Waste Management of Alameda County, Inc.
172 98th Avenue, Oakland, CA 94603

June 7, 2013

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Alameda County Health Care Services Agency
Environmental Health Services, Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Attn: Mr. Jerry Wickham, PG, CEG, CHG
Senior Hazardous Materials Specialist

Transmittal: Vapor Intrusion Assessment Workplan
Former Waste Management Facility
6175 Southfront Road, Livermore, California
GeoTracker Global ID T10000003066
SLIC Case RO0003076

Dear Mr. Wickham:

I declare, under penalty of perjury, that the information and recommendations contained in the attached Work Plan are true and correct to the best of my knowledge.

Sincerely,
Waste Management

Barry Skolnick
Area Vice President
WM-California Bay Area

Attachment

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June 12, 2013

Mr. Jerry Wickham
Senior Hazardous Materials Specialist
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502 142782

Subject: Vapor Intrusion Assessment Work plan for Former Waste Management of Alameda County, Inc. property, 6175 Southfront Road, Livermore, California 94550

Dear Mr. Wickham,

This Work Plan was prepared by Brown and Caldwell (BC) on behalf of Waste Management of Alameda County, Inc. (WMAC) to conduct additional investigations at the former WMAC facility located at 6175 Southfront Road, Livermore, California (Site; Figure 1). The scope of work presented in the Work Plan is in accordance with the request for additional sub-slab vapor and indoor air from the Alameda County Department of Environmental Health (ACEH) presented in their letter dated April 11, 2013 The April 11, 2013 letter provided ACEH's comments to BC's March 15, 2013 Letter Report summarizing the results of the initial field investigation, indoor air sampling, and additional groundwater grab sampling. These comments included:

> *"Vinyl chloride was not detected above a reporting limit of 0.041 µg/m³in the ambient or indoor air samples. The Report concludes that the indoor and ambient air data show no evidence of vapor intrusion at the subject site. However, the sub-slab sample data indicate that the potential for vapor intrusion was significantly higher in November 2012 when vinyl chloride was present in the sub-slab rather than February 2013 when vinyl chloride was not detected in the sub-slab. Unfortunately, no indoor air samples were collected in November 2012 when there was a potential for vapor intrusion. Therefore, the assessment of the potential for vapor intrusion is not complete."*

Based on this comment, the ACEH requested that WMAC submit a Work Plan no later than June 13, 2013 to conduct an additional vapor intrusion assessment that should include:

- Sub-slab vapor sampling
- Analysis of sub-slab vapor samples on a real time basis in order to determine whether indoor air sampling should be performed
- Indoor and ambient air sampling
- Possible radon analysis in sub-slab and indoor air samples to help assess slab attenuation

The purpose of this Work Plan is to document the proposed sample locations, numbers and analytical procedures and field methods that will be used to collect data during the Vapor Intrusion Assessment. Specifically, the Work Plan describes: the health and safety procedures that will be implemented during field activities, quality control proce-

dures, and sampling rationale and methods proposed to collect and analyze environmental data at the Site. Environmental media including soil gas and air will be sampled to determine if chlorinated solvents previously detected on site may be a risk to human health and the environment. Since both sub-slab and indoor air sampling are included both from the February 2013 sampling round and the proposed sampling event described in this Work Plan, radon analysis to assess slab attenuation has not been included within the proposed scope of work as the combined methods provide the attenuation rate of any volatile organic compounds (VOCs) present in the sub-slab.

The ACEH also requested that WMAC claim the site in the California state Geotracker system and upload required reports and documents. On May 08, 2013 the site was claimed on the Geotracker system and the site investigation report and analytical laboratory electronic deliverable format (EDF) reports were downloaded onto the site. Since no permanent monitoring wells were installed as part of the investigations, no survey data was included in this submittal. In addition, the inconsistencies noted by the ACEH (Technical Comment No. 2) between the analytical laboratory reports and report tables were corrected for the downloaded version on Geotracker. A copy of the corrected report for your files has been included in this submission.

As noted below, there are no methods to collect sub-slab samples on a real time basis to assess concentrations of vinyl chloride at the detection limits required to assess indoor air risks. Following the Vapor Intrusion Guidance published by the California Department of Toxic Substances Control (DTSC, 2011), this Work Plan outlines the procedures to collect one more round of sub-slab sampling and indoor air testing during a different season than the sampling round conducted in February 2013. To provide the "worst case" scenario, this sampling round will be conducted during the end of the Summer 2013 season (August or September 2013) when vapor concentrations would be expected to be at their highest due to the high ambient temperatures and low to no rainfall.

