

October 23, 2001
Project 2543.02

RO378

Mr. Barney Chan
Alameda County Health Care Services
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

Subject: Additional Remedial Investigation
2855 Mandela Parkway
Oakland, California

Dear Mr. Chan:

Treadwell & Rollo, Inc. has prepared this letter to present data collected during this investigation at 2855 Mandela Parkway in Oakland, California. The scope of work for this investigation was previously presented to you in a Work Plan dated March 29, 2001. As we discussed during our September 6, 2001, meeting with you, Treadwell & Rollo, Inc. will prepare an addendum to the 1999 Remedial Investigation Report which will include this most recent data and will also present our recommendations for a subsequent Corrective Action Plan (CAP). The addendum and CAP will be prepared and submitted after this site has been registered with the Underground Storage Tank (UST) Fund.

(Cleanup Fund)

Background

The existing building on the property is a 143,000 square foot, single-story industrial structure. The building is currently occupied by a number of commercial tenants, mainly for warehousing and storage. The building was originally constructed in 1941 and operated until approximately 1983 by International Harvester as a truck service and sales facility. An underground gasoline storage tank was removed from property in 1991 by a previous owner, Cypress Property.

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 grade. The clayey Bay Mud appears to include heterogeneous zones of sandier soil and organic matter. The stabilized groundwater depth is approximately eight to ten feet and there are indications of a localized (i.e., discontinuous) perched water zone at the interface between the fill and the Bay Mud.

Environmental investigations have confirmed the presence of gasoline free product within the Bay Mud and potentially significant concentrations of the gasoline constituents benzene, toluene, ethylbenzene, and total xylenes (BTEX) in groundwater beneath a portion of the property, including under the existing building. However, a soil vapor survey in 1998 suggested only relatively low benzene concentrations in the shallow soil beneath the building. A sample of perched water was collected in 1999 above an area of groundwater known to contain detectable

Mr. Barney Chan
Alameda County Health Care Services
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BTEX concentrations; the perched water samples did not contain detectable BTEX concentrations.

These previous investigation results suggest that gasoline vapors from the free product and those dissolved in the groundwater are inhibited from upward migration into the fill zone beneath the building because of geologic conditions. These conditions include the low-permeability clayey Bay Mud matrix and the presence of a perched water zone, as well as other factors. A study of the indoor ambient air quality completed in March 2001, concluded that gasoline vapors, specifically BTEX, are not migrating in significant concentrations from the subsurface into the building.

Evaluating the distribution of petroleum hydrocarbons, including those in the soil vapors, required collecting field data along multiple lines of evidence:

- Concentrations present in soil gas immediately beneath the existing concrete floor slab
- The presence and chemical quality of a perched water layer at the fill/Bay Mud interface
- The vertical distribution of gasoline free product in the Bay Mud soil column.

The work scope to gather these data was divided into the following tasks.

Task 1. Soil Vapor Sampling and Analysis

Ten soil vapor sampling locations are shown on the attached map. The locations were chosen to provide data to evaluate the potential for vapor migration into the occupied building space. Locations A, B, and D were chosen because they are located immediately above the free product pool. Sampling locations C, E, F, G, and H were chosen because they are adjacent (laterally) to the free product plume or dissolved phase plume beneath occupied portions of the building. Sampling locations I and J were chosen to provide additional lateral definition of the soil vapor plume, if present.

Sampling and Analysis Procedures:

1. To provide access for soil-vapor sampling, the concrete floor slab was cored using a 4-inch diameter core. The base rock immediately below the core locations was removed, as appropriate, to facilitate installing the soil vapor sampling probes.
2. Dedicated vapor-sampling probes were installed using a direct push technique. The dedicated soil vapor probe points (stainless steel) and Teflon sampling tubes will remain in place for subsequent and repeat sampling/monitoring as appropriate. The sampling tubes were grouted in place to provide a vapor seal between the slab and the underlying sand/fill.

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3. The shallow soil vapor probes were set at approximately 2 to 3 feet below top of slab to correspond with the middle of the sandy fill interval.
4. Soil-vapor samples collected from each sampling location were analyzed for BTEX by a California State-certified laboratory (SunStar Laboratories, Inc. of Tustin, California).

Task 2. Stratigraphic Soil Borings and Perched Water Monitoring Well

Two soil borings (2-inch diameter, direct-push probes with continuous soil collection) were advanced to provide additional stratigraphic data (see attached map for locations).

