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Alameda County Environmental Health

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Project No. 2543.04

Mr. Paresh Khatri Alameda County Environmental Health 1131 Harbor Bay Parkway Alameda, CA 94502-6577

Subject: Soil Vapor Sampling Work Plan 2855 Mandela Parkway Oakland, California

Dear Mr. Khatri:

As a legally authorized representative of BALCO properties, LLC, and on behalf of BALCO properties, LLC, I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document *Soil Vapor Sampling Work Plan, 2855 Mandela Parkway, Oakland, California*, are true and correct to the best of my knowledge.

Sincerely yours,

Janet Jolley / Property Manager

SOIL VAPOR SAMPLING WORK PLAN 2855 Mandela Parkway Oakland, California

BALCO Properties, LLC Oakland, California

> 1 October 2008 Project No.2543.04



Treadwell&Rollo

9 October 2008 Project No. 2543.04

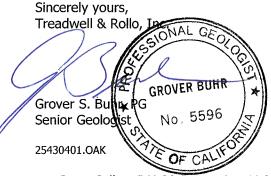
Mr. Paresh Khatri Alameda County Environmental Health 1131 Harbor Bay Parkway Alameda, CA 94502-6577

Subject: Soil Vapor Sampling Work Plan 2855 Mandela Parkway Oakland, California

Dear Mr. Khatri:

On behalf of BALCO properties, LLC, Treadwell & Rollo is pleased to present this Soil Vapor Sampling Work Plan for the property located at 2855 Mandela Parkway in Oakland, California. This work plan is being submitted for your review and approval.

If you have any questions please call Mr. Greg Johnson at (510) 874-4500, ext. 539.



cc: Janet Jolley, BALCO Properties, LLC

Patrick Hubbard, PG, CEG Principal Geologist

SOIL VAPOR SAMPLING WORK PLAN 2855 Mandela Parkway Oakland, California

BALCO Properties, LLC Oakland, California

> 1 October 2008 Project No.2543.04





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SOIL VAPOR SAMPLING WORK PLAN 2855 MANDELA PARKWAY Oakland, California

1.0 INTRODUCTION AND PURPOSE

This soil vapor sampling work plan (work plan) has been prepared by Treadwell & Rollo, Inc. (Treadwell and Rollo), on behalf of BALCO Properties, LLC, to define procedures for performing a soil vapor investigation for the property located at 2855 Mandela Parkway, Oakland, California (Site) (Figure 1). This work plan has been prepared in response to the Alameda County Department of Environmental Health (ACDEH) letter dated 6 June, 2008.

The Site is located in a historically industrial section of Oakland, California. The Site comprises a 143,000 square foot, single-story industrial structure atop a concrete foundation with the remainder of the Site occupied by an asphalt paved parking lot.

Proposed scope of work includes collection and laboratory analysis of soil vapor samples from ten permanent soil vapor wells installed on June 2001 at the Site by Treadwell and Rollo. The purpose of the soil vapor sampling is to evaluate potential vapor intrusion from free-phase or dissolved gasoline present in groundwater beneath the Site.

This work plan includes protocols and recommendations derived from the Department of Toxic Substances Control/ California Environmental Protection Agency (DTSC/Cal EPA), 2004, *Interim Final, Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air*, December 15 (Revised February 7, 2005).

2.0 BACKGROUND

2.1 Site Description and History

The property is located at 2855 Mandela Parkway and is bordered by Mandela Parkway and Willow Street to the east, 26th Street to the South, Wood Street to the West, and 32nd Street to the North (Figure 2). The existing building at the Site is a 143,000 square foot, single-story industrial structure currently used as a warehouse. The building is currently occupied by a number of commercial tenants. The building



was originally constructed in 1941 and operated until approximately 1983 by International Harvester as a truck service and sales facility. A waste oil underground storage tank (UST) and a 350-gallon gasoline

UST were removed from the Site in 1991. The former gasoline UST apparently leaked leaving free-phase product in the shallow soil and groundwater beneath the Site. In January 2004, a draft Interim Corrective Action Plan (ICAP) for removing free-phase gasoline from the groundwater was submitted to the ACDEH. This plan was approved with stipulations by the ACDEH in a letter dated February 10, 2004.

2.2 Site Geology

Geologic conditions at the Site consist of approximately two to eight feet of relatively sandy fill material underlain by Bay Mud to a depth of at least 24 feet below the ground surface (bgs). The clayey Bay Mud appears to include discontinuous zones of sandier soil and organic matter (peat). The stabilized groundwater depth is approximately eight to ten feet bgs. However, there are indications of a shallower localized (i.e., discontinuous) perched water zone at the interface between the fill and the Bay Mud. A discontinuous layer of peat occurs between seven and nine feet bgs. The residual gasoline appears to occur within this peat layer. The shallow perched water contains only minor concentrations of dissolved total petroleum hydrocarbons as gasoline (TPHg) and TPHg constituents.

