AKI K. NAKAO, Director

1401 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94612 510 208 9700 FAX 510 208 9711 www.acgov.org/gsa/

PERJURY STATEMENT
SOIL MITIGATION, ASHLAND YOUTH CENTER PROJECT
PROJECT NO. 10020

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached "Soil Vapor Probe Installation and Sampling Report" dated May 1, 2012, are true and correct to the best of my knowledge.

Aki K. Nakao
Director, General Services Agency

5/4/12
Date

Chris Bazar
Director, Community Development Agency

5/9/12
Date

CORNERSTONE EARTH GROUP

Type of Services	**Soil Vapor Probe Installation and Sampling Report**
Location	**Ashland Youth Center** **16335 East 14th Street** **San Lorenzo, California** **(RO 0003078)**
Addressee	**Alameda County Health Care Services Agency** **Environmental Health Services**
Address	**1131 Harbor Bay Parkway, Suite 250** **Alameda, California 94502**
Project Number	**165-11-2**
Date	**May 1, 2012**

Prepared by **Jacob B. Lee, P.G.**
Senior Staff Geologist

Peter M. Langtry, P.G., C.E.G.
Principal Geologist
Quality Assurance Reviewer

1259 Oakmead Parkway | Sunnyvale, CA 94085
T 408 245 4600 | F 408 245 4620

2737 North Main Street, Suite 10 | Walnut Creek, CA 94597
T 925 988 9500 | F 925 988 9501

www.cornerstoneearth.com

CORNERSTONE EARTH GROUP

Table of Contents

SECTION 1: INTRODUCTION 1
1.1 BACKGROUND 1
1.2 PURPOSE 2
1.3 SCOPE OF WORK 2
SECTION 2: SOIL VAPOR INTRUSION ENGINEERING CONTROLS 2
SECTION 3: SOIL VAPOR QUALITY EVALUATION 4
3.1 SUBSURFACE EXPLORATION 4
3.2 TEMPORARY 5-FOOT DEPTH SOIL VAPOR PROBE INSTALLATION 5
3.3 SOIL VAPOR SAMPLE COLLECTION 5
3.4 SOIL VAPOR LABORATORY ANALYSES 6
3.5 SOIL VAPOR SAMPLE INTEGRITY EVALUATION 6
SECTION 4: CONCLUSIONS 7
4.1 SOIL VAPOR QUALITY 7
4.2 CONCLUSIONS 8
SECTION 5: LIMITATIONS 8
SECTION 6: REFERENCES 8
ANALYTICAL DATA TABLES

FIGURE 1 – VICINITY MAP
FIGURE 2 – SITE PLAN
FIGURE 3 – SOIL VAPOR PROBE CONSTRUCTION DETAIL

APPENDIX A – SOIL VAPOR INTRUSION MITIGATION SYSTEM DOCUMENTATION
APPENDIX B – LABORATORY ANALYTICAL REPORTS

Type of Services	**Soil Vapor Probe Installation and Sampling Report**
Location	**Ashland Youth Center** **16335 East 14th Street** **San Lorenzo, California**

SECTION 1: INTRODUCTION

This report presents the results of the soil vapor quality evaluation performed at the Ashland Youth Center in San Lorenzo, California as shown on Figures 1 and 2 (Site). This work was performed for Sandis Engineers and Alameda County General Services Agency (ACGSA) in accordance with our February 3, 2012 Agreement (Agreement).

In accordance with the Alameda County Health Care Services Agency (ACHCSA) March 15, 2012 letter, the vapor control measures implemented for the new youth center building are summarized in this report.

1.1 BACKGROUND

The project consists of the construction of an approximately 32,000 square foot youth center on the approximately 1 acre Site. Construction of the new building currently is in progress. In addition, asphalt and concrete paved driveway and parking area, and hardscape patio areas, and landscaping also will be constructed. A tot-lot is planned adjacent to the northeast corner of the building, adjacent to East 14th Street.

Holland Oil formerly operated on the adjacent parcel (APN 80C-479-9-21) and on the northwest and southwest portion of the on-Site parcel (Figure 2). Holland Oil operated as a bulk fuel storage and distribution facility from the 1960s to the mid-1980s. The on-Site area located along East 14th Street and outside the Holland Oil facility area reportedly was used primarily for vehicle sales. Other former Site uses included a retail store, Moose lodge, a bar, a blacksmith, and an automobile window tinting shop (Cornerstone Earth Group, 2011).