Soil Boring SB-35 is located between existing wells TR-4 and TR-6, both of which have contained free product. The purpose of this boring was: 1) to provide additional stratigraphic information regarding vertical distribution of free product within the Bay Mud; and 2) enable monitoring for the presence and chemical quality of the perched water zone, if present. A continuous core sample was collected from this location. Soil boring SB-36 was advanced to a total depth of approximately 20 feet below ground surface. The continuous core was evaluated in the field for detailed stratigraphic characteristics and was screened in the field for the potential presence of gasoline free product using a Photo-Ionization Detector (PID)-type organic vapor meter. The boring was backfilled with cement grout.

The proposed scope of work stated that a shallow groundwater well would be installed if clear evidence of a perched water zone was observed at Soil Boring SB-35. The shallow sandy unit appeared wet, but it was inconclusive whether a perched water zone is present. Therefore, a shallow well was not installed.

Soil Boring SB-36 was located within the boundary of the former UST excavation. The purpose of this boring was to: 1) evaluate whether free product has been collecting within the former tank excavation; and 2), similar to SB-35, to evaluate the stratigraphy of the Bay Mud and vertical distribution of free product within the soil column. While advancing this boring, concrete debris assumed to be the former surface cap was encountered at a depth of approximately 6 feet below the current ground surface. The Geoprobe™ could not be advanced through the concrete debris, and the boring was stopped at that depth.

Task 3. Install Free Product Monitoring Wells

Based on discussions with the Alameda County Health Care Services (ACHCS), three additional monitoring wells were installed. These wells are designated as TR-7, TR-8, TR-9 on the attached site map. The purpose of these wells is to monitor the stability (i.e., lateral extent) of the free product plume. The locations for these free-product plume monitoring wells were

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chosen based on the assumed extent of that plume. The intent was to place the wells slightly beyond the lateral extent of the free product plume.

The free-product monitoring wells were constructed of 1-inch diameter polyvinyl chloride (PVC) well casing (inside diameter of 0.75 inches). The screened intervals are positioned to permit free phase gasoline, if present, to enter and accumulate in the well casing.

Additionally, because the purpose for these wells is to monitor whether the extent of the free product plume is stable, groundwater will not be extracted from these wells. Groundwater removal by purging or other activities could potentially cause localized disturbance and migration of the free product plume. Therefore, free product monitoring will be conducted using an electronic interface probe (IP). Initially, these wells will be monitored quarterly (every three months) for the first year. Subsequent monitoring will be conducted on an annual, or as-needed, basis.

Investigation Results

The soil vapor samples collected from the ten probes installed in June 2001 did not contain detectable concentrations of BTEX. These probes are typically located within the shallow soil above areas that are known to have free product or high concentrations of gasoline in the groundwater. These results suggest that gasoline vapors (specifically the BTEX constituents) are not migrating upward towards the building. These data further support the previous (March 2001) indoor air sample results that also indicate that gasoline vapors from the subsurface are not entering the building through the floor slab. The data sheets from the analytical laboratory are attached.

At most soil boring locations, there is a shallow, sandy zone that typically occurs between the ground surface to 5 feet deep. That sandy zone is typically underlain by a clay zone. The base of the shallow sandy zone is sometime very wet to saturated, and may represent a perched water zone at the interface between the sandy and clay zones. This perched water zone appears to be relatively thin, and may not be present beneath the entire site. Soil boring logs are attached.

The free-phase gasoline appears to be present in a relatively thin, laterally discontinuous zone of organic-rich ("peaty") clay that typically occurs between 6 and 9 feet below the ground surface. The peaty clay zone appears significantly more permeable than the surrounding clay, thereby allowing flow within that unit. The peaty clay zone was not encountered in each soil boring suggesting that the peaty clay zone is discontinuous. As such, the free-phase gasoline plume configuration is also likely discontinuous, occurring in localized areas rather than beneath the entire site.

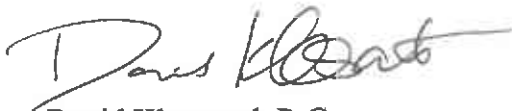
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None of the monitoring wells (TR-7, TR-8, and TR-9) installed for this additional investigation contain a measurable thickness or sheen of free-phase gasoline. The peaty clay unit was observed in the borings for Wells TR-7 and TR-8. The wells were constructed such that liquid from that zone will enter the well screen. Because free-phase gasoline was not observed in these wells, this suggests that the lateral extent of free-phase gasoline on the groundwater surface has been defined. Subsequent monitoring of those wells will be used to evaluate whether the free-phase gasoline is migrating.