3.0 PREVIOUS SOIL VAPOR INVESTIGATIONS

Previous soil and groundwater investigations have confirmed the presence of relatively old gasoline free product within the Bay Mud and potentially significant concentrations of the gasoline constituents benzene, toluene, ethylbenzene, and total xylenes (BTEX compounds) in groundwater beneath a portion of the property, including under the existing building. In addition, to soil and groundwater investigations, soil vapor investigations have been performed at the Site, and are discussed below.

3.1 1992 ATEC Environmental Consultants Soil Vapor Sampling

In 1992, ATEC Environmental Consultants (ATEC) collected soil vapor samples SG-01 through SG-17 in the vicinity of the former USTs (Figure 3) (ATEC, 1992). Samples were analyzed for total volatile hydrocarbons (TVH) and BTEX compounds. Results of this sampling are summarized in Table 1. These results showed the highest concentration of TVH and BTEX compounds to be in the sample collected from location SG-01 at concentrations of 763 micrograms per liter (μ g/L) for TVH and 95.1 μ g/l for benzene. Location SG-01 was located in the yard on the southern portion of the property. The highest



detections of TVH and BTEX compounds in soil vapor collected inside the building was at location SG-14 at concentrations of 178 μ g/L for TVH and 20.9 μ g/l for benzene.

3.2 1998 Ceres Associates Soil Vapor Sampling

In 1998, Ceres Associates (Ceres) collected soil vapor samples SV-1 through SV-20 in the vicinity of the former USTs and in the areas to the east, south, and west of the building (Figure 3) (CERES, 1998). Samples were analyzed for BTEX compounds and methyl tertiary-butyl ether (MTBE). Results of this sampling are summarized in Table 1. These results showed the highest concentration of BTEX compounds to be in the sample collected from location SV-6 at a concentration of 190 μ g/L for benzene and ethylbenzene. Location SV-6 was located in the yard to the west of SG-01. The highest detection of benzene in soil vapor collected inside the building was at location SV-11 at a concentration of 1.1 μ g/L and for ethylbenzene at location SV-12 at a concentration of 1.9 μ g/L. MTBE was not detected within any of the samples collected.

3.3 2000 SOMA Corporation Ambient Air Sampling

In 2000, SOMA Corporation (SOMA) collected ambient air samples A-1 through A-6 at the Site (Figure 3). Three of these samples were collected inside the building (plus a field duplicate) and two from outdoor locations. Samples were collected in 6-liter Summa Canisters fitted with 7-micron particulate filters. The Summa canisters were placed on the ground and left for approximately seven hours to collect samples. Samples were analyzed for 60 different compounds using EPA method TO-14 (low level quantitation). Analytical results are summarized in Table 1. 24 organic compounds were detected in the samples, ten of which were only detected in the indoor air samples. Nine of these compounds (1,1,1-trichloroethane, 1,2-dichloroethane, styrene, 1,3,5-trimethylbenzene, 1,2-dichlorobenzene, methyl ethyl ketone, hexane, cyclohexane, and heptane) are usually associated with sources other than gasoline, such as industrial solvents, adhesives, and cleaning solutions. The only one of the ten compounds detected inside the building that is commonly associated with gasoline was MTBE. However, it has been demonstrated during previous investigations that the free product beneath the building does not contain MTBE (Treadwell and Rollo, 2001). BTEX compounds were detected in all six samples, with benzene concentrations ranging from 2.9 micrograms per cubic meter ($\mu g/m^3$) at location A-6 to 10 $\mu g/m^3$ at location A-1. It was concluded that the MTBE detections and a large part of the BTEX compounds were probably related to the use of gasoline powered vehicles in the building (Treadwell and Rollo, 2001).

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3.4 2001 Treadwell and Rollo Soil Vapor Sampling

Ten permanent soil vapor wells (A through J; Figure 4) were installed in June 2001 by Precision Sampling, Incorporated under the supervision of Treadwell and Rollo personnel. These wells were described in a letter submitted by Treadwell and Rollo to ACDEH on 23 October 2001 (Treadwell and Rollo, 2001). Locations of these soil vapor wells were chosen to provide data to evaluate the potential vapor migration into the occupied building space. Soil vapor wells A, B, and D were chosen because they are located immediately above the free product pool. While soil vapor wells C, E, F, G, and H were chosen because they are adjacent to the free product plume or dissolved phase plume beneath occupied portions of the building. Lastly, soil vapor wells I and J, were chosen to provide additional lateral definition of the soil vapor plume to the north, if present. Samples were collected in Tedlar bags and analyzed for BTEX compounds. Analytical results are summarized in Table 1. BTEX compounds were not detected in any of the samples analyzed and it was concluded gasoline vapors, as indicated by BTEX compounds are not migrating through soil into the building.