Grading activities for the construction of the youth center began on-Site on August 16, 2011. The deeper (6 feet deep) excavations previously backfilled (excavations B1 and B2) were initially over-excavated and the material stockpiled on-Site. The remainder of the Site was to be over-excavated to a depth of approximately 3 feet for re-compaction as engineered fill as

discussed above. During this initial excavation process, soil with significant petroleum odors was encountered.

Subsequently, an additional soil quality evaluation was conducted on-Site that lead to the removal of the undocumented fill soil across the Site, which generally was present to a depth of approximately 3 feet. The fill was disposed at appropriately licensed facilities. In addition, soil in the northwest portion of the Site, in the area formerly occupied by Holland Oil, was excavated to depths of approximately 6 to 8 feet. Total petroleum hydrocarbons in the diesel (TPHd) and oil (TPHo) ranges were detected in 5 final verification soil samples collected from the base of excavation in northwest corner of the Site at concentrations above the unrestricted Environmental Screening Level (ESL) (San Francisco Bay Regional Water Quality Control Board, May 2008). In addition, benzene was detected in one of the soil samples collected from the base of the excavation [VS-5 (8)] at a concentration of 0.65 ppm. The residential ESL for benzene is 0.044 ppm. Due to the location of the samples near the property boundary and the presence of ground water at the base of the excavation, this soil was left in-place. Based on the detection of benzene at sample location VS-5 (8), the Alameda County Health Services Department of Environmental Health (County Health) required a soil vapor quality investigation to be conducted in the northwestern area of the Site.

Cornerstone Earth Group prepared a work plan, dated February 14, 2012, for the evaluation of soil vapor quality beneath the northwest corner of the Site. County Health approved the work plan in a letter dated March 15, 2012.

1.2 PURPOSE

The purpose of this investigation was to evaluate the presence of volatile organic compounds (VOCs) and volatile petroleum hydrocarbons in soil beneath the Northwest corner of the Site.

1.3 SCOPE OF WORK

As presented in our Agreement, the scope of work performed for this investigation included the following:

- Hand-auguring three exploratory borings.
- Installation of three soil vapor probes and the collection and laboratory analyses of soil vapor samples.

The limitations for this investigation are presented in Section 5.

SECTION 2: SOIL VAPOR INTRUSION ENGINEERING CONTROLS

Based on the detection of benzene above the unrestricted ESL in soil left in-place beneath the northwest corner of the Site, ACGSA installed vapor intrusion engineering controls in the new youth center building. The system was installed by Advanced Construction Tech (ACT) and consists of a soil vapor membrane beneath the floor of the new building. The elevator pit

foundation was installed without a sub-slab membrane; we understand that ACT will coat the concrete surface of the elevator pit with an epoxy sealant during May 2012. In addition, sub-slab depressurization conduits were installed by ACT beneath the membrane and passive ventilation risers were installed through the building that vent above the roof. The passive ventilation risers were designed so that they can be converted to active ventilation, if needed based on the results of the soil vapor monitoring.

The soil vapor sub-slab depressurization conduits and sub-slab membrane were installed during February 2012. Construction of the building is currently on-going. Descriptions of the materials used for the installation are presented in Appendix A. In addition, a Site map showing the general layout of the sub-slab ventilation piping and plans showing the locations of ventilation risers also are presented in Appendix A.

On February 27, 2012, the sub-slab membrane was tested by CIS Inc. on behalf of ACGSA. CIS Inc. reported that the installation of the vapor mitigation system appeared to be performed in accordance with the manufacturer's specifications. The CIS Inc. report is presented in Appendix A.

Selected photographs provided by ACGSA are presented below.

Photograph 1: Close-up view showing Liquid Boot® barrier.

Photograph 2: View showing Liquid Boot® seal around utility piping.

Photograph 3: View showing riser fitting above geo-textile fabric.