As stated above, Treadwell & Rollo, Inc. will prepare an addendum to the *1999 Remedial Investigation Report* which will include this most recent data and will also present our recommendations for a subsequent Corrective Action Plan (CAP). The addendum and CAP will be prepared and submitted after this site has been registered with the Underground Storage Tank (UST) Fund.

If you have any questions regarding this report, please call David Kleesattel at (510) 874-4500, extension 541.

Sincerely,
Treadwell & Rollo, Inc.



David Kleesattel, R.G.
Senior Geologist



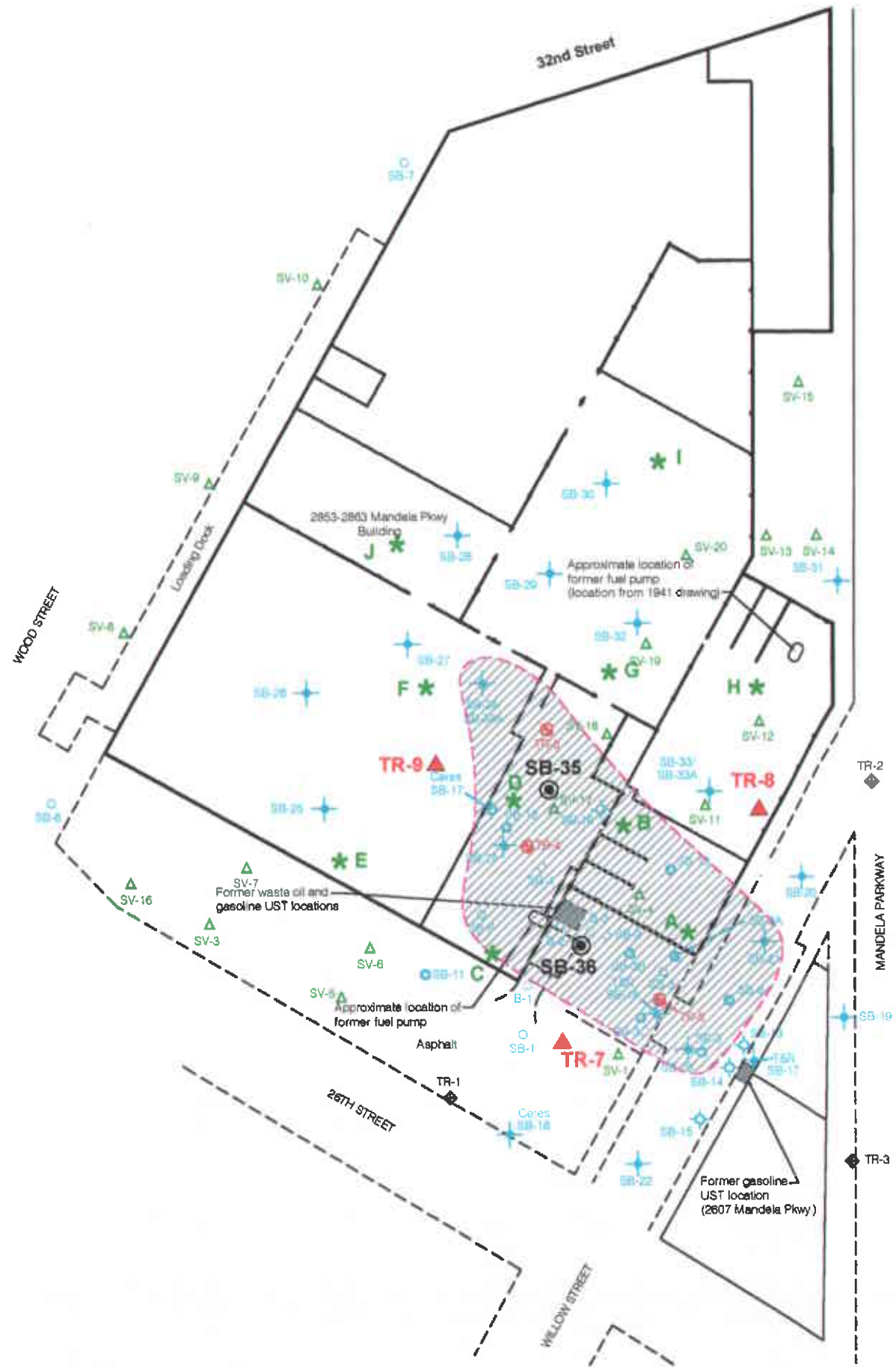
Michael P. McGuire, P.E.
Associate Engineer

25430201.OAK

Attachments: Site Plan
Laboratory Data Sheets
Soil Boring Logs/Well Completion Diagrams

cc: Ms. Faye Beverett
Richard C. Jacobs, Esq.

