November 4, 1998

UST Local Oversight Program
Alameda County Health Agency
Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502-6577

Attention: Ms. Eva Chu

Subject: Report of Soil Vapor Sampling
Arrow Rentals UST Site
187 North L Street
Livermore, California
Alameda County Site ID: 4132
GA Project No.: 143-01-01

Ladies and Gentlemen:

This report documents recent soil vapor sampling at the Arrow Rentals underground storage tank (UST) site located at 187 North L Street in Livermore, California (see Figure 1 and Figure 2). Sampling activities included collecting soil vapor samples at two locations downgradient (west) from former project site USTs. The purpose of these activities was to assess potential risk associated with possible hydrocarbon vapor inhalation at the site.

The services provided under this contract as described in this report include professional opinions and judgments based on data collected. These services have been provided according to generally accepted environmental protocol.

DESCRIPTION OF FIELD ACTIVITIES

Soil vapor sampling activities were conducted by Mr. Jim Gribi on Thursday, August 27, 1998.

Location of Soil Vapor Probes

Locations of the soil vapor probes, VS-1 and VS-2, are shown on Figure 2. Vapor probe VS-1 was sited inside the Arrow Rentals building, and VS-2 was sited immediately west from the Arrow Rentals building, between former project site USTs and the project site building. These vapor probes were sited in order to assess possible hydrocarbon vapor migration into the Arrow Rentals building.

Soil Vapor Sampling

The two soil vapor samples, VS-1 and VS-2, were each collected using the following method:

- An AMS Gas Vapor Probe was driven 36-1/2 inches into subsurface soils, and then retracted to 34 inches, exposing approximately two inches of screen on the bottom of the vapor probe to allow for vapor sampling

- The vapor probe was purged and a vapor sample was collected using a six-liter, laboratory clean-certified Summa Canister™ supplied by Air Toxics, Ltd. The Summa Canister was evacuated at the laboratory to about 29 inches of mercury (Hg) vacuum pressure, and, during sampling, the vacuum pressure was lowered to about six inches Hg vacuum as soil vapors entered the Summa Canister. To insure collection of an adequate volume of soil vapors in the six-liter Summa Canister, it is necessary to reduce the vacuum pressure during sampling to at least eight inches Hg (a higher final vacuum pressure indicates less vapor intake, and thus would require dilution during laboratory analysis to make a six-liter sample, resulting in a higher detection limit for the sample analysis). A flow controller calibrated and supplied by the analytical laboratory was used to achieve this reduction in pressure over at least one hour of sampling. Field sampling logs for the two vapor samples are contained in Appendix A.

- The two Summa Canister vapor samples were transported to the analytical laboratory under formal chain-of-custody.

Laboratory Analysis of Soil and Soil Vapor Samples

The two soil vapor samples were analyzed for Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX by EPA Method TO-14). This method provides for a benzene detection level of at least 0.13 parts per billion by volume (ppbv). Vapor samples were analyzed by Air Toxics, Ltd., a California-certified analytical laboratory.

RESULTS OF INVESTIGATION

Results of Laboratory Analyses

Soil vapor analytical results are summarized in Table 1. Laboratory data reports for soil samples and soil vapor samples are contained in Appendix B.

Table 1
SUMMARY OF SOIL AND SOIL VAPOR ANALYTICAL RESULTS
2808 Adeline Street Residence

Sample ID	*Sample Depth*	*Constituent (ppbv)*			
		B	*T*	*E*	*X*
VS-1	3.0 ft	3.4	12	2.2	12.0
VS-2	3.0 ft	4.9	6.3	2.2	12.8
Vapor RSBL		11.6	27,000	69,000	505,000

Ppbv - Parts per billion by volume.

Vapor RSBL - Risk-Based Screening Levels for vapors in soil at three feet below ground surface, with no building slab (residential receptors), San Francisco Bay Regional Water Quality Control Board. Concentrations for benzene are based on carcinogenic risk of 10^{-6}; and concentrations for toluene, ethylbenzene, and xylenes are based on non-carcinogenic chronic hazard quotient of 1.0.