If the results of this testing indicate that there are no risks to human health from indoor air, regardless of whether vinyl chloride is detected in the sub-surface, the report summarizing the results of this testing will request a "No Further Action" (NFA) status from the ACEH. WMAC is requesting that the ACEH provide concurrence with this approach prior to conducting the additional round of sampling.

Site Overview

The Site was formally used by WMAC as a regional operations yard. A fleet of refuse/recycling materials collection trucks operated from the facility and served the cities of Livermore and San Ramon. The collection trucks were stored, serviced and cleaned on the Site.

As discussed in the June 12, 2012 Work Plan prepared by BC for the Site, previous investigations indicated that one 10,000-gallon diesel underground storage tank (UST) and one 4,000-gallon gasoline/diesel UST formerly existed on the Site (Figure 2). The two USTs were reportedly installed in the early 1980s. Regulatory records indicate that both tanks and/or associated piping leaked and impacted soil and groundwater. The USTs were removed in April 1992. More than 1,000 cubic yards of impacted soil were excavated and disposed of off-site, and 6.2 million gallons of impacted groundwater were ultimately extracted, treated on-site and discharged to the sanitary sewer. The ACEH granted case closure on August 31, 1998. The closure letter stated that up to 380

parts per million (ppm) total petroleum hydrocarbons as gasoline (TPH-g) and 1.3 ppm benzene remained in the soil beneath the Property, and up to 5.8 parts per billion (ppb) benzene remained in the groundwater beneath the Site.

In addition, a pressure wash area and clarifier were located on the Site. The steam pressure washer used injected soap and/or degreasers to wash equipment, disposal trucks, engines and parts at this location. Waste water from the pressure wash area was discharged to the sanitary sewer via a clarifier (Figure 2).

As part of a property transfer assessment conducted for the Site, several investigations were conducted to evaluate the potential for fuel-related vapor intrusion impacts (associated with the former USTs) to nearby structures and to evaluate the potential for subsurface environmental impacts in the vicinity of the pressure wash area, clarifier and associated sewer lines. In a report prepared by Tetra Tech Geo dated January 2012, it was concluded that:

- No total petroleum hydrocarbons (TPH) impacts were evident in soil and groundwater.
- No TPH or VOC impacts were present in groundwater below the area of identified vinyl chloride impacts in soil vapor at SV-6.
- Vinyl chloride was detected above environmental screening levels in the area of SV-6 (Figure 3) where vinyl chloride was previously detected.

Based on the results of the Tetra Tech additional investigation, the ACEH issued their letter dated March 26, 2012, requesting additional work to:

- Evaluate the potential for vapor intrusion to the Break Room/Offices adjacent to the reported vinyl chloride impacts in soil gas.
- Identify the source of vinyl chloride.
- Collect groundwater samples of first water to determine the potential for shallow groundwater contamination.

BC conducted the additional investigation in November 2012 and February 2013 to address the concerns of ACEH. The investigation showed tetrachloroethene (PCE) and trichloroethene (TCE) present at the site are below the commercial California Human Health Screening Levels (CHHSL) as shown in Figure 4. Indoor air samples conducted during these investigations show that vinyl chloride present in the subsurface is not causing intrusion concerns inside the building. The concentrations of vinyl chloride present in the soil vapor at the site likely represent the incomplete breakdown of PCE or TCE. The area of PCE and TCE in soil vapor has been horizontally delineated, and the groundwater beneath the soil vapor impacts has also been vertically and horizontally delineated. Samples were collected from first encountered groundwater from five borings at the Site.

Sampling of indoor air and concurrent ambient air at the subject property shows that only one chemical, benzene, was detected above commercial use CHHSLs. However, even though the benzene levels detected indoors were above the commercial use CHHSL, they are identical to ambient levels to one significant figure (i.e. 1 ug/m^3). Thus, the slightly elevated benzene levels can be entirely attributed to the ambient contribution. The ACEH agreed with this conclusion in their April 11, 2013 letter. In short, the indoor and concurrent ambient air data show no evidence of significant vapor intrusion at the subject property.

Scope of Work

BC proposes to conducted sub-slab vapor and indoor/ambient air sampling. This work will be used to verify whether vapor from beneath the Break Room/Offices is intruding into the building, and whether it poses a threat to workers.

