Weiss Associates Environmental and Geologic Services

5500 Shellmound Street, Emeryville, CA 94608-2411 Fax: 510-547-5043 Phone: 510-450-6000

February 5, 1999

Figure 1 missing

Brett Hunter
Chevron Products Company
P.O. Box 5004
San Ramon, California 94583-0804

RE: **Soil Vapor Sample Collection Update**
Former Chevron Service Station #9-5607
5269 Crow Canyon Road
Castro Valley, California
WA Job #4-1129-3

Dear Mr. Hunter:

On Behalf of Chevron Products Company (Chevron), Weiss Associates (WA) has prepared this update for soil vapor sample activities at the above referenced site. The results of samples collected on July 30, 1998, were determined invalid due to a sample collection error. The sample collection error occurred when the field geologist purged an undetermined volume of soil vapor prior to collecting the samples. WA plans to re-collect the soil vapor samples in May of 1999. A summary of the July 30, 1998, soil vapor sample event is summarized below followed by a description of the correct vapor purging procedure.

July 30, 1998, Soil Vapor Sample Event

On July 30, 1998, WA collected 8 vapor samples in the vicinity of the Forrest Creek Townhomes property as shown in Figure 1. Three vapor samples were collected from 3 feet below ground surface (bgs) and five vapor samples were collected from within the sand backfill surrounding the existing sanitary sewer piping at approximately 6 feet bgs. Backfill sample collection began at the northern terminus of the sewer line near well C-12, and extended southward beyond well C-11. The scope of work included:

- Obtaining Drilling Permits from the Alameda County Public Works Department,
- Requesting a 1 week pause in irrigation from the Forrest Creek Townhomes gardening service prior to sample collection and notifying the residents of drilling activities,
- Marking the drilling locations, notifying USA, and contracting a line locator to clear the drilling locations,

- Collecting 3 soil vapor samples from 3 feet bgs,
- Locating the sand backfill adjacent to the sanitary sewer service conduit with a Geoprobe and probing stake,
- Collecting 5 soil vapor samples from the sand backfill,
- Submitting the vapor samples to Air Toxics for analysis, and;
- Reporting the results.

The site preparation, drilling and sampling activities are described in detail below.

Drilling Permit

A drilling permit for the eight boring locations was obtained from Alameda County Public Works Agency.

Notifying Involved Parties

As requested by Alameda County, WA contacted the Forrest Creek Townhomes gardening service and requested a 1-week pause in irrigation activities in the vicinity of the sample locations prior to sample collection. On July 24, 1998, the irrigation system was shut off except for the flower box at the front of the Townhomes complex.

On July 27, 1998, WA placed drilling notices on the doors of the Townhomes units that were near the drilling locations.

Field Preparation and Job Coordination

On July 27, 1998, WA marked sample locations SV-9, SV-10, and SV-11 in front of Townhome units 2, 3 and 6 respectively. WA located the sewer main, marked the sewer backfill sample locations, and notified Underground Services Alert of the drilling activities. WA marked the location of the sewer main by running a span of string between each sewer manhole/piping intersection and marking the ground below the string. Sample locations SV-12, SV-13, SV-14, SV-15 and SV-16 were placed 1 foot east of the sewer main.

On July 28, 1998, Subtronic Corporation of Concord, California cleared the sample locations and verified the sewer main location.

Soil Vapor Sample Collection

Sample Collection Date: July 30, 1998

Parties Present: William McConihe of WA, Scott Souza of Vironex, and Scott Seery of Alameda County Health Care Services Agency. Mr. McConihe collected the samples, Mr. Souza operated the drilling equipment, and Mr. Seery witnessed drilling and sampling activities for boring SV-16.

Sewer Conduit Drilling Precautions: Special precautions were taken to prevent rupture of the sewer service piping during drilling activities. The depth to the sewer service piping was determined from survey information included in the City of Castro Valley Building Department drawings. The Geoprobe rod was offset approximately 1 foot east of the piping centerline and advanced to approximately 1 foot above the piping (5 feet bgs) using a truck mounted Geoprobe hammer. The Geoprobe rod was withdrawn from the hole and a hand operated probing stake was inserted into the hole to the depth of the sewer piping to ensure that rupture of the piping would not occur. A vapor-sampling rod was then driven to the depth of the sewer piping and the vapor sample collected as described below.

