparation of this letter report.

GROUNDWATER SAMPLING

Fieldwork was conducted on October 31, 2001. The depth to the top of the groundwater was verified and the well was checked for the presence of free product or petroleum sheen. No free product was observed; however, a sheen was observed on the water recovered from MW-5. Prior to sampling, approximately four volumes of water were removed from the well. Monitoring Well MW-5 was purged using a disposable bailer, due to the shallow depth of the water column in the well. The groundwater samples were collected for laboratory testing using a disposable polyethylene bailer. The samples were then decanted into pre-cleaned laboratory glassware and cooled in an ice chest until delivery under a documented chain of custody to Chromalab, Inc., in Pleasanton, California. The well sampling information form and the chain of custody document are provided as attachments.

LABORATORY ANALYSIS

The groundwater samples were tested for total petroleum hydrocarbons as gasoline TVPH, BTEX and MtBE. A copy of the laboratory test report is provided as an attachment. Table I provides a summary of the laboratory test results for the current sampling episode. Table II, providing a historical summary of the laboratory analysis data, is included as an attachment.

TABLE I
Laboratory Analysis Summary for the Current Sampling Episode
(Concentrations reported in parts per billion)

Well	DTW	TVPH	B	T	E	X	MtBE
MW5	**21.70**	**71,000**	**7,800**	**14,000**	**2,300**	**14,000**	<1,300

DTW: Depth to water (ft.) measured from top of casing (TOC).

The four existing monitoring wells, including MW-5 are scheduled for sampling in January 2002. With your authorization, a copy of this report has been provided to Ms. Eva Chu with the Alameda County Department of Environmental Health.

We appreciate the opportunity to be of continued service to you on this project. If you have any questions, please contact us.

Very truly yours,

ENGEO INCORPORATED

Bill Fagundes
Staff Geologist
bf/hg:gws

Reviewed by:

Shawn Munger
Principal - CHG 413

REGISTERED GEOLOGIST
SHAWN MUNGER
No. HG 413
CERTIFIED
HYDROGEOLOGIST
STATE OF CALIFORNIA

Attachments: Figure 1 - Site Location
Figure 2 - Monitoring Well Locations
Table II – Historical Laboratory Analysis Summary
Groundwater Sampling Information Forms
Chromalab, Inc., Report
Chain-of-Custody

cc: 1 – Alameda County Department of Environmental Health, Ms. Eva Chu

TABLE II
Historical Data
Laboratory Analysis Summary
(Concentrations reported in parts per billion)

	DTW	TVPHg	B	T	E	X	MtBE
MW2							
4/20/93	30.81	4,500	340	110	8.0	630	NT
5/12/94	31.12	7,000	520	220	35	410	NT
2/8/95	28.04	170	8.9	4.5	2.1	17	NT
5/23/95	17.77	<50	<0.5	<0.5	<0.5	<0.5	NT
9/20/95	25.55	8,400	2,500	1,200	180	940	NT
12/29/95	20.91	640	0.7	<0.5	1.9	4.7	NT
11/01/96	22.63	1,600	390	140	25	120	NT
4/29/97	20.39	4,900	640	240	83	200	<250
8/05/99	26.18	3,000	1,100	370	97	240	<25
8/01/00	**23.96**	**2,200**	**850**	**240**	**74**	**240**	<50
MW3							
7/12/94	38.76	<50	<0.5	<0.5	<0.5	<0.5	NT
2/8/95	27.08	<50	<0.5	<0.5	<0.5	<0.5	NT
5/23/95	17.28	<50	<0.5	<0.5	<0.5	<0.5	NT
9/20/95	25.06	<50	1.4	<0.5	<0.5	<0.5	NT
12/29/95	20.25	50	1.8	<0.5	<0.5	<0.5	NT
11/01/96	22.22	<50	<0.5	<0.5	<0.5	<0.5	NT
4/29/97	20.05	<50	1.7	<0.5	<0.5	<0.5	<5.0
8/05/99	26.07	<50	<0.50	<0.50	<0.50	0.70	<5.0
7/20/00	**23.35**	<50	**1.4**	**3.6**	<0.50	**3.9**	<5.0
MW4							
7/12/94	39.50	<50	<0.5	<0.5	<0.5	<0.5	NT
2/8/95	27.66	<50	<0.5	<0.5	<0.5	<0.5	NT
5/23/95	17.68	60	<0.5	<0.5	<0.5	<0.5	NT
9/20/95	25.81	<50	<0.5	<0.5	<0.5	<0.5	NT