SECTION 3: SOIL VAPOR QUALITY EVALUATION

3.1 SUBSURFACE EXPLORATION

On March 26th and 27th, 2012 a California registered Professional Geologist installed three approximately five-foot depth soil vapor probes (SV-1, SV-2, and SV-3). The three soil vapor probes were located inside the planter areas northwest of the youth center building (Figure 2). The five-foot depth vapor probes were continuously logged in general accordance with the Unified Soil Classification System (ASTM D-2487). The borings were initially advanced using a 6-inch diameter post-hole digger to between approximately 1 and 2 feet below grade to facilitate well monument installation. A 2 ¼ inch diameter stainless steel hand auger was utilized from approximately 2 to 5 feet. Boring location SV-1 was advanced from existing grade (approximately 10 inches below finished pad grade). Boring locations SV-2 and SV-3 were

advanced from the approximate subgrade elevation of the planter box excavation (approximately 28 inches below pad grade).

Subsurface materials encountered in exploratory borings drilled during this investigation primarily consisted of fill materials composed of well graded gravels with clay and sand to the total depth of the borings. In one of three borings (SV-3) native clay was encountered from approximately 3 ½ feet depth to the total depth of the boring (5 feet). A petroleum odor was noted in the native clay material encountered in boring location SV-3. Approximately 4 inches of water was present in boring SV-2 prior to construction of the soil vapor probe; ground water was not encountered in the other borings.

Protocols presented below follow the general requirements of the March 2010 document entitled, "Advisory – Active Soil Gas Investigations", prepared by the Department of Toxic Substances and Control and the California Regional Water Quality Control Board, Los Angeles Region.

3.2 TEMPORARY 5-FOOT DEPTH SOIL VAPOR PROBE INSTALLATION

Three soil vapor probes were completed with stainless steel expendable tips and screens affixed to Teflon™ tubing within a sand interval extending from approximately 4 to 5-feet at locations SV-1, SV-2, and SV-3. Each probe was constructed by first placing approximately 6 to 9 inches of clean coarse Monterey sand into the bottom of the borehole. The stainless steel tip and tubing was then lowered into the borehole via a tremie pipe. Additional sand was then placed in the borehole via tremie to create an approximately 1 foot sand pack interval around the vapor tip. Approximately 6 inches to 1 foot of granular bentonite (Benseal™) was placed on top of the sand pack. Hydrated bentonite was then placed down-hole by the approximate mixing of 50 percent water to bentonite in less than approximately six-inch lifts to become flush with the surface in locations SV-1D 4.5, SV-2 D4.0, and SV-3 D4.25. The Teflon™ tubing was labeled and capped utilizing a vapor-tight Swagelok valve set in the "off" position. The 5-foot long, 6-inch diameter protective well monument was then cemented in place with the Teflon™ tubing hosting Swagelok valve coiled near the hinged lid to facilitate sampling. Probe construction details are presented on Figure 3.

3.3 SOIL VAPOR SAMPLE COLLECTION

On April 6, 2012, after allowing time for equilibrium, sampling of the soil vapor probes was performed by a California registered Professional Geologist. A 167 milliliters-per-minute flow regulator inclusive of a particulate filter was fitted to the shut-off valve and the other end to a "T" fitting. A Summa canister was connected to the "T" fitting. The other end of the "T" fitting was affixed to a digital vacuum gauge and a 1-liter Summa canister utilized for purging.

Due to the presence of water in the sample tubing, vapor probe SV-2 could not be sampled. A minimum 10-minute vacuum tightness test was performed on the manifold and connections by opening and closing the 1-liter purge canister valve and applying and monitoring a vacuum on the vacuum gauge. The sample shut-off valve on the downhole side of the sampling manifold remained in the "off" position. When gauge vacuum was maintained for at least 10 minutes

without any noticeable decrease (less than approximately 0.1 inches of mercury (Hg) for properly connected fittings), purging began. The downhole shut off valve was opened and approximately three purge volumes of vapor were removed using the purging 1-liter Summa. The volume of vapor removed was verified by the calculated versus observed pressure drop in the purging Summa canister. The purge volume was calculated based on the length and inner diameter of the sampling probe and the connected sampling tubing and equipment. Assuming the vapor probe was properly sealed, the borehole sand pack vapor space will have equilibrated with the surrounding vapors following the more than 48 hour equilibration period. Thus, the sand pack vapor space was not included in the purge volume calculation. Sampling was performed for VOCs and oxygen, methane and carbon dioxide as described below in section 3.4.