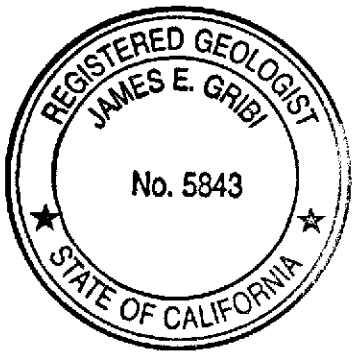
4.0 CONCLUSIONS

Results of this investigation clearly indicate that significant concentrations of hydrocarbon vapors are not present in soils at shallow depths beneath the Arrow Rentals building. The soil vapor analytical results from vapor samples VS-1 and VS-2 are much lower than the Risk-Based Screening Levels (RBSLs) established by the San Francisco Bay Regional Water Quality Control Board, clearly showing no significant risk of indoor benzene vapor exposure in the Arrow Rentals building.

We appreciate the opportunity to present this report for your review. Please call if you have questions or require additional information.

Very truly yours,

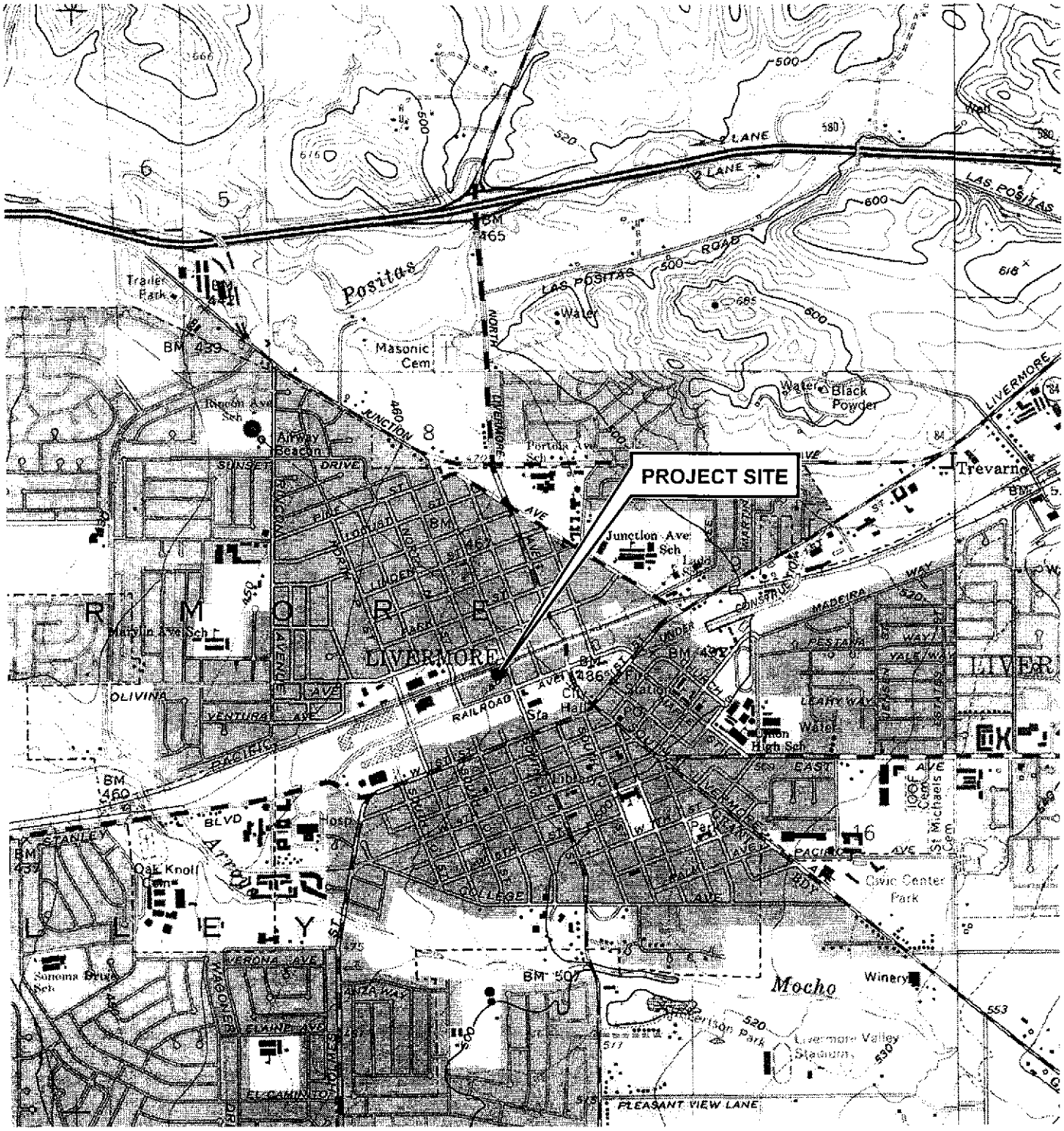
James E. Gribi
Registered Geologist
California No. 5843