Task 1: Sub-Slab Soil Gas Survey

The ACEH has requested that onsite testing of the soil vapor be conducted to determine if ambient and indoor air sampling should be conducted concurrently. The mobile laboratory used previously on Site (TEG) is not able to achieve the low detection limits for vinyl chloride required to compare to CHHSLs. In addition, as described in the Vapor Intrusion Guidance (DTSC, 2011) higher concentrations of soil gas may be observed under buildings than beside a building at the same depth. As the soil gas concentrations may be elevated beneath a building, sub-slab sampling can provide a better idea of soil gas concentrations under a building. Slabs are also generally constructed on an engineered fill that will be more porous than the subsurface silty clays and clayey silts present on site. As such, the soil below a concrete slab without cracks may become a collection point for vapors migrating upward through the sub-surface. The potential for migration of vapors into the sub-slab is maximized during the summer season when the soils are the driest.

Sub-slab soil gas sampling will be conducted to determine if there are VOC concentrations during the summer season that will represent the "worst case" scenario. Vapor samples will be collected by collecting samples from the soil vapor probes installed in the concrete in November 2012, and used in February 2013. The sampling round will be conducted near the end of the 2013 summer season (August or September). The ACEH will be contacted at least one week prior to conducting the sampling round.

The tubing will be purged of 3 volumes prior to collecting samples in a one-liter summa canister with flow controller provided by Air Toxics. The summa canister will be used to sample for EPA Method TO-15 for VOCs. The summa canister will be fitted with a flow controller to flow at 200 milliliters per minute (mL/min). Prior to collection of the sample in the summa canister, the canister, flow controller, and fittings will be tested by conducting a shut-in test. The test will be conducted by applying a vacuum of at least 10 inches of water on the tubing while the valve to the summa canister is closed. Once the vacuum is applied, the valve from the vacuum pump will be closed. If the vacuum holds for at least five minutes, the shut-in test will be considered successful. If the vacuum drops, the fittings will be checked and tightened, and the test will be repeated until the vacuum holds for at least five minutes.

Task 2: Ambient and Indoor Air Sampling

In order to assess if VOCs (if present) in the sub-slab have the potential to impact indoor air, samples will be collected of the indoor air and ambient air. Sampling will consist of collecting four air samples—two outside the building and two inside the break-room/offices building (within the bathroom and shop). The locations of the indoor and ambient air sampling will be the same as the samples collected in February 2013. Samples will be collected using 6-liter summa canisters. For quality control purposes, a replicate of each sample from inside of the building will be collected, for a total of six samples. The intake for the summa canister will be placed in the breathing zone (approximately five feet above ground surface). The summa canisters will be individually

certified clean by the laboratory for selected ion monitoring (SIM), which provides a lower detection limit.

The building is used for commercial purposes; therefore, consistent with DTSC indoor air sampling guidance, each indoor air sample will be collected over an 8-hour period using a laboratory-provided flow controller. The indoor air samples will be collected in an environment that is more conservative than under normal building use. Heating and air conditioning systems will be set to operate normally for the season and time of day, however the shop space normally has a roll-up door (able to accommodate a garbage truck) that is open during business hours. The indoor air samples will be collected with the door shut. The sampling will take place on a weekend when workers are not present, and the building has been closed for at least 12 hours prior to starting sampling. The two outdoor, or ambient, air samples will be collected upwind of the building (on the west side) set at five feet off the ground and approximately 15 feet from the building along the fence-line with Caltrans. Prior to starting collection of the samples, a photoionization detector (PID) will be used to determine if there were any sources of VOC present in the shop space, as the shop contains numerous chemicals used for the maintenance of trucks (brake cleaner, carb cleaner, spray paint, WD-40, etc.). If there are VOC readings off of rags or other movable items, they will be removed from the building.

ACEH has requested radon analysis in sub-slab and indoor air samples to help assess slab attenuation, however the sampling of both sub-slab and indoor air samples will provide the attenuation rate of any VOCs present in the sub-slab as described in the DTSC (2011) Vapor Intrusion Guidance.

Data Interpretation and Reporting

BC will document the results of the field investigation and data interpretation in a report after receiving the completed analytical laboratory reports. The report will include figures, tabulated data and an update to the conceptual site model, and will present a closure strategy for the Site. If the data collected from this sampling event shows that there are again no indoor air impacts from chlorinated VOCs, Brown and Caldwell will submit a report documenting the results along with the previous air monitoring conducted on Site and will request NFA status from the ACEH. This sampling event along with the February 2013 sampling event will document an investigation that complies with the recommendations in DTSC's vapor intrusion guidance.