4.0 CONCEPTUAL ASSESSMENT STRATEGY

Volatile organic compounds (VOCs) dissolved in groundwater can potentially volatilize and migrate upward through the soil column and intrude into overlying buildings, impacting indoor air quality. Various factors, including the properties of the specific compounds, concentration of VOCs in groundwater, vadose zone soil properties, building slab properties, heating and cooling of buildings, external winds, and positive/negative air pressure within a building may all affect the potential for vapor intrusion.

Potential indoor air vapor intrusion may be evaluated through soil vapor sampling. The approach for this investigation will be to evaluate potential health risks based on soil vapor sampling. The soil vapor data will be used to evaluate whether VOCs in groundwater and soil are migrating upward into shallow soil beneath buildings at the Site.

5.0 PROPOSED SAMPLE LOCATIONS

As discussed in section 3.4 of this work plan, ten permanent soil vapor wells (Figure 4) were installed at the Site in June 2001. Prior to installation the concrete floor slab was cored using a 4-inch diameter core. Dedicated soil vapor-sampling probes were installed using a direct push technique. These dedicated soil vapor-sampling probes are pre-manufactured out of stainless steel; 12 inches long, with slotted screen at the base. At the bottom of each soil vapor-sampling probe is a steel point that was used to push into the



ground. Teflon tubing was attached on a nipple at the top of the soil vapor-sampling probe and brought above the floor grade. These vapor-sampling probes were typically set 2 to 3 feet below the top of the slab to correspond with the middle of the sandy fill interval in the shallow soil, which typically occurs between the surface and 5 ft bgs and is typically underlain by a clay zone. During previous investigations, the base of the shallow sandy zone has sometimes been very wet to saturated and may represent a perched water zone. Although this perched-water zone appears to be relatively thin and possibly not under the entire Site, to get a more accurate measurement of soil vapor and the potential for vapors to enter the building through the concrete foundation, the vapor monitoring points were installed above the perched-water zone rather than 5-feet or deeper as recommended. Upon completion of soil vapor-sampling probe installation, the holes were grouted in place to provide a vapor seal between the slab and the underlying sand/fill. A well box with a screw on lid was installed to protect the tubing. These permanent soil vapor wells will be used by Treadwell and Rollo to perform the soil gas vapor sampling proposed in this work plan.

6.0 DATA COLLECTION

The following briefly outlines the soil vapor sampling protocols and air sample analytical methods.

6.1 Soil Vapor Sampling Protocols

Soil vapor samples will be collected from the ten permanent soil vapor wells by Treadwell and Rollo in general accordance with the 2003 DTSC/LARWQCB guideline presented in *Advisory – Active Soil Gas Investigations* and 2004 DTSC/Cal EPA guideline presented in *Interim Final, Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air*. Soil vapor sampling will include the following:

- Soil vapor wells will be purged of three casing volumes equivalent to 7,500 milliliter (ml), using a purge pump.
- Leak testing will be conducted at each soil probe. Leak tests are performed by applying a tracer compound, which may include pentane, isobutene, butane, isopropanol, and propane (these compounds are commonly found in items such as shaving foam), to the base of the sampling point where it exits the ground, and at the connection between the sample tubing and sampling point and sample tubing and Summa Canister.
- Soil vapor samples will be collected from each well in pre-evacuated 1-liter SUMMA canisters



6.2 Soil Vapor Analysis

All soil vapor samples will be submitted under chain-of-custody protocol to Air Toxics Ltd. of Folsom, California, a certified California laboratory. Samples will be analyzed for:

• Volatile organic compounds (VOCs) using EPA Method TO-15 (Standard).

7.0 REPORT PREPARATION

Upon completion of field sampling activities and receipt of analytical results from the laboratory, Treadwell and Rollo will prepare a report outlining the results of the sampling effort. This report will be included as an appendix to the 3rd quarter 2008 groundwater monitoring report and will be uploaded electronically to the geotracker website.



REFERENCES

Alameda County Health Care Services, 2004, Letter, Fuel Leak Case No. RO0000378, 2855 Mandela Parkway Property, Oakland, California, 94607, 10 February.

ATEC Environmental Consultants, 1992, Subsurface Soil Investigation, 2855 Cypress Street, Oakland, California, dated July 16.