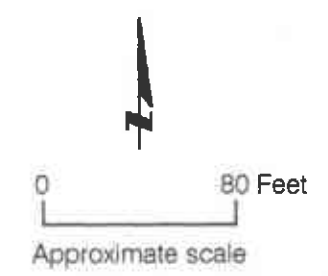
PLANNED SAMPLING LOCATIONS V1 254301.DWG



EXPLANATION

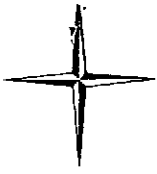
- Soil boring (06/92)
- Soil boring (08/98)
- ⊙ Soil boring (10/98)
- ⊕ Soil boring (11/98)
- ⊕ Soil boring (1999)
- ⊕ Piezometer (1999)
- ⊕ Monitoring well (1999)
- △ Soil vapor sampling (08/98)
- ▨ Free product extent based on:
1 - direct observation of product
2 - benzene >2000 µg/L
- G * Soil - vapor collection point
- SB-35 ⊙ Soil boring
- TR-7 ▲ Free product monitoring piezometer

Note:
Free product may not necessarily be present at all locations within the extent envelope indicated.



2855 MANDELA PARKWAY PROPERTY Oakland, California		
SAMPLING LOCATIONS		
Date 09/05/01	Project No. 2543.01	Figure 1
Treadwell&Rollo		

References: Ceres Associates, 1998. Interactive Resources, 1999.



SunStar Laboratories, Inc.

August 6, 2001

David Kleesattel
Treadwell and Rollo
501 14th Street
3rd Floor
Oakland, CA 94612

SunStar Laboratories Incorporated Batch Number: T-2860

Dear Mr. Kleesattel:

This report contains the analytical results for ten (10) vapor samples received under chain of custody by SunStar Laboratories on August 4, 2001. These samples are associated with your *Mandela Parkway Property / 2543.02* project.

Project Summary

Samples were received in good condition. Sample container(s) and label(s) agreed with the chain of custody as to sample ID, collection time/ date, requested analyses and/or preservatives.

Samples were received in time to meet the method holding time specifications.

All applicable internal quality control analyses including calibration verifications, calibration (instrumentation), method blanks, matrix spike (MS) and matrix spike duplicate (MSD) met method specified acceptance criteria. Any anomalies are reported within the case narrative.

If you require further information or clarification, please feel free to contact us at (714) 505-4010.

Sincerely,


Reviewer

Vironex Inc.
 3002 Dow Ave, Ste. 406
 Tustin, CA 92780
 1-800-847-6639

Chain of Custody Record

T-2860

Client: Treadwell and Rollo
 Address: 501 14th Street 3rd Floor Oakland, 94612
 Phone: 510 874 4500 Fax: 510 874 4507
 Project Manager: David Kleebattel

Date: 08-03-01 Page: 1 of 1
 Project Name: Mandela Parkway Property
 Collector: BM Client Project #: 2543.02
 Batch #: _____ Proposal #: SF10723-1557

Sample ID	Date Sampled	Time	Sample Type	Container Type	EPA 8010	EPA 8020	EPA 8260	EPA 8270	EPA 418.1	EPA 8015M (gasoline)	EPA 8015M (diesel)	EPA 6010/7000 RCRA (8) Metals	EPA 6010/7000 Title 22 Metals	Laboratory ID #	Preservative	Comments	Total # of containers
SG-E	08-03-01	0950	vapor	1 L Tectal									X	01	100		1
SG-F	08-03-01	1000												02			1
SG-I	08-03-01	1045												03			1
SG-D	08-03-01	1100												04			1
SG-G		1105												05			1
SG-J		1014												06			1
SG-C		1105												07			1
SG-A		1130												08			1
SG-B		1138												09			1
SG-H		1200												10			1

Relinquished by: (signature) <u>D. Netherland</u>	Date / Time <u>08-03-01 12:00</u>	Received by: (signature) <u>Bryan M...</u>	Date / Time <u>8/3/01 12:00</u>	Total # of containers Chain of Custody seals Y/N/NA Seals intact? Y/N/NA Received good condition/cold	Notes <u>* BTEX by 8020</u>
Relinquished by: (signature)	Date / Time	Received by: (signature) <u>Olin...</u>	Date / Time <u>8/4/01</u>		
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time		

Sample disposal Instructions: Disposal @ \$2.00 each _____ Return to client _____ Pickup _____

Turn around time: _____

SunStar Laboratories, Inc.