	DTW	TVPHg	B	T	E	X	MtBE
12/29/95	20.90	<50	<0.5	<0.5	<0.5	<0.5	NT
11/01/96	22.84	<50	2.7	<0.5	<0.5	<0.5	NT
4/29/97	20.57	<50	2.6	<0.5	<0.5	<0.5	9.2
8/05/99	26.64	120	59	<0.50	<0.50	<0.50	19
7/20/00	**23.91**	**97**	**21**	**6.8**	**0.66**	**4.6**	**11**
MW5[1]							
7/21/00	**20.19**	**92,000**	**9,900**	**15,000**	**540**	**17,000**	<1,300
10/31/00	**21.70**	**71,000**	**7,800**	**14,000**	**2,300**	**14,000**	<1,300

DTW: Depth to water (ft.) measured from top of casing (TOC).
NT: Not Tested
1. Well installed May 28, 2000

ENGEO INCORPORATED
GROUND-WATER SAMPLING INFORMATION

Job Name: 2900 Ladd Avenue	Job Number: 3174.3.050.01
Location: Livermore	Date: October 31, 2001
Client: Livermore Valley Joint Unified School District	By: Bill Fagundes

WELL INFORMATION

Well Number: MW-5	Diameter (in): 2 inches
Total Depth (ft): 24.99	Screen Length: 21.5 feet
Depth to Water (ft): 21.70 (TOC)	Casing Volume (gal): 0.6

PURGING INFORMATION

Bailer: X Pump: Rate: gpm	Time: (init./fin) 1245/1315
Volume Removed (gal): 2.5	No. of Casing Vol: 4.2

Time	Volume Removed (Gal.)	Total Casing Volumes	Temp°F	Conc (µmohs/cm)	pH	Comments
1245	-	-	-	-	-	Turbid, pet. sheen & odor
1315	2.5	-	-	-	-	Turbid, pet. sheen & odor
-	-	--	-	--	--	-
-	--	-	-	--	-	-
-	--	-	-	-	-	-

SAMPLE INFORMATION

Bailer: X Pump: Rate: (gpm)	
Decon Procedure: TSP: OR Alquinox:	Dist. H_2O
Disposable X	Other

Sample	Time	Size	Presv.	Test	Comments
MW-5	1320	(3) 40 ml	ice/ HCl	EPA 8015M/8021	Turbid, pet. sheen & odor

FILE 3174.3.050.03

Submission #: 2001-11-0006

Date: November 5, 2001

SEVERN TRENT SERVICES

STL Chromalab
1220 Quarry Lane
Pleasanton, CA 94566

Tel 925 484 1919
Fax 925 484 1096
www.stl-inc.com
www.chromalab.com

CA DHS ELAP#1094

Engeo, Inc.

2401 Crow Canyon Road, Suite 200
San Ramon, CA 94583-1545

Bill Fagundes

Project: 3714.3.050.03
2900 Lard Avenue

Attached is our report for your samples received on Wednesday October 31, 2001
This report has been reviewed and approved for release. Reproduction of this report is permitted only in its entirety.

The report contains a Case Narrative detailing sample receipt and analysis.

Please note that any unused portion of the samples will be discarded after December 15, 2001 unless you have requested otherwise.
We appreciate the opportunity to be of service to you. If you have any questions, please call me at (925) 484-1919.
You can also contact me via email. My email address is: asalimpour@chromalab.com

Sincerely,

Afsaneh Salimpour

Afsaneh Salimpour
Project Manager

Submission #: 2001-11-0006

SEVERN TRENT SERVICES

Gas/BTEX Compounds by 8015M/8021

STL Chromalab
1220 Quarry Lane
Pleasanton, CA 94566

Tel 925 484 1919
Fax 925 484 1096
www.stl-inc.com
www.chromalab.com

CA DHS ELAP#1094

Engeo, Inc.	✉ 2401 Crow Canyon Road, Suite 200 San Ramon, CA 94583-1545
Attn: Bill Fagundes	Phone: (925) 838-1600 Fax: (925) 838-7425
3714.3.050.03	Project: 2900 Lard Avenue

Samples Reported

Sample ID	Matrix	Date Sampled	Lab #
MW-5	Water	10/31/2001 13:20	1

Submission #: 2001-11-0006

SEVERN TRENT SERVICES

Gas/BTEX Compounds by 8015M/8021

Engeo, Inc.