Failed Sample Collection: Soil vapor samples were collected by advancing a vapor sampling rod with a hydraulically powered GeoProbe, inserting post run tubing (PRT) and connecting the tubing to the vapor sample collection assembly (Figure 2). The collection assembly ball valve was opened and an *unknown* purge volume was removed from the vapor sample lines using a Geoprobe vacuum/volume system.

The field geologist purged the line for approximately 5 minutes instead of purging the volume specified in the field protocol. Unfortunately, the actual purge volume cannot be estimated using the purge duration because the vacuum/volume system flow rate was not recorded and cannot be estimated accurately.

The samples were collected by closing the ball valve and opening the sample collection valve on the 1 liter Summa canister while monitoring the vacuum gauge. The Summa canister valve was closed after approximately three minutes. After sample collection, the configuration was disconnected and the summa canister was labeled and stored for shipment. Before collecting the next vapor sample, the tubing and tee were replaced, the probe rod assembly was cleaned, the vacuum gauge and ball valve were purged with ambient air and a new Summa canister was connected.

Laboratory Sample Analysis Method

Soil vapor samples were sent to Air Toxics Ltd. of Folsom, California and analyzed for benzene, toluene, ethylbenzene and xylenes by EPA method TO-14.

Sample Results

The concentration of benzene and toluene in soil vapor was near or below detection limits for all samples collected. The only detected concentration of benzene in soil vapor was 0.0069 parts per million by volume (ppmv) in sample SV-10 collected at 3 feet bgs. The only detected concentration of toluene was 0.0047 ppmv in sample SV-9 at 3 feet bgs. No ethylbenzene or xylenes were detected in any of the soil vapor samples.

BTEX vapor concentrations were below lowest laboratory detection limits in all of the sewer backfill samples. The laboratory results are summarized in Table 1 and copies of the laboratory report and chain of custody form are attached in Appendix A.

Correct Vapor Purging Procedure

The correct purging procedure involves removing three times the PRT volume prior to collecting the sample. The line volume is determined from the length and diameter of the PRT. A calculation and graph of the purge volume for ¼ inch tubing is shown in Figure 3. Typically, 2 feet of extra tubing extends out of the boring during vapor sample collection. The extra tubing should be included when determining the purge volume. For example, a 6-foot boring will typically correspond to 8 feet of tubing and 480 ml of purge volume. Purge volumes are also shown in units of in^3 and ft^3 in Figure 3.

WA plans to measure the purge volume using the Geoprobe vacuum/volume system or a hand held 60 ml syringe depending on the length of PRT tubing. WA will likely use the syringe to purge the lines for the 3-foot borings and the vacuum/volume system for the 6-foot borings.

Please call Tim Utterback at (510) 450-6193 if you have any technical questions about this update.

Sincerely,
Weiss Associates

Tim Utterback PE
Project Engineer

Attachments: Figure 1. Soil Vapor Survey Sample Locations
Figure 2. Vapor Sample Collection Configuration
Figure 3. Line Purge Volume vs. Length
Table 1. Analytical Results for Vapor Samples
Attachment A. Laboratory Data and Chain of Custody Form

cc: Scott Seery, Alameda County Health Care Services Agency, Department of Environmental Health, 1131 Harbor Bay parkway, 2nd Floor, Alameda, California, 94502

Ravi Arulanantham, Regional Water Quality Control Board - San Francisco Bay, 1515 Clay Street, Suite 1400, Oakland, California 94612

Diane Riggs, Forest Creek Townhomes Association, c/o Walsh Property Management, P.O. Box 2657, Castro Valley, California 94546

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@AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 9808015

Work Order Summary

CLIENT: Mr. Tim Utterback
Weiss Associates
5500 Shellmound Street
Emeryville, CA 94608

BILL TO: Same

PHONE: 510-450-6193
FAX: 510-547-5043
DATE RECEIVED: 8/3/98
DATE COMPLETED: 8/17/98

P.O. # 4-1129-73
PROJECT # 4-1129-73 Chevron CVII

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	SV-9 @3'	TO-14	0.2 psi
02A	SV-10 @3'	TO-14	0.4 psi
03A	SV-11 @3'	TO-14	0.2 psi
04A	SV-12 @6'	TO-14	0.4 psi
05A	SV-13 @6.5'	TO-14	0.2 psi
06A	SV-14 @6'	TO-14	0.2 psi
07A	SV-15 @6'	TO-14	0.2 psi
08A	SV-16 @6'	TO-14	0.2 psi
09A	Lab Blank	TO-14	NA