3.4 SOIL VAPOR LABORATORY ANALYSES

To evaluate soil vapor quality, two soil vapor samples were analyzed for full list volatile organic compounds (VOCs), total petroleum hydrocarbons in the gasoline range (TPHg) (EPA Test Method TO-15) and oxygen, methane, and carbon dioxide (ASTM Test Method D-1946). As a quality control measure, one air sample collected from the shroud atmosphere was analyzed for 2-propanol. These compounds were selected to evaluate potential impacts to soil vapor quality from the former petroleum impacts. Analytical results are summarized in Tables 1 and 2 in the Tables section of this report. The laboratory analytical reports are presented in Appendix B.

3.5 SOIL VAPOR SAMPLE INTEGRITY EVALUATION

Isopropyl alcohol (2-propanol, 91 percent) was utilized as a leak detection compound during sampling by applying approximately 10- drops to cotton gauze and placing the moistened gauze above the monument within the shroud. Sampling began by opening the Summa canister valve. Immediately upon opening the sampling valve, the shroud cover was placed over the shroud base affixed to the top of the well monument and enclosed the atmosphere of the open top of the monument and entire sampling train including all connections.

A data logging PID was utilized during sampling to monitor the atmosphere inside the shroud through a bulk-head fitting. The logged data (at minimum 30 second intervals) was corrected to parts per million by volume isopropyl alcohol concentrations and utilized to evaluate the integrity of the sampling train.

2-propanol was not detected in any of the samples collected above its laboratory reporting limits ranging from <7.5 µg/m^3 to <620 µg/m^3. This data indicates that the sample trains were tight and no significant leakage occurred.

To confirm the isopropyl alcohol atmosphere, one confirmation sample was collected from the shroud atmosphere by connecting a 250mL summa canister to tubing entering the shroud through a bulkhead fitting. Laboratory analyses of the shroud atmosphere sample collected during sampling from the soil vapor well SV-3 on April 6, 2012 contained 2-propanol at 120,000 µg/m^3. During the same sampling time period (approximately 3 minutes), the shroud atmosphere was measured by the PID to contain approximately 153,800 µg/m^3 (approximately

24.7 percent relative percent difference [RPD] above the laboratory reported value). The PID appeared to slightly overestimate the shroud atmosphere (Table A-1 in Appendix A).

SECTION 4: CONCLUSIONS

Data summary tables are included in the Tables section of this report. Analytical data sheets and chain of custody documentation are included in Appendix B. The results of the soil samples were compared to California Human Health Screening Levels (CHHSLs) established by the California Environmental Protection Agency (CalEPA, 2010). For detected chemicals for which CHHSLs have not been established, Environmental Screening Levels (ESLs) established by the San Francisco Bay Area Regional Water Quality Control Board (SFRWQCB, 2008) were used for comparison.

CHHSLs and ESLs are used to screen properties for potential human health concerns where releases of chemicals to soil have occurred. Under most circumstances, the presence of a chemical in soil below the corresponding CHHSL or ESL can be assumed not to pose a significant risk to human health. A chemical exceeding the CHHSL or ESL does not indicate that adverse impacts to human health are occurring or will occur but suggests that further evaluation of potential health concerns is warranted.

4.1 SOIL VAPOR QUALITY

Water was present in the SV-2 vapor probe at the time of sampling; no soil vapor sample was collected at this location during this sampling event.

TPHg was detected in one of two soil vapor samples above the minimum laboratory screening level (SV-3) at a concentration of 1,600,000 µg/m^3. There is no CHHSL established for this compound. The unrestricted ESL for TPHg is 10,000 µg/m^3.

Benzene was detected in one of two soil vapor samples above the minimum laboratory screening level (SV-3) at a concentration of 200 µg/m^3. The unrestricted CHHSL for benzene is 85 µg/m^3.

Trichloroethene (TCE) was detected in one of two soil vapor samples above the minimum laboratory screening level (SV-3) at an estimated concentration of 340 µg/m^3. The unrestricted CHHSL for TCE is 1,300 µg/m^3.