Attn: Bill Fagundes

Test Method: 8015M 8021B

Prep Method: 5030

STL Chromalab
1220 Quarry Lane
Pleasanton, CA 94566

Tel 925 484 1919
Fax 925 484 1096
www.stl-inc.com
www.chromalab.com

CA DHS ELAP#1094

Sample ID:	**MW-5**	Lab Sample ID:	2001-11-0006-001
Project:	3714.3.050.03 2900 Lard Avenue	Received:	10/31/2001 13:45
		Extracted:	11/02/2001 20:02
Sampled:	10/31/2001 13:20	QC-Batch:	2001/11/02-01.03
Matrix:	Water		

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	71000	13000	ug/L	250.00	11/02/2001 20:02	
Benzene	7800	130	ug/L	250.00	11/02/2001 20:02	
Toluene	14000	130	ug/L	250.00	11/02/2001 20:02	
Ethyl benzene	2300	130	ug/L	250.00	11/02/2001 20:02	
Xylene(s)	14000	130	ug/L	250.00	11/02/2001 20:02	
MTBE	ND	1300	ug/L	250.00	11/02/2001 20:02	
Surrogate(s)						
Trifluorotoluene	118.4	58-124	%	250.00	11/02/2001 20:02	
4-Bromofluorobenzene-FID	81.9	50-150	%	250.00	11/02/2001 20:02	

Submission #: 2001-11-0006

SEVERN TRENT SERVICES

STL Chromalab
1220 Quarry Lane
Pleasanton, CA 94566

Tel 925 484 1919
Fax 925 484 1096
www.stl-inc.com
www.chromalab.com

CA DHS ELAP#1094

Gas/BTEX Compounds by 8015M/8021

Batch QC report

Test Method: 8015M
8021B

Prep Method: 5030

Method Blank | **Water** | **QC Batch # 2001/11/02-01.03**

MB: 2001/11/02-01.03-004 | Date Extracted: 11/02/2001 09:18

Compound	Result	Rep.Limit	Unit	Analyzed	Flag
Gasoline	ND	50	ug/L	11/02/2001 09:18	
Benzene	ND	0.5	ug/L	11/02/2001 09:18	
Toluene	ND	0.5	ug/L	11/02/2001 09:18	
Ethyl benzene	ND	0.5	ug/L	11/02/2001 09:18	
Xylene(s)	ND	0.5	ug/L	11/02/2001 09:18	
MTBE	ND	5.0	ug/L	11/02/2001 09:18	
Surrogate(s)					
Trifluorotoluene	123.8	58-124	%	11/02/2001 09:18	
4-Bromofluorobenzene-FID	101.7	50-150	%	11/02/2001 09:18	

Submission #: 2001-11-0006

SEVERN TRENT SERVICES

STL Chromalab
1220 Quarry Lane
Pleasanton, CA 94566

Tel 925 484 1919
Fax 925 484 1096
www.stl-inc.com
www.chromalab.com

CA DHS ELAP#1094

Gas/BTEX Compounds by 8015M/8021

Batch QC report

Test Method: 8021B Prep Method: 5030

Laboratory Control Spike (LCS/LCSD)		**Water**		**QC Batch # 2001/11/02-01.03**
LCS:	2001/11/02-01.03-005	Extracted:	11/02/2001 09:49	Analyzed: 11/02/2001 09:49
LCSD:	2001/11/02-01.03-006	Extracted:	11/02/2001 10:20	Analyzed: 11/02/2001 10:20