JEG/ct
Enclosures

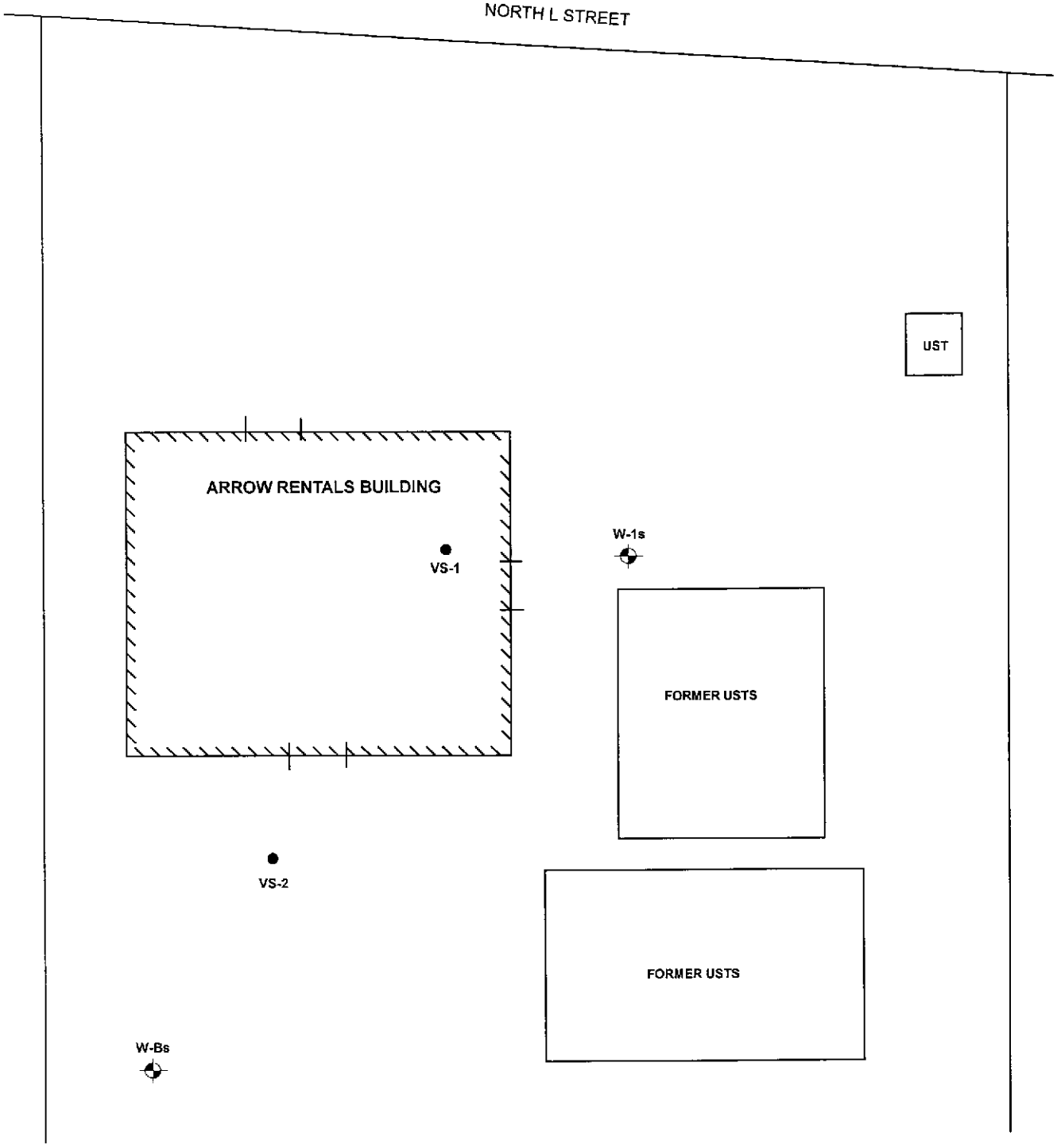
c Rita Sullins, Arrow Rentals

File: GA-23/Arrow.rpl



TOPOGRAPHY FROM USGS LIVERMORE, CALIFORNIA
7.5-MINUTE QUADRANGLE MAPS, (TOPO! 1997).

DESIGNED BY:	CHECKED BY:	**SITE VICINITY MAP**	DATE: 11/03/98	FIGURE: 1
DRAWN BY: JG	SCALE: 1:24,000	ARROW RENTALS UST SITE 187 NORTH L STREET LIVERMORE, CALIFORNIA	**GRIBI Associates**	