Schedule

BC is prepared to commence work following acceptance of the Work Plan and proposed approach for NFA status by ACEH. The field investigation will be initiated near the end of the 2013 summer season (August or September). The field investigation will be completed within two weeks of starting work. The report outlining the results of the investigation will be submitted to ACEH within four weeks of receiving the final analytical laboratory reports.

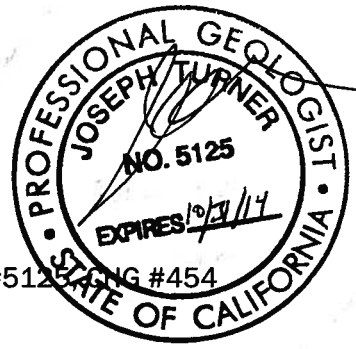
Summary

Based on the results of the various site investigations to date, WMAC requests acceptance of this Work Plan and concurrence from ACEH for the proposed approach to reach NFA status even if no vinyl chloride is detected from sub-slab sampling during this final sampling event.

Should you have any questions, please do not hesitate to contact Mr. Joe Turner at (916) 853-5334.

Very truly yours,

Brown and Caldwell



Joseph B. Turner, PG #5125, CHG #454
Chief Hydrogeologist

CEF:ds

Attachments (1)

1. Figures

Figures

Figure 1. Project Site Location
Figure 2. Existing Site Features
Figure 3. Historical Soil Vapor Sample Locations and Results
Figure 4. Soil Vapor Analytical Results

DATE	PROJECT	SITE	
5-18-12	142782	6175 Southfront Road, Livermore, Callifornia	Figure 1
Brown AND Caldwell		TITLE: Project Site Location	

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Legend

Sanitary sewer line (with direction of flow)

SITE
6175 Southfront Road, Livermore, California

TITLE
Existing Site Features

Brown AND Caldwell

DATE 5/18/2012

PROJECT 142782

Figure 2

NORTH

0 50

Feet

Source: maps.google.com, 2011

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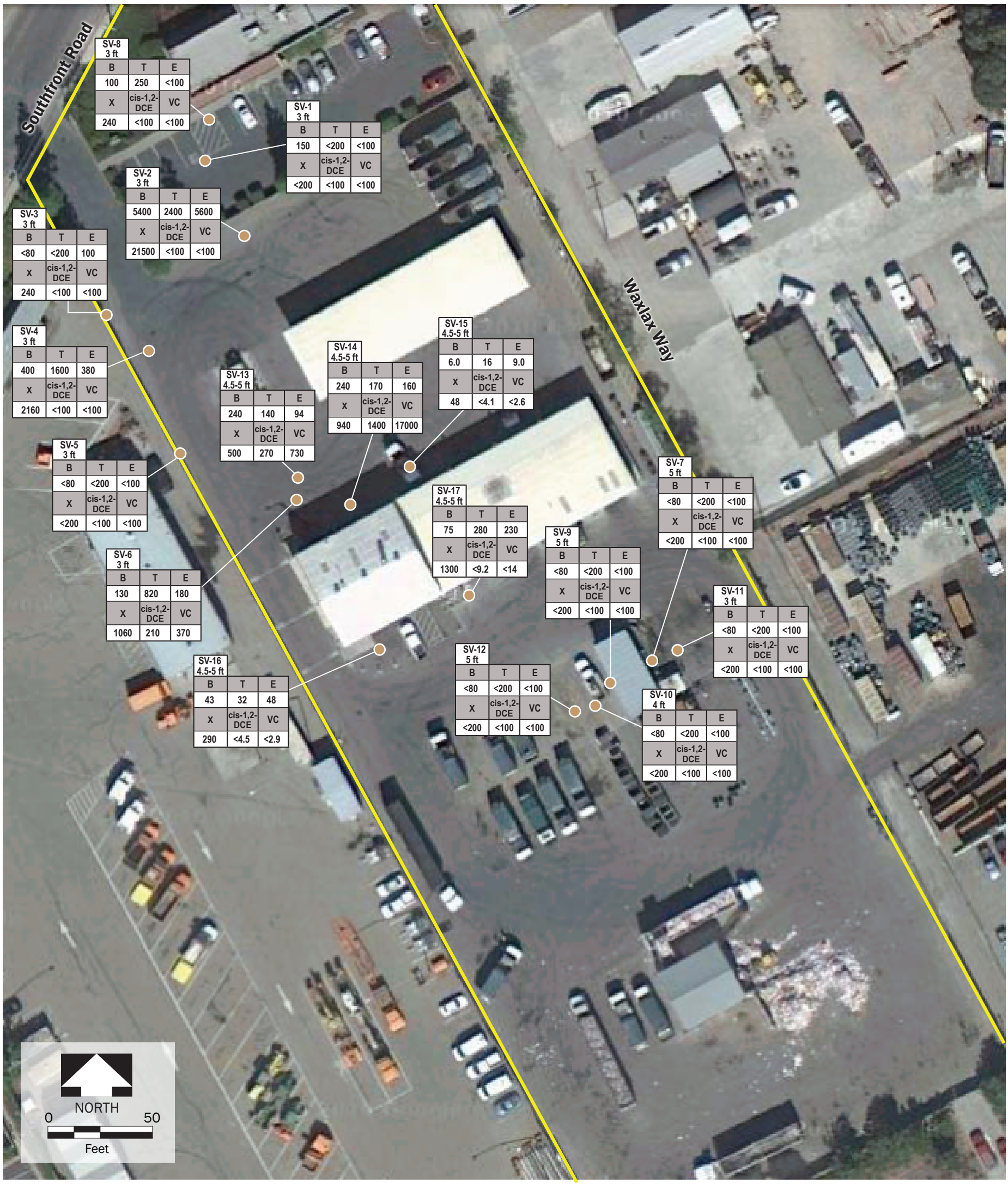