Analytical Report EPA 8260

Client: Treadwell and Rollo
Project Manager: David Kleesattel

Project Name
Mandela Parkway Property

Sample ID: Method Blank
Date Sampled: NA
Date Received: NA
Date Analyzed: 8/4/01
Laboratory ID: T2860-MB
Matrix: Air

Surrogate Compounds

	Conc. (µg/L)	%Rec.
4-Bromofluorobenzene	60.6	121

Compound	Concentration (µg/L)	RL (µg/L)
Benzene	ND	5
Toluene	ND	5
Ethyl benzene	ND	5
m&p-Xylene	ND	10
o-Xylene	ND	5

SunStar Laboratories, Inc.

Analytical Report EPA 8260

Client: Treadwell and Rollo
Project Manager: David Kleesattel

Project Name
Mandela Parkway Property

Sample ID: SG-E
Date Sampled: 8/3/01
Date Received: 8/4/01
Date Analyzed: 8/4/01
Laboratory ID: T2860-01
Matrix: Air

Surrogate Compounds
4-Bromofluorobenzene

Conc. (µg/L)
49.7

%Rec.
99

Compound	Concentration (µg/L)	RL(µg/L)
Benzene	ND	5
Toluene	ND	5
Ethyl benzene	ND	5
m&p-Xylene	ND	10
o-Xylene	ND	5

SunStar Laboratories, Inc.

Analytical Report EPA 8260

Client: Treadwell and Rollo
Project Manager: David Kleesattel

Project Name
Mandela Parkway Property

Sample ID: SG-F
Date Sampled: 8/3/01
Date Received: 8/4/01
Date Analyzed: 8/4/01
Laboratory ID: T2860-02
Matrix: Air

Surrogate Compounds
4-Bromofluorobenzene

Conc. (µg/L)
55.2

%Rec.
110

Compound	Concentration (µg/L)	RL (µg/L)
Benzene	ND	5
Toluene	ND	5
Ethyl benzene	ND	5
m&p-Xylene	ND	10
o-Xylene	ND	5

SunStar Laboratories, Inc.

Analytical Report EPA 8260

Client: Treadwell and Rollo
Project Manager: David Kleesattel

Project Name
Mandela Parkway Property

Sample ID: SG-1
Date Sampled: 8/3/01
Date Received: 8/4/01
Date Analyzed: 8/4/01
Laboratory ID: T2860-03
Matrix: Air

Surrogate Compounds	Conc. (µg/L)	%Rec.
4-Bromofluorobenzene	57.8	116

Compound	Concentration (µg/L)	RL(µg/L)
Benzene	ND	5
Toluene	ND	5
Ethyl benzene	ND	5
m&p-Xylene	ND	10
o-Xylene	ND	5

SunStar Laboratories, Inc.

Analytical Report EPA 8260

Client: Treadwell and Rollo
Project Manager: David Kleesattel

Project Name
Mandela Parkway Property

Sample ID: SG-D
Date Sampled: 8/3/01
Date Received: 8/4/01
Date Analyzed: 8/4/01
Laboratory ID: T2860-04
Matrix: Air

Surrogate Compounds	Conc. (µg/L)	%Rec.
4-Bromofluorobenzene	62.1	124

Compound	Concentration (µg/L)	RL(µg/L)
Benzene	ND	5
Toluene	ND	5
Ethyl benzene	ND	5
m&p-Xylene	ND	10
o-Xylene	ND	5

SunStar Laboratories, Inc.

Analytical Report EPA 8260

Client: Treadwell and Rollo
Project Manager: David Kleesattel

Project Name
Mandela Parkway Property

Sample ID: SG-G
Date Sampled: 8/3/01
Date Received: 8/4/01
Date Analyzed: 8/4/01
Laboratory ID: T2860-05
Matrix: Air

<u>Surrogate Compounds</u>	<u>Conc. (µg/L)</u>	<u>%Rec.</u>
4-Bromofluorobenzene	55.7	111

Compound	Concentration (µg/L)	RL (µg/L)
Benzene	ND	5
Toluene	ND	5
Ethyl benzene	ND	5
m&p-Xylene	ND	10
o-Xylene	ND	5

SunStar Laboratories, Inc.