PROJECT NO: 143-01-01				



LEGEND

- GROUNDWATER MONITORING WELL
- VAPOR SAMPLE LOCATION

0 15 30

APPROX. SCALE IN FEET

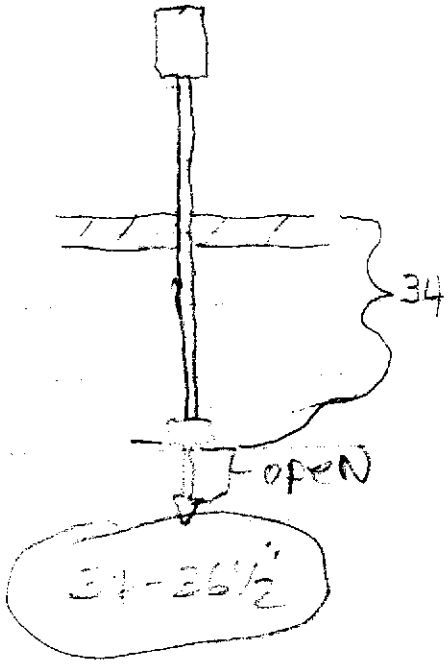
DESIGNED BY:	CHECKED BY:	**SITE PLAN**	DATE: 11/09/98	FIGURE: 2
DRAWN BY: JG	SCALE:	187 NORTH L STREET UST SITE LIVERMORE, CALIFORNIA	**GRIBI Associates**	
PROJECT NO: 143-01-01				