CERES Associates, 1998, Phase II Subsurface Investigation Report, dated September 1.

Department of Toxic Substances Control/California Environmental Protection Agency (DTSC/Cal EPA), 2004, *Interim Final, Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air*, dated December 15 (Revised February 7, 2005).

Department of Toxic Substances Control/Los Angeles Regional Water Quality Control Board, 2003, *Advisory – Active Soil Gas Investigations,* dated January 28.

San Francisco Bay Regional Water Quality Control Board (SF-RWQCB), 2007, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final. November (revised May 2008).

Treadwell and Rollo, 2000, 1999 Site Investigation And Remediation Activities, 2855 Mandela Parkway Property, Oakland, California, January.

Treadwell and Rollo, 2001, Ambient Air Sampling Results, 2855 Mandela Parkway Property, Oakland, California, dated March 7.

Treadwell and Rollo, 2001, Additional Remedial Investigation, 2855 Mandela Parkway, Oakland, California, dated October 23.

Treadwell and Rollo, 2004, Draft Interim Corrective Action Plan, 2855 Mandela Parkway Property, Oakland, California, 22 January.

Treadwell&Rollo

TABLES

TABLE 1 Summary of Air Data Mandela Parkway Project Oakland, California

		Total Volatile			_															_							
Sample Name	Sample Date	Petroleum Hydrocarbons	Froon 12	Chloromethane	Freon 11	Methylene Chloride	1,1,1- Trichloroethane	Benzene	1,2- Dichloroethane	Toluene	Ethylbonzono	m,p-	o-vylene	Total Xylenes	Styropo	1,3,5- Trimethylbenzene	1,2,4- Trimethylbenzene	1,2- Dichlorobenzene	Acetone	2- Propanol	Methyl Ethyl Ketone		1 4-Diovane	Cyclohexane	Ethanol	Methyl tert- Butyl Ether	Heptane
Name	Date	Tryarocarbons		chioromethane		chionae	memoroethane	Denzene	Dictitor bethalle	Toluene	Linyiberizerie	Aylette	0-xylene	Ayleries	ug/L	minetryibenzene	minethyibenzene	Dichiorobenzene	Acetone	Fropanor	Retone	Tiexane	1,4-Dioxane	cyclonexane	Lination	Dutyi Ether	Tieptane
SG-01	6/17/1992	763	N/A	N/A	N/A	N/A	N/A	95.1	N/A	49.2	2.1	N/A	N/A	29.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SG-02	6/17/1992	ND	N/A	N/A	N/A	N/A	N/A	ND	N/A	ND	ND	N/A	N/A	ND	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SG-03	6/17/1992	286	N/A	N/A	N/A	N/A	N/A	34.2	N/A	23.8	1.6	N/A	N/A	19.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SG-04	6/17/1992	ND	N/A	N/A	N/A	N/A	N/A	ND	N/A	ND	ND	N/A	N/A	ND	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SG-05	6/17/1992	163	N/A	N/A	N/A	N/A	N/A	18.5	N/A	17.2	1.5	N/A	N/A	22.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SG-06	6/17/1992	123	N/A	N/A	N/A	N/A	N/A	14.7	N/A	12.6	0.9	N/A	N/A	14.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SG-07	6/17/1992	53	N/A	N/A	N/A	N/A	N/A	6.3	N/A	4.5	ND	N/A	N/A	4.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SG-08	6/17/1992	38	N/A	N/A	N/A	N/A	N/A	4.9	N/A	2.9	0.2	N/A	N/A	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SG-09 SG-10	6/17/1992	ND	N/A	N/A	N/A	N/A	N/A	ND 12.0	N/A	ND 12.0	ND 1	N/A	N/A	ND	N/A	N/A	N/A N/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SG-10 SG-11	6/17/1992 6/17/1992	127 66	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	13.9 6.9	N/A N/A	13.0 7.4	0.6	N/A N/A	N/A N/A	16.9 13.1	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
SG-11 SG-12	6/17/1992	ND	N/A	N/A N/A	N/A	N/A N/A	N/A N/A	0.9 ND	N/A N/A	7.4 ND	0.8 ND	N/A	N/A N/A	ND	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
SG-12 SG-13	6/17/1992	131	N/A	N/A N/A	N/A	N/A N/A	N/A N/A	13.5	N/A N/A	14.9	1.8	N/A	N/A	26.3	N/A	N/A	N/A N/A	N/A N/A	N/A	N/A N/A	N/A N/A	N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