Analytical Report EPA 8260

Client: Treadwell and Rollo
Project Manager: David Kleesattel

Project Name
Mandela Parkway Property

Sample ID: SG-J
Date Sampled: 8/3/01
Date Received: 8/4/01
Date Analyzed: 8/4/01
Laboratory ID: T2860-06
Matrix: Air

<u>Surrogate Compounds</u>	<u>Conc. (µg/L)</u>	<u>%Rec.</u>
4-Bromofluorobenzene	53.5	107

Compound	Concentration (µg/L)	RL(µg/L)
Benzene	ND	5
Toluene	ND	5
Ethyl benzene	ND	5
m&p-Xylene	ND	10
o-Xylene	ND	5

SunStar Laboratories, Inc.

Analytical Report EPA 8260

Client: Treadwell and Rollo
Project Manager: David Kleesattel

Project Name
Mandela Parkway Property

Sample ID: SG-C
Date Sampled: 8/3/01
Date Received: 8/4/01
Date Analyzed: 8/4/01
Laboratory ID: T2860-07
Matrix: Air

Surrogate Compounds
4-Bromofluorobenzene

Conc. (µg/L)
52.7

%Rec.
105

Compound	Concentration (µg/L)	RL (µg/L)
Benzene	ND	5
Toluene	ND	5
Ethyl benzene	ND	5
m&p-Xylene	ND	10
o-Xylene	ND	5

SunStar Laboratories, Inc.

Analytical Report EPA 8260

Client: Treadwell and Rollo
Project Manager: David Kleesattel

Project Name
Mandela Parkway Property

Sample ID: SG-A
Date Sampled: 8/3/01
Date Received: 8/4/01
Date Analyzed: 8/4/01
Laboratory ID: T2860-08
Matrix: Air

Surrogate Compounds

	<u>Conc. (µg/L)</u>	<u>%Rec.</u>
4-Bromofluorobenzene	49.2	98

Compound	Concentration (µg/L)	RL (µg/L)
Benzene	ND	5
Toluene	ND	5
Ethyl benzene	ND	5
m&p-Xylene	ND	10
o-Xylene	ND	5

SunStar Laboratories, Inc.

Analytical Report EPA 8260

Client: Treadwell and Rollo
Project Manager: David Kleesattel

Project Name
Mandela Parkway Property

Sample ID: SG-B
Date Sampled: 8/3/01
Date Received: 8/4/01
Date Analyzed: 8/4/01
Laboratory ID: T2860-09
Matrix: Air

Surrogate Compounds

	<u>Conc. (µg/L)</u>	<u>%Rec.</u>
4-Bromofluorobenzene	56.5	113

Compound	Concentration (µg/L)	RL(µg/L)
Benzene	ND	5
Toluene	ND	5
Ethyl benzene	ND	5
m&p-Xylene	ND	10
o-Xylene	ND	5

SunStar Laboratories, Inc.

Analytical Report EPA 8260

Client: Treadwell and Rollo
Project Manager: David Kleesattel

Project Name
Mandela Parkway Property

Sample ID: SG-H
Date Sampled: 8/3/01
Date Received: 8/4/01
Date Analyzed: 8/4/01
Laboratory ID: T2860-10
Matrix: Air

<u>Surrogate Compounds</u>	<u>Conc. (µg/L)</u>	<u>%Rec.</u>
4-Bromofluorobenzene	53.8	108

Compound	Concentration (µg/L)	RL(µg/L)
Benzene	ND	5
Toluene	ND	5
Ethyl benzene	ND	5
m&p-Xylene	ND	10
o-Xylene	ND	5

PROJECT: **MANDELA PARKWAY**
Oakland, California

Log of Boring SB-35

Boring location: See Site Plan

Logged by: D. Sutherland

Date started: 6/4/01

Date finished: 6/4/01

Drilling method: Direct push-geoprobe

Hammer weight/drop:

Hammer type:

Sampler: Continuous core

DEPTH (feet)	SAMPLES					LITHOLOGY	MATERIAL DESCRIPTION
	Sample Number	Sample	Blow Count	Recovery (inches)	OVN (ppm)		
							Surface Conditions: concrete floor slab
1							6 inches concrete
2						SW	SAND (SW), 90% recovery gray-brown, dense, moist, some fine to medium gravel, shell fragments
3							wet, gray-brown to brown
4							
5						CL	SANDY CLAY (CL) dark gray, soft, wet, soft to stiff, no odor
6							
7					86	OH	PEATY CLAY (OH) dark gray, very stiff, moist, gasoline odor
8							
9					227		CLAY (CL) dark gray, medium stiff, moist, gasoline odor, soft, shell fragments at 9.0 feet
10						CL	
11							
12							
13					210		SANDY CLAY (CL) light gray, stiff, moist, fine gravel, gasoline odor
14						CL	gray to gray-brown, hard, increase in medium gravel
15							
16						SW	SAND (SW) brown, dense, moist, fine to medium sand, no odor
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

Boring terminated at a depth of 16.0 feet.
Boring backfilled with grout.
During drilling, wet zone potentially indicating perched groundwater encountered at a depth of 3.5 feet.

Treadwell & Rollo

Project No.: 2543.02

Figure:

A-1

PROJECT: **MANDELA PARKWAY**
Oakland, California

Log of Boring SB-36

Boring location: See Site Plan

Logged by: D. Sutherland

Date started: 6/4/01

Date finished: 6/4/01

Drilling method: Direct push-geoprobe

Hammer weight/drop:

Hammer type:

Sampler: Continuous core

DEPTH (feet)	SAMPLES				OVM (ppm)	LITHOLOGY	MATERIAL DESCRIPTION
	Sample Number	Sample	Blow Count	Recovery (inches)			
							Surface Conditions: concrete pavement
1							6 inches concrete
2							CLAYEY GRAVEL (GC) gray, loose, moist, 15% recovery
3					3.3	GC	SANDY CLAY (CL) dark gray, soft, moist, with some gravel and wood fragments
4							
5					13.9		
6							concrete debris, refusal - end of hole
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
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23							
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25							
26							
27							
28							
29							
30							

FILL

Boring terminated at a depth of 6.0 feet.
Boring backfilled with grout.
Groundwater not encountered at time of drilling.

Treadwell & Rollo

Project No.: 2543.02

Figure:

A-2

PROJECT:

MANDELA PARKWAY
Oakland, California

Log of Boring TR-7

PAGE 1 OF 1

Boring location: See Site Plan

Logged by: D. Sutherland

Date started: 6/4/01

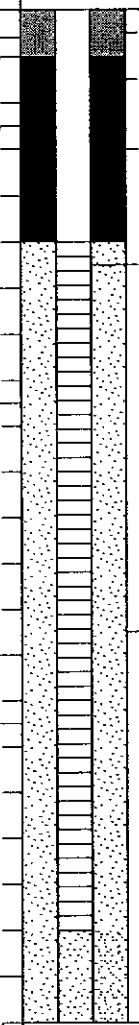
Date finished: 6/4/01

Drilling method: Direct push-geoprobe

Hammer weight/drop:

Hammer type:

Sampler: Continuous core

DEPTH (feet)	SAMPLES				OVM (ppm)	LITHOLOGY	MATERIAL DESCRIPTION	WELL COMPLETION INFORMATION
	Sample Number	Sample	Blow Count	Recovery (feet)				
1						6 inches asphalt pavement	 <p>Grout From 0 To 1 Feet Blank Casing From 1 To 5 Feet Bentonite From 1 To 5 Feet Screened Casing From 5 To 20 Feet Sand From 5 To 22 Feet</p>	
1					GW	GRAVEL (GW)		
2					CL	gray, loose, moist, with some clay, (fill)		
2					CL	CLAY (CL)		
3						dark gray, very stiff, moist, becomes interbedded with sand		
3					SW	SAND (SW)		
4						red-brown, very dense, moist, no odor		
5						wet at 5.5 feet		
6						SILTY PEATY CLAY (OL)		
7					OL	medium stiff, wet, no odor		
9						CLAY (CL)		
9						dark brown, moist, stiff, decrease in plant fragments, no odor		
11					CL			
12						shell fragments at 12.0 feet		
15					CL	GRAVELLY CLAY (CL)		
15						light gray, stiff, moist, no odor		
16						SANDY CLAY (CL)		
17						light gray, very stiff, moist, very fine sand decreasing sand gray to orange-brown mottling at 16.5 feet		
18					CL			
22					SC	CLAYEY SAND (SC)		
22						orange-brown, medium dense sand, moist, gray mottling, no odor		
23								
24								
25								
26								
27								
28								
29								
30								

Boring terminated at a depth of 22.0 feet.

Note: 0.010 inch slotted PVC casing with pre-pack sand.