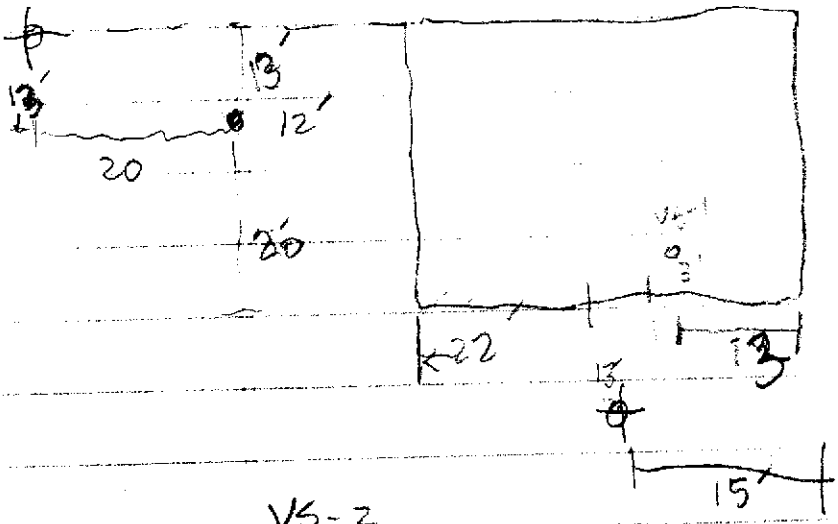
APPENDIX A

VAPOR SAMPLING FIELD LOGS

VS 1 - INSIDE bldg

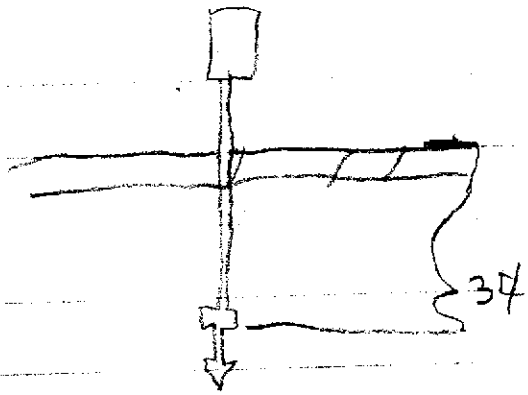
11:22	22" Hg
11:42	16
12:02	11
12:22	6.5
12:32	4.5





VS-2

12:43	28" Hg
12:58	23
13:13	18
13:28	14
13:43	10
13:53	8.°



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APPENDIX B

LABORATORY DATA REPORT

@AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 9808423

Work Order Summary

CLIENT: Mr. Jim Gribi
Gribi and Associates
884 Vintage Ave.
Suisun, CA 94585

BILL TO: Same

PHONE: 707-864-5543
FAX: 707-864-5543
DATE RECEIVED: 8/28/98
DATE COMPLETED: 9/28/98

P.O. # NR
PROJECT # Sullins Site

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	VS-1	TO-14-S	6.5 "Hg
02A	VS-2	TO-14-S	10.0 "Hg
02AA	VS-2 Duplicate	TO-14-S	10.0 "Hg
03A	Method Spike	TO-14-S	NA
04A	Lab Blank	TO-14-S	NA
04B	Lab Blank	TO-14-S	NA

CERTIFIED BY: Linda D Fruman
Laboratory Director

DATE: 9/29/98

Certification numbers: CA ELAP - 1149, NY ELAP - 11291, UT ELAP - E-217

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

AIR TOXICS LTD.

SAMPLE NAME : VS-1

ID#: 9808423-01A

EPA METHOD TO-14 GC/MS SIM

File Name:	j092418	**Date of Collection:**	8/27/98
Dil. Factor:	1.71	**Date of Analysis:**	9/24/98

Compound	Det. Limit (ppbv)	Amount (ppbv)
Benzene	0.086	3.4
Toluene	0.086	12
Ethyl Benzene	0.086	2.2
m,p-Xylene	0.086	8.8
o-Xylene	0.086	3.2

Container Type: 6 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	100	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	111	70-130

AIR TOXICS LTD.

SAMPLE NAME : VS-2

ID#: 9808423-02A

EPA METHOD TO-14 GC/MS SIM

File Name:	j092509	**Date of Collection:**	8/27/98
Dil. Factor:	2.65	**Date of Analysis:**	9/25/98

Compound	Det. Limit (ppbv)	Amount (ppbv)
Benzene	0.13	4.9
Toluene	0.13	6.3
Ethyl Benzene	0.13	2.2
m,p-Xylene	0.13	9.3
o-Xylene	0.13	3.5

Container Type: 6 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	104	70-130
Toluene-d8	108	70-130
4-Bromofluorobenzene	112	70-130

AIR TOXICS LTD.