Legend

B	Benzene
T	Toluene
E	Ethylbenzene
X	Total Xylenes
cis 1,2-DCE	cis 1,2-Dicholoroehene
VC	Vinyl Chloride

Sample measurements are in micrograms per cubic meter (µg/m3)

SITE
6175 Southfront Road, Livermore, California

TITLE
Historical Soil Vapor Sample Locations and Results

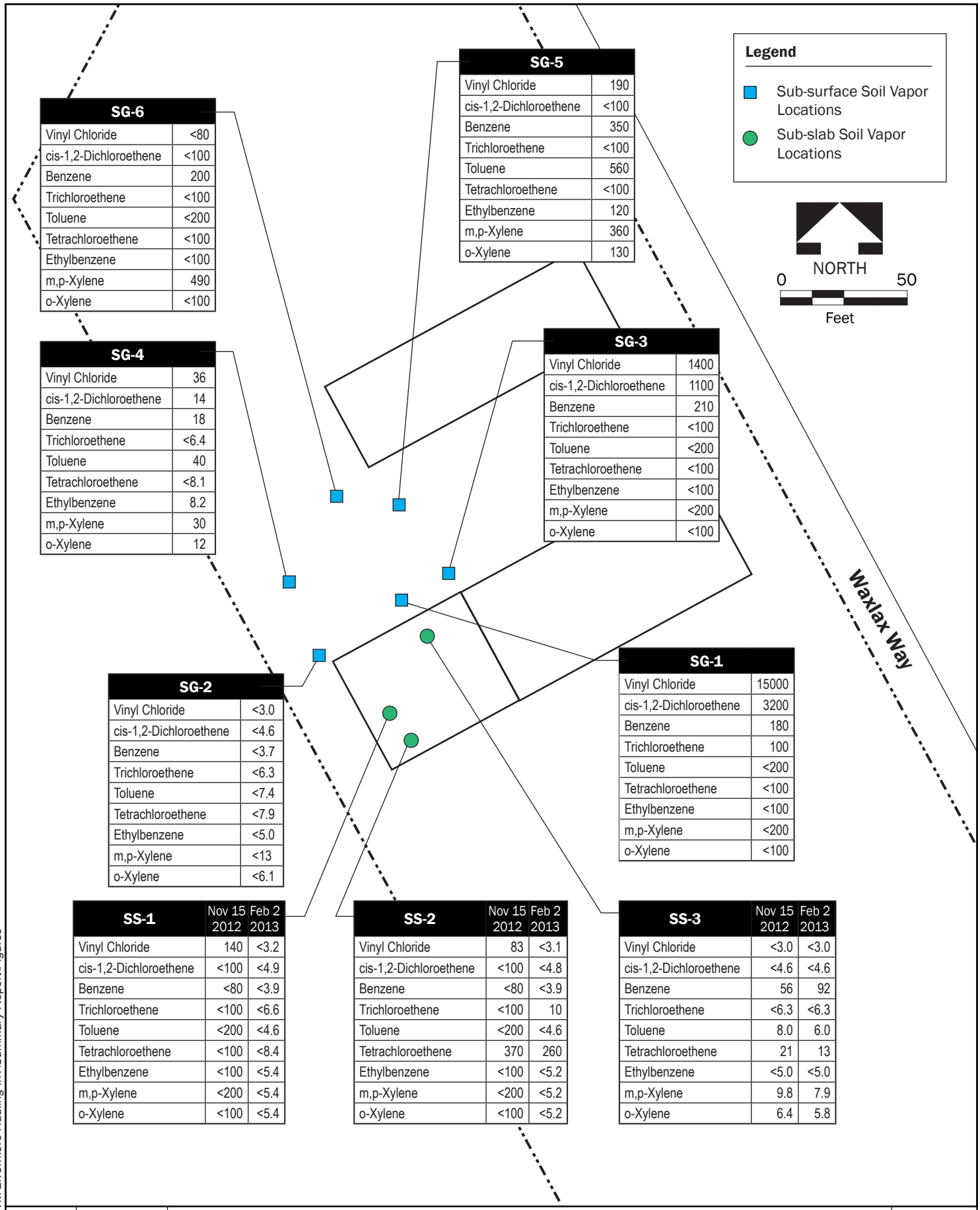
Brown AND Caldwell

DATE 5/18/2012

PROJECT 142782

Figure 3

Source: maps.google.com, 2011



SG-6	
Vinyl Chloride	<80
cis-1,2-Dichloroethene	<100
Benzene	200
Trichloroethene	<100
Toluene	<200
Tetrachloroethene	<100
Ethylbenzene	<100
m,p-Xylene	490
o-Xylene	<100

SG-5	
Vinyl Chloride	190
cis-1,2-Dichloroethene	<100
Benzene	350
Trichloroethene	<100
Toluene	560
Tetrachloroethene	<100
Ethylbenzene	120
m,p-Xylene	360
o-Xylene	130

SG-4	
Vinyl Chloride	36
cis-1,2-Dichloroethene	14
Benzene	18
Trichloroethene	<6.4
Toluene	40
Tetrachloroethene	<8.1
Ethylbenzene	8.2
m,p-Xylene	30
o-Xylene	12

SG-3	
Vinyl Chloride	1400
cis-1,2-Dichloroethene	1100
Benzene	210
Trichloroethene	<100
Toluene	<200
Tetrachloroethene	<100
Ethylbenzene	<100
m,p-Xylene	<200
o-Xylene	<100

SG-2	
Vinyl Chloride	<3.0
cis-1,2-Dichloroethene	<4.6
Benzene	<3.7
Trichloroethene	<6.3