SG-14	6/17/1992	178	N/A	N/A	N/A	N/A	N/A N/A	20.9	N/A	14.7	1.4	N/A	N/A	19.8	N/A	N/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SG-15	6/17/1992	50	N/A	N/A	N/A	N/A	N/A	4.5	N/A	5.6	0.6	N/A	N/A	8.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SG-16	6/17/1992	28	N/A	N/A	N/A	N/A	N/A	2.1	N/A	4.1	0.7	N/A	N/A	12.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SG-17	6/17/1992	ND	N/A	N/A	N/A	N/A	N/A	ND	N/A	ND	ND	N/A	N/A	ND	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SV-01	9/1/1998	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A	< 1.0	< 1.0	N/A	N/A	< 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A
SV-02	9/1/1998	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A	< 1.0	< 1.0	N/A	N/A	< 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A
SV-03	9/1/1998	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A	< 1.0	< 1.0	N/A	N/A	< 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A
SV-04	9/1/1998	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A	< 1.0	< 1.0	N/A	N/A	< 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A
SV-05	9/1/1998	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A	< 1.0	< 1.0	N/A	N/A	< 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A
SV-06	9/1/1998	N/A	N/A	N/A	N/A	N/A	N/A	190	N/A	110	190	N/A	N/A	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A
SV-07	9/1/1998	N/A	N/A	N/A	N/A	N/A	N/A	10	N/A	65	20	N/A	N/A	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A
SV-08 SV-09	9/1/1998 9/1/1998	N/A N/A	N/A	N/A	N/A	N/A	N/A	4.9	N/A	< 1.0	9.2 7.3	N/A	N/A	8.6	N/A	N/A N/A	N/A N/A	N/A	N/A N/A	N/A	N/A	N/A	N/A	N/A N/A	N/A	< 1.0	N/A
SV-09 SV-10	9/1/1998	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	4.8	N/A N/A	< 1.0 < 1.0	7.3 5.4	N/A N/A	N/A N/A	5.9 4.5	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	< 1.0	N/A N/A
SV-10 SV-11	9/1/1998	N/A N/A	N/A	N/A N/A	N/A	N/A N/A	N/A N/A	3.2	N/A N/A	< 1.0	5.4 1.6	N/A	N/A	4.5	N/A	N/A N/A	N/A N/A	N/A N/A	N/A	N/A	N/A N/A	N/A	N/A N/A	N/A N/A	N/A N/A	< 1.0	N/A N/A
SV-12	9/1/1998	N/A	N/A	N/A	N/A	N/A	N/A N/A	< 1.0	N/A	< 1.0	1.9	N/A	N/A	15	N/A	N/A	N/A N/A	N/A N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A
SV-12 SV-13	9/1/1998	N/A	N/A	N/A	N/A	N/A	N/A	2.7	N/A	18	6.8	N/A	N/A	6.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A
SV-14	9/1/1998	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A	< 1.0	< 1.0	N/A	N/A	< 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A
SV-15	9/1/1998	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A	< 1.0	< 1.0	N/A	N/A	< 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A
SV-16	9/1/1998	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A	< 1.0	< 1.0	N/A	N/A	< 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A
SV-17	9/1/1998	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A	< 1.0	< 1.0	N/A	N/A	< 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A
SV-18	9/1/1998	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A	< 1.0	< 1.0	N/A	N/A	< 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A
SV-19	9/1/1998	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A	< 1.0	< 1.0	N/A	N/A	< 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A
SV-20	9/1/1998	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A	< 1.0	< 1.0	N/A	N/A	< 1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.0	N/A
		1		1			1		1	,			1		uG per m3		1	1	1		1	1	1	1	· · ·		
A-1	11/12/2000	N/A	6.6	2.5	1.2	2.0	0.82 J	10	< 0.61	56	4.4	17	4.3	N/A	0.96	0.96	3.5	< 0.91	18	5.5	<2.2	11	<2.7	4.6	12	5.4	4.9
A-2 A-3	11/12/2000	N/A N/A	6.1 6.1	1.2	1.2	2.2	1.1	8.0	<0.65	42 18	3.4	12 6.4	3.4	N/A N/A	<0.68	0.78 J <0.80	2.8	<0.96	16 15	5.6 4.4	<2.4	9.8 5.2	<2.9	3.7 2.9	12 16	4.4	3.7 <0.34
A-3 A-4	11/12/2000	N/A N/A	6.1 5.8	2.2	1.1	5.8	1.3	6.5	<0.66	18	2.0	6.4 8.0	2.4	N/A N/A	<0.70	<0.80	2.8	3.0	15	4.4 2.1 J	3.0	5.2	<2.9	<2.9	16	6.6	< 0.34
A-5	11/12/2000	N/A	4.8	1.3	1.2	0.70	< 0.93	3.7	<0.69	6.4	0.82	2.8	1.2	N/A	<0.73	< 0.84	< 0.84	<1.0	11	<2.1	<2.5	<3.0	<3.1	<2.9	8.1	<3.1	<3.5
A-6	11/12/2000	N/A	6.0	1.3	<1.0	0.61 J	<0.97	2.9	<0.72	4.4	<0.77	2.2	1.3	N/A	<0.76	<0.87	1.1	<1.1	14	<2.2	<2.6	<3.1	8.6	<3.1	3.6	<3.2	<3.6