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Project No.: 2543.02

Figure:

A-3

TEST ENVIRONMENTAL WELL 254302.GPJ T&R.GDT 9/24/01

PROJECT: **MANDELA PARKWAY**
Oakland, California

Log of Boring TR-8

Boring location: See Site Plan

Logged by: D. Sutherland

Date started: 8/10/01

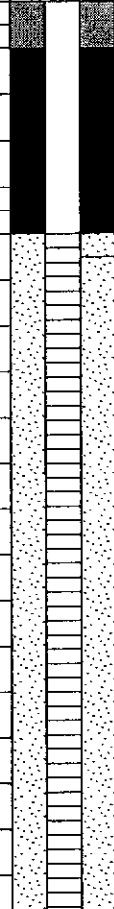
Date finished: 8/10/01

Drilling method: Direct push-geoprobe

Hammer weight/drop:

Hammer type:

Sampler: Continuous core

DEPTH (feet)	SAMPLES				OVM (ppm)	LITHOLOGY	MATERIAL DESCRIPTION	WELL COMPLETION INFORMATION
	Sample Number	Sample	Blew Count	Recovery (feet)				
1							6 inches concrete floor slab	 <p>Grout From 0 To 1 Feet Blank Casing From 1 To 5 Feet Bentonite From 1 To 5 Feet Screened Casing From 5 To 20 Feet Sand From 5 To 20 Feet</p>
2						0-2 inches gravel SANDY CLAY (SC) 30% recovery olive-gray, stiff, moist, with some fine to medium gravel		
3								
4							wet at 4.5 feet	
5							CLAY (CL) 100% recovery dark, gray, soft, wet	
6								
7								
8								
9								
10								
11							SANDY CLAY (SC) light gray, moist, with trace fine sand, stiff	
12								
13							gray to gray-brown, odor of gasoline wet at 13.0 feet	
14							CLAY (CL) 100% recovery black, soft, wet, some organic matter	
15								
16							increased sand decrease in organic matter 15.5-16.5 slight odor gasoline	
17							SANDY CLAY (SC) 100% recovery light brown, hard, moist, some orange mottling	
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

Boring terminated at a depth of 20.0 feet.
During drilling, wet zone potentially indicating groundwater encountered at a depth of 4.5 feet and 13.0 feet.

Note: 0.010 inch slotted PVC casing with pre-pack sand.

Treadwell & Rollo

Project No.: 2543.02

Figure:

A-4

TEST ENVIRONMENTAL WELL 254302.GPJ T&R.GDT 9/24/01

Boring location: See Site Plan
 Date started: 6/5/01
 Date finished: 6/5/01
 Drilling method: Direct push-geoprobe
 Hammer weight/drop:
 Hammer type:
 Sampler: Continuous core

DEPTH (feet)	SAMPLES				OMV (ppm)	LITHOLOGY	MATERIAL DESCRIPTION	WELL COMPLETION INFORMATION
	Sample Number	Sample	Blow Count	Recovery (feet)				
1						CL	6 inches concrete floor slab SANDY CLAY (CL) gray-brown, medium dense, moist, with brick fragments, no odor	<p>Grout From 0 To 1 Feet Blank Casing From 1 To 6 Feet Bentonite From 1 To 6 Feet Screened Casing From 6 To 16 Feet Sand From 6 To 16 Feet</p>
2								
3						SW	SAND (SW), 85% recovery gray, dense, moist, fine to medium sand, with shell fragments, no odor	
4								
5						CL	CLAY (CL) dark gray, very soft, moist, no odor wet at 5.5 feet	
6								
7						OH	ORGANIC CLAY (OH) dark gray, soft, moist, decomposing odor	
8								
9								
10					0.0			
11						CL	CLAY (CL) dark gray, very soft, moist, with trace fine sand, no odor	
12								
13								
14								
15						CL	∇ wet at 14.0 to 14.5 feet SANDY CLAY (CL) light gray, hard, dry, with fine to medium gravel, brown mottling, shell fragments gray to brown at 15.5 feet	
16								
17								
18								
19								
20								
21								
22								
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27								
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29								
30								

TEST ENVIRONMENTAL WELL 254302.GPJ, T&R.GDT, 9/24/01

Boring terminated at a depth of 16.0 feet.
 During drilling, wet zone potentially indicating groundwater encountered at a depth of 5.5 feet and 14.0 feet.

Note: 0.010 inch slotted PVC casing with pre-pack sand.

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Project No.: 2543.02 Figure: A-5