Compound	Conc. [ug/L]		Exp.Conc. [ug/L]		Recovery [%]		RPD	Ctrl.Limits [%]		Flags	
	LCS	LCSD	LCS	LCSD	LCS	LCSD	[%]	Recovery	RPD	LCS	LCSD
Benzene	123	119	100.0	100.0	123.0	119.0	3.3	77-123	20		
Toluene	121	115	100.0	100.0	121.0	115.0	5.1	78-122	20		
Ethyl benzene	119	115	100.0	100.0	119.0	115.0	3.4	70-130	20		
Xylene(s)	336	327	300	300	112.0	109.0	2.7	75-125	20		
Surrogate(s)											
Trifluorotoluene	601	571	500	500	120.2	114.2		58-124			

Submission #: 2001-11-0006

SEVERN TRENT SERVICES

STL Chromalab
1220 Quarry Lane
Pleasanton, CA 94566

Tel 925 484 1919
Fax 925 484 1096
www.stl-inc.com
www.chromalab.com

CA DHS ELAP#1094

Gas/BTEX Compounds by 8015M/8021

Batch QC report

Test Method: 8015M Prep Method: 5030

Laboratory Control Spike (LCS/LCSD)		**Water**		**QC Batch # 2001/11/02-01.03**
LCS:	2001/11/02-01.03-007	Extracted:	11/02/2001 10:50	Analyzed: 11/02/2001 10:50
LCSD:	2001/11/02-01.03-008	Extracted:	11/02/2001 11:21	Analyzed: 11/02/2001 11:21

Compound	Conc. [ug/L]		Exp.Conc. [ug/L]		Recovery [%]		RPD	Ctrl.Limits [%]		Flags	
	LCS	LCSD	LCS	LCSD	LCS	LCSD	[%]	Recovery	RPD	LCS	LCSD
Gasoline	500	520	500	500	100.0	104.0	3.9	75-125	20		
Surrogate(s)											
4-Bromofluorobenzene-	459	474	500	500	91.8	94.8		50-150			

2001-11-0006

CHAIN OF CUSTODY RECORD

627796

PROJECT NUMBER	PROJECT NAME
3719.3.050.03	2900 LADD AVENUE

SAMPLED BY: (SIGNATURE)/(PRINT) Bill Fagundes (BILL FAGUNDES)

SAMPLE NUMBER	DATE	TIME	MATRIX	NUMBER OF CONTAINERS	CONTAINER SIZE	PRESERVATIVE	TPH - GASOLINE (EPA 8015/5030)	TPH - DIESEL (EPA 8015/3550/3510)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240)	BASE/NEUTRALS, ACIDS (EPA 625,8270)	TOTAL OIL & GREASE (SMWW 5520 F)	OC PESTICIDES/PCB (EPA 608, 8080)	OP PESTICIDES (EPA 614/8 140)	TITLE 26 METALS (17)	PRIORITY METALS (13)						REMARKS REQUIRED DETECTION LIMITS
MW-5	10/31/01	1320	Aqueous	4	40ml	HCl	X											X BTEX	X MTBE				