CERTIFIED BY: Linda K. Truman
Laboratory Director

DATE: 8/17/98

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 [redacted]

ID#: 9808015-01A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	p081013	**Date of Collection:**	7/30/98
Dil. Factor:	7.96	**Date of Analysis:**	8/10/98

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	4.0	Not Detected
Toluene	4.0	[redacted]
Ethyl Benzene	4.0	Not Detected
m,p-Xylene	4.0	Not Detected
o-Xylene	4.0	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	113	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	92	70-130

AIR TOXICS LTD.

SAMPLE NAME : SV-10 @3'

ID#: 9808015-02A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	p081014	Date of Collection:	7/30/98
Dil. Factor:	7.88	Date of Analysis:	8/10/98

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	3.9	6.9
Toluene	3.9	Not Detected
Ethyl Benzene	3.9	Not Detected
m,p-Xylene	3.9	Not Detected
o-Xylene	3.9	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	115	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	93	70-130

AIR TOXICS LTD.

SAMPLE NAME : SV-11 @3'

ID#: 9808015-03A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	p081015	**Date of Collection:**	7/30/98
Dil. Factor:	7.96	**Date of Analysis:**	8/10/98

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	4.0	Not Detected
Toluene	4.0	Not Detected
Ethyl Benzene	4.0	Not Detected
m,p-Xylene	4.0	Not Detected
o-Xylene	4.0	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	114	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	89	70-130

AIR TOXICS LTD.

SAMPLE NAME : SV-12 @6'

ID#: 9808015-04A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	p081016	Date of Collection: 7/30/98
Dil. Factor:	7.88	Date of Analysis: 8/10/98

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	3.9	Not Detected
Toluene	3.9	Not Detected
Ethyl Benzene	3.9	Not Detected
m,p-Xylene	3.9	Not Detected
o-Xylene	3.9	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	114	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	91	70-130

AIR TOXICS LTD.

SAMPLE NAME : SV-13 @6.5'

ID#: 9808015-05A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	p081017	Date of Collection:	7/30/98
Dil. Factor:	7.96	Date of Analysis:	8/10/98

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	4.0	Not Detected
Toluene	4.0	Not Detected
Ethyl Benzene	4.0	Not Detected
m,p-Xylene	4.0	Not Detected
o-Xylene	4.0	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	112	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	88	70-130

AIR TOXICS LTD.

SAMPLE NAME : SV-14 @6'

ID#: 9808015-06A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	p081018	Date of Collection:	7/30/98
Dil. Factor:	7.96	Date of Analysis:	8/11/98

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	4.0	Not Detected
Toluene	4.0	Not Detected
Ethyl Benzene	4.0	Not Detected
m,p-Xylene	4.0	Not Detected
o-Xylene	4.0	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	114	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	88	70-130

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SAMPLE NAME : SV-15 @6'

ID#: 9808015-07A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	p081019	Date of Collection:	7/30/98
Dil. Factor:	7.96	Date of Analysis:	8/11/98

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	4.0	Not Detected
Toluene	4.0	Not Detected
Ethyl Benzene	4.0	Not Detected
m,p-Xylene	4.0	Not Detected
o-Xylene	4.0	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	114	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	88	70-130

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SAMPLE NAME : SV-16 @6'

ID#: 9808015-08A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	p081020	Date of Collection: 7/30/98
Dil. Factor:	7.96	Date of Analysis: 8/11/98

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	4.0	Not Detected
Toluene	4.0	Not Detected
Ethyl Benzene	4.0	Not Detected
m,p-Xylene	4.0	Not Detected
o-Xylene	4.0	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	112	70-130
Toluene-d8	93	70-130
4-Bromofluorobenzene	89	70-130

AIR TOXICS LTD.

SAMPLE NAME : Lab Blank

ID#: 9808015-09A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	**p081004**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 8/10/98**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	0.50	Not Detected
Toluene	0.50	Not Detected
Ethyl Benzene	0.50	Not Detected
m,p-Xylene	0.50	Not Detected
o-Xylene	0.50	Not Detected

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	116	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	98	70-130