SAMPLE NAME : VS-2 Duplicate

ID#: 9808423-02AA

EPA METHOD TO-14 GC/MS SIM

File Name:	j092510	**Date of Collection:**	8/27/98
Dil. Factor:	2.65	**Date of Analysis:**	9/25/98

Compound	Det. Limit (ppbv)	Amount (ppbv)
Benzene	0.13	5.0
Toluene	0.13	6.5
Ethyl Benzene	0.13	2.5
m,p-Xylene	0.13	11
o-Xylene	0.13	4.0

Container Type: 6 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	103	70-130
Toluene-d8	107	70-130
4-Bromofluorobenzene	104	70-130

AIR TOXICS LTD.

SAMPLE NAME : Method Spike

ID#: 9808423-03A

EPA METHOD TO-14 GC/MS SIM

File Name:	**I092502**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/25/98**	

Compound	Det. Limit (ppbv)	% Recovery
Benzene	0.050	112
Toluene	0.050	123
Ethyl Benzene	0.050	109
m,p-Xylene	0.050	109
o-Xylene	0.050	110

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	102	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	103	70-130

AIR TOXICS LTD.

SAMPLE NAME : Lab Blank

ID#: 9808423-04A

EPA METHOD TO-14 GC/MS SIM

File Name:	**j092417**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/24/98**	

Compound	Det. Limit (ppbv)	Amount (ppbv)
Benzene	0.050	Not Detected
Toluene	0.050	Not Detected
Ethyl Benzene	0.050	Not Detected
m,p-Xylene	0.050	Not Detected
o-Xylene	0.050	Not Detected

Contalner Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	105	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	101	70-130

AIR TOXICS LTD.

SAMPLE NAME : Lab Blank

ID#: 9808423-04B

EPA METHOD TO-14 GC/MS SIM

File Name:	**I092508**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/25/98**	

Compound	Det. Limit (ppbv)	Amount (ppbv)
Benzene	0.050	Not Detected
Toluene	0.050	Not Detected
Ethyl Benzene	0.050	Not Detected
m,p-Xylene	0.050	Not Detected
o-Xylene	0.050	Not Detected

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	97	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	91	70-130

AIR TOXICS LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX: (916) 985-1020

Nº 016412

CHAIN-OF-CUSTODY RECORD

Page ___ of ___

Contact Person: JIM GRIBI
Company: GRIBI ASSOCIATES
Address: 884 VINTAGE City: SUISUN State: CA Zip: 94585
Phone: 707/864-5543 FAX: same
Collected By: Signature: James Gribi

Project info:
P.O. #
Project #
Project Name

Turn Around Time:
☐ Normal
☐ Rush ___ Specify

Lab I.D.	Field Sample I.D.	Date & Time	Analyses Requested	Canister Pressure / Vacuum Initial	Final	Receipt
				22	4.5	6.5 ?
01A	VS-1	8/27 12:32	BTEX by TO-14	28	8.0	
02A	VS-2	8/27 13:53	" " "			

Relinquished By: (Signature) Date/Time: James Gribi 8/27/98 16:05 Print Name: JIM GRIBI
Received By: (Signature) Date/Time: ATL 8/27/98 1658
Relinquished By: (Signature) Date/Time
Received By: (Signature) Date/Time

Notes: Check Flow guages on Flow Controlers.

Lab Use Only	Shipper Name	Air Bill #	Opened By:	Date/Time	Temp. (°C)	Condition	Custody Seals Intact?	Work Order #
	CA Overnight	NA		8/27/98 1501	Ambient	Good	Yes No (None) N/A	9808423

Form 1293 rev. 06