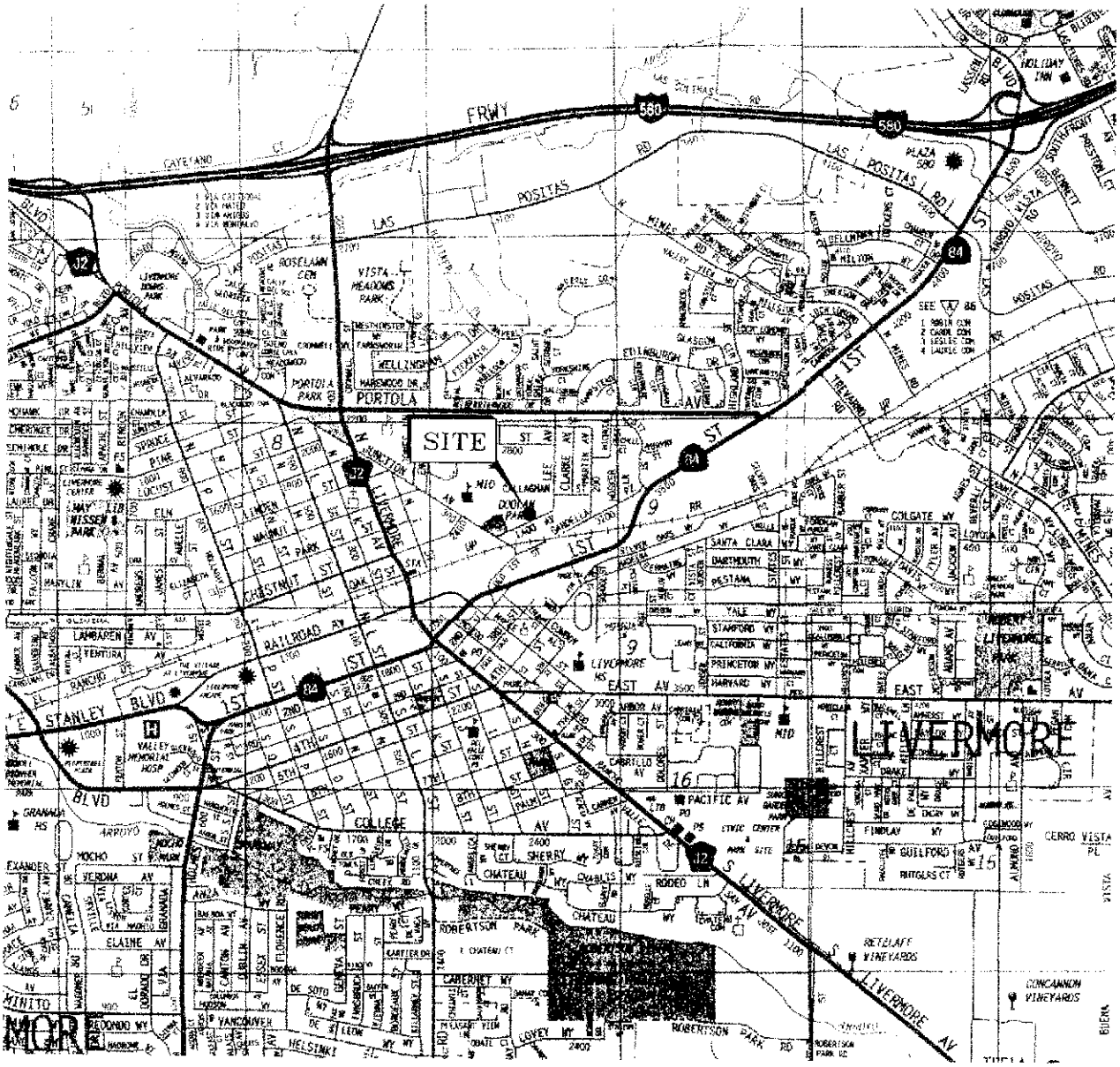
RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)
Bill Fagundes	10/31/01 1345				
RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE/TIME	REMARKS	
		Denise Harrington	10/31/01 1345	STD 5-DAY TAT	

ENGEO INCORPORATED

2401 CROW CANYON ROAD • SUITE 200
SAN RAMON, CALIFORNIA 94583-1545
(925)838-1600 • FAX(925)838-7425
www.engeo.com

DISTRIBUTION: ORIGINAL ACCOMPANIES SHIPMENT: COPY TO PROJECT FIELD FILES

6.0°C



BASE MAP SOURCE: THOMAS BROTHERS

N.T.S.