Toluene	<7.4
Tetrachloroethene	<7.9
Ethylbenzene	<5.0
m,p-Xylene	<13
o-Xylene	<6.1

SG-1	
Vinyl Chloride	15000
cis-1,2-Dichloroethene	3200
Benzene	180
Trichloroethene	100
Toluene	<200
Tetrachloroethene	<100
Ethylbenzene	<100
m,p-Xylene	<200
o-Xylene	<100

SS-1	Nov 15 2012	Feb 2 2013
Vinyl Chloride	140	<3.2
cis-1,2-Dichloroethene	<100	<4.9
Benzene	<80	<3.9
Trichloroethene	<100	<6.6
Toluene	<200	<4.6
Tetrachloroethene	<100	<8.4
Ethylbenzene	<100	<5.4
m,p-Xylene	<200	<5.4
o-Xylene	<100	<5.4

SS-2	Nov 15 2012	Feb 2 2013
Vinyl Chloride	83	<3.1
cis-1,2-Dichloroethene	<100	<4.8
Benzene	<80	<3.9
Trichloroethene	<100	10
Toluene	<200	<4.6
Tetrachloroethene	370	260
Ethylbenzene	<100	<5.2
m,p-Xylene	<200	<5.2
o-Xylene	<100	<5.2

SS-3	Nov 15 2012	Feb 2 2013
Vinyl Chloride	<3.0	<3.0
cis-1,2-Dichloroethene	<4.6	<4.6
Benzene	56	92
Trichloroethene	<6.3	<6.3
Toluene	8.0	6.0
Tetrachloroethene	21	13
Ethylbenzene	<5.0	<5.0
m,p-Xylene	9.8	7.9
o-Xylene	6.4	5.8

DATE 06-11-13 | PROJECT 142782

Brown AND Caldwell

SITE

6175 Southfront Road, Livermore, California

TITLE

Soil Vapor Analytical Results

Figure 4

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