Notes:

ug/L = Micrograms per liter. Results for samples SG-01 through SG-17 and SV-01 through SV-20 are reported in micrograms per liter uG/m3 = Micrograms per meter-cubed, results for samples A-1 through A-6 are reported in micrograms per meter-cubed

ND = Non-detect

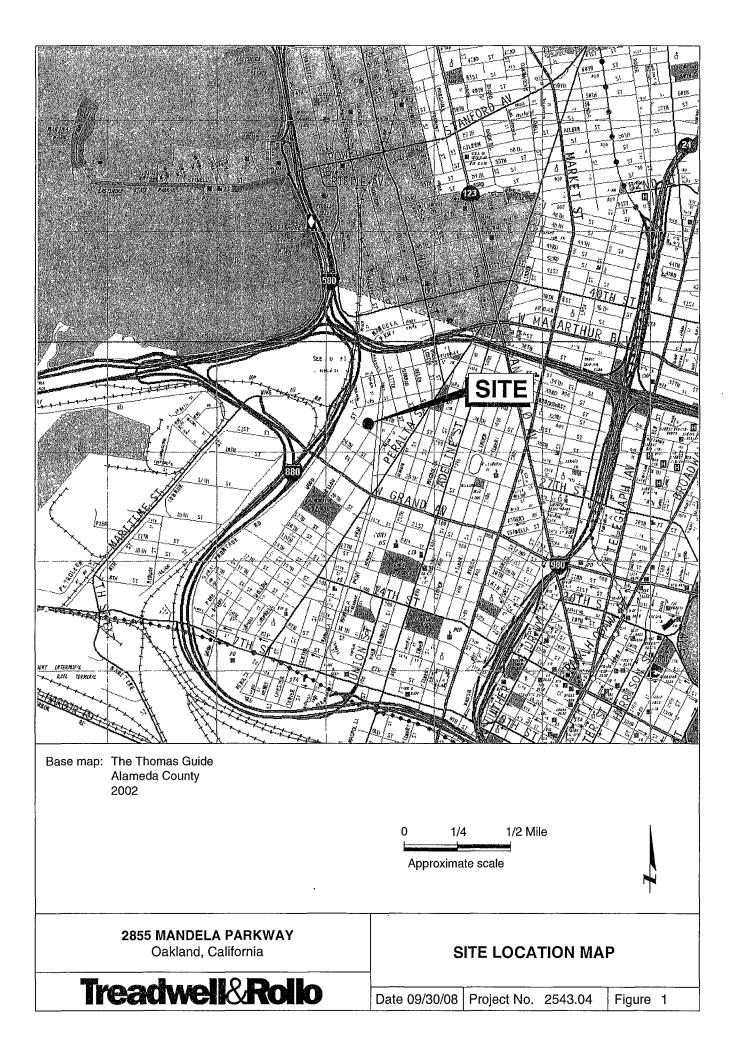
N/A = Not analyzed

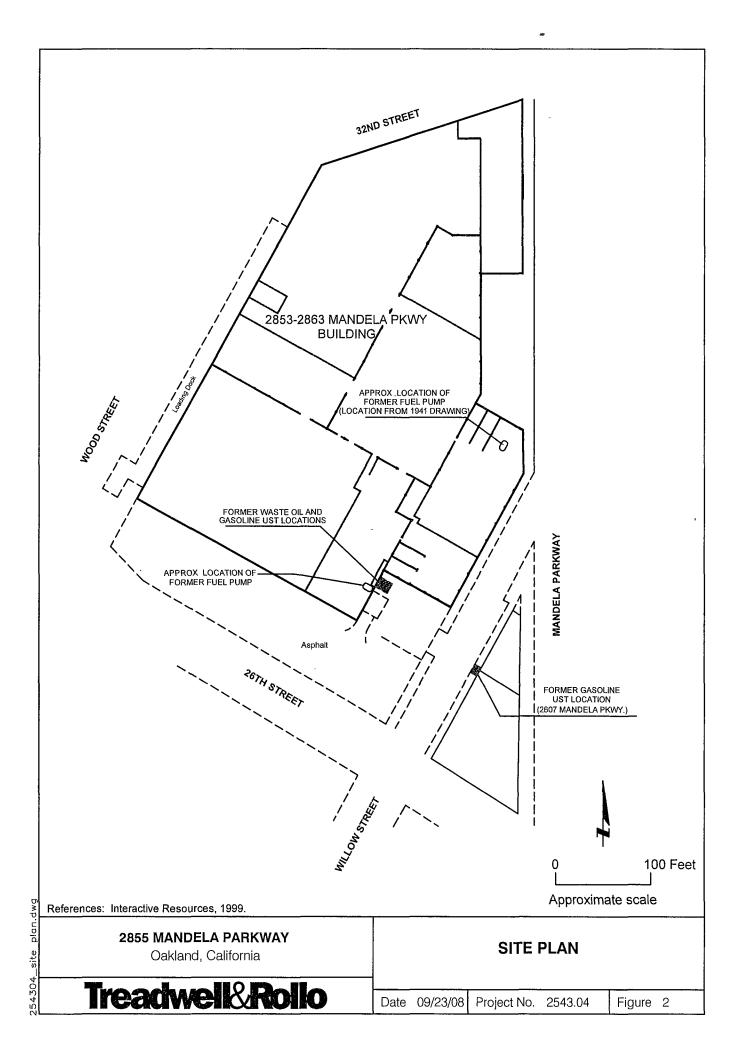
J = Estimated value

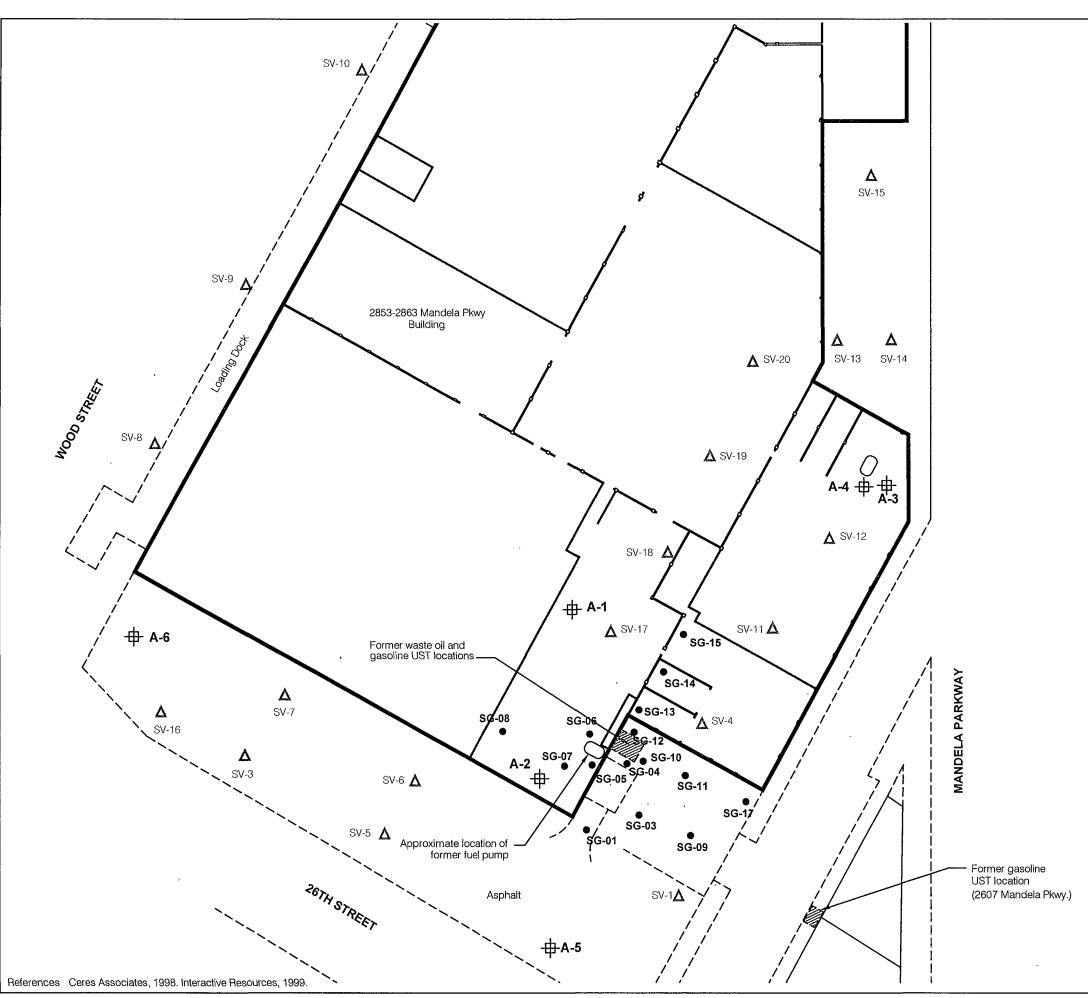
< = Indicates chemical is not detected, or detected at a level less than the given detection limit