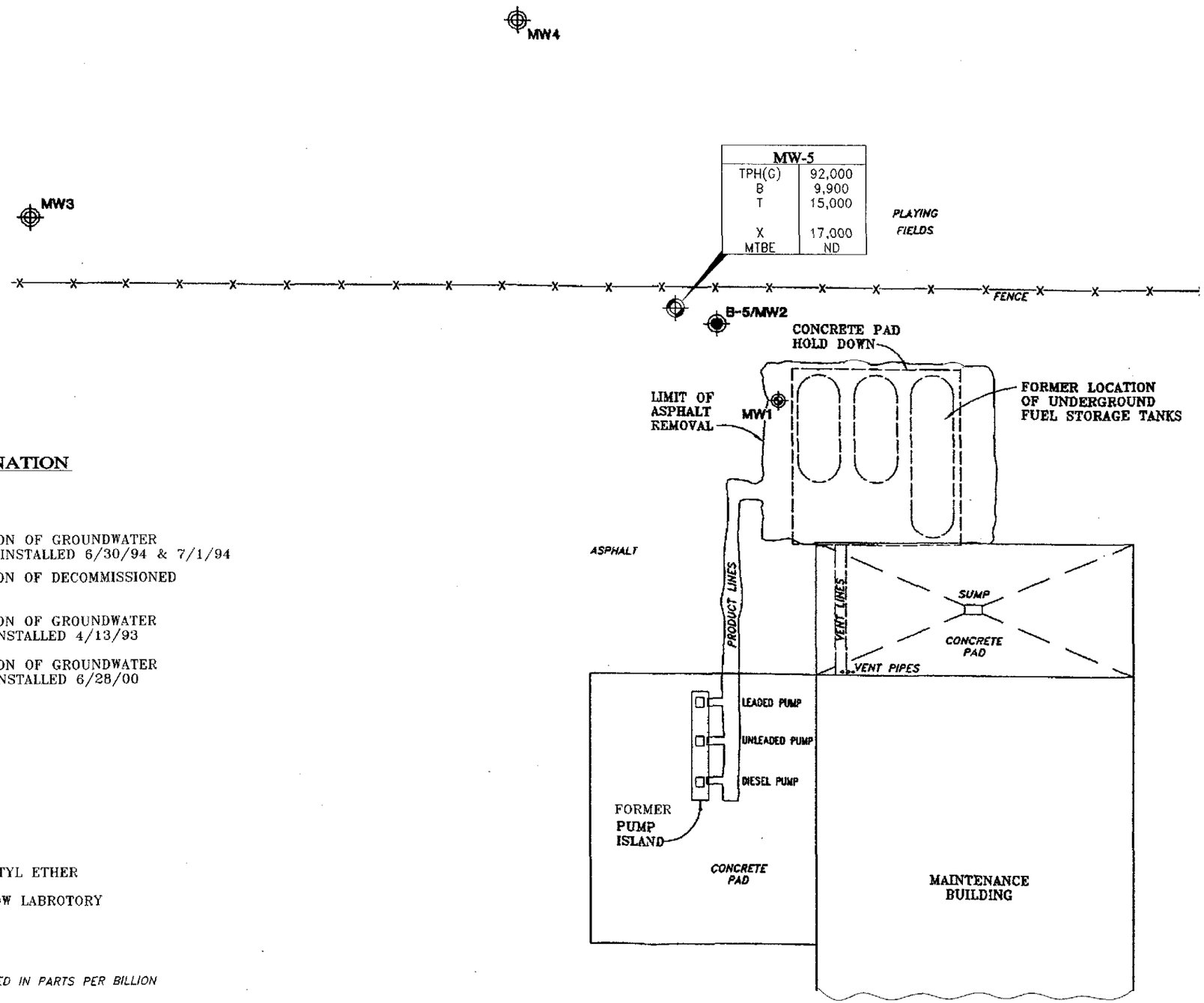
ENGEO INCORPORATED

SITE LOCATION

MAINTENANCE YARD, 2900 LADD AVENUE

LIVERMORE, CALIFORNIA

PROJECT NO.: 3174.3.050.02	FIGURE NO. 1
DATE: AUGUST 2000	
DRAWN BY:	CHECKED BY:



EXPLANATION

- APPROXIMATE LOCATION OF GROUNDWATER MONITORING WELLS INSTALLED 6/30/94 & 7/1/94
- APPROXIMATE LOCATION OF DECOMMISSIONED MONITORING WELL
- APPROXIMATE LOCATION OF GROUNDWATER MONITORING WELL INSTALLED 4/13/93
- APPROXIMATE LOCATION OF GROUNDWATER MONITORING WELL INSTALLED 6/28/00

TPH(G) GASOLINE

B BENZENE

T TOLUENE

E ETHYL BENZENE

X TOTAL XYLENES

MTBE METHYL-TERIARY-BUTYL ETHER

ND CONCENTRATION BELOW LABROTORY REPORTING LIMITS

CONCENTRATIONS REPORTED IN PARTS PER BILLION

SOURCE: UNKNOWN

N.T.S.

ENGEO INCORPORATED

MONITORING WELL LOCATIONS
MAINTENANCE YARD 2900 LADD AVENUE
LIVERMORE,CALIFORNIA

PROJECT NO.: 3174.3.050.02
DATE: AUGUST,2000
DRAWN BY: CHECKED BY:

FIGURE NO. **2**