Treadwell&Rollo

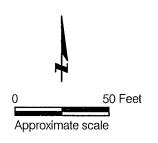
FIGURES







- EXPLANATION
- Approximate location of soil gas sample by ATEC Environmental, 1992
- ▲ Approximate location of soil gas sample by CERES Associates, 1998
- Approximate location of air gas sample by SOMA, 2000



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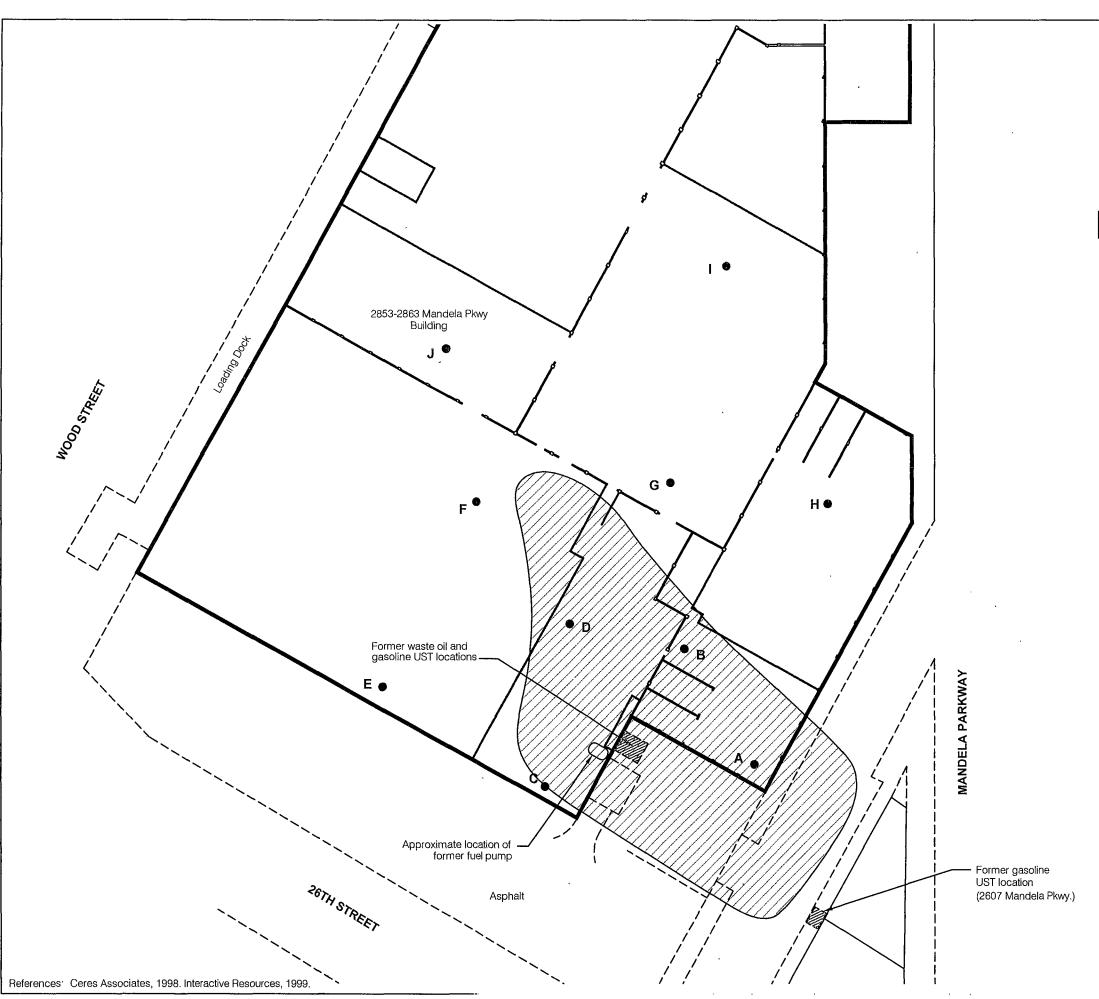
SITE PLAN SHOWING HISTORICAL VAPOR SAMPLING LOCATIONS

Date 09/30/08

Project No. 2543.04

Figure 3





EXPLANATION



Soil vapor sampling point

Free product extent as of 12/1999 based on:

1 - direct observation of product

2 - benzene >2000 μg/L