Acetone was detected in one of two soil vapor samples above the minimum laboratory screening level (SV-1) at a concentration of 28 µg/m^3. There is no CHHSL established for this compound. The unrestricted ESL for acetone is 660,000 µg/m^3.

M,p-xylene was detected in one of two soil vapor samples above the minimum laboratory detection limit (SV-1) at a concentration of 3.6 µg/m^3. The unrestricted CHHSL for m,p-xylene is 800,000 µg/m^3.

Several other VOCs were detected in the soil vapor samples including carbon disulfide, hexane, cyclohexane, 2,2,4-trimethylpentane, and heptane. No CHHSLs or ESLs are established for these compounds.

Oxygen was detected in soil vapor samples SV-1 and SV-3 at 9.6 and 1.6 percent, respectively. In addition, methane was detected in probes SV-1 and SV-3 at 0.00023 percent and 0.13 percent, and carbon dioxide was detected in probes SV-1 and SV-3 at 0.78 percent and 3.1 percent.

4.2 CONCLUSIONS

Based on the laboratory analytical results, soil vapor at SV-3 appears to be impacted from TPHg and benzene above unrestricted ESLs. The sub-slab ventilation and vapor membrane installed by ACGSA are intended to mitigate potential impacts to indoor air as a result of vapor intrusion. Additional soil vapor sampling is planned for May, June and July 2012. This monitoring will help evaluate whether the passive sub-slab ventilation system should be converted to an active system.

This report will be submitted to County Health for their review.

SECTION 5: LIMITATIONS

Cornerstone performed this investigation to support Sandis Engineers and Alameda County General Services Agency in evaluation of soil vapor quality at the Site based on a scope of work developed by Alameda County Health Services Department of Environmental Health. Sandis Engineers and Alameda County General Services Agency understand that the extent of soil vapor and air quality data obtained is based on the reasonable limits of time and budgetary constraints. In addition, the chemical information presented in this report can change over time and is only valid at the time of this investigation and for the locations sampled.

This report, an instrument of professional service, was prepared for the sole use of Sandis Engineers and Alameda County General Services Agency and may not be reproduced or distributed without written authorization from Cornerstone.

Cornerstone makes no warranty, expressed or implied, except that our services have been performed in accordance with the environmental principles generally accepted at this time and location.

SECTION 6: REFERENCES

CalEPA, 2005. *Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties,* January 2005.

CalEPA, 2010. *Advisory – Active Soil Gas Investigation,* March 2010.

Cornerstone Earth Group, 2011. *Completion Report, Soil Removal Activities, Ashland Youth Center, 16335 East 14th Street, San Lorenzo, California*, dated February 1, 2012.

Regional Water Quality Control Board, 2008. *Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater* (November 2007), San Francisco Bay Regional Water Quality Control Board, California EPA, http://www.waterboards.ca.gov/sanfranciscobay/esl.htm, updated May 2008.

CORNERSTONE EARTH GROUP

ANALYTICAL DATA SUMMARY TABLES

Ashland Youth Center
San Lorenzo, California
165-11-2

Table 1. Analytical Results of Selected Soil Vapor Samples - VOCs

(Concentrations in µg/m^3)

Sample Location	Date	Depth (feet)	TPHg	Acetone	Carbon Disulfide	Hexane	Cyclohexane	2,2,4-Trimethylpentane	Benzene	Heptane	Trichloroethene (TCE)	m,p-Xylene
SV-1	4/6/2012	5	<160	28	21	<2.7	<2.6	<3.6	<2.4	<3.1	<4.1	3.6
SV-2	4/6/2012	5	---	---	---	---	---	---	---	---	---	---
SV-3	4/6/2012	5	**1,200,000**	<1,500	<780	3,200	2,900	69,000	**200**	790	340 J	<270
Residential Soil Vapor CHHSL[1]			10,000 [2]	660,000 [2]	NE	NE	NE	NE	85	NE	1,300	800,000

1 California Human Health Screening Level (CHHSL) - Cal/EPA - September 2010

2 Environmental Screening Level (ESL) - SF Bay Regional Water Board - May 2008 - Table E2

< Not detected at or above laboratory reporting limit

J Laboratory approximate value

BOLD Concentration exceeds CHHSL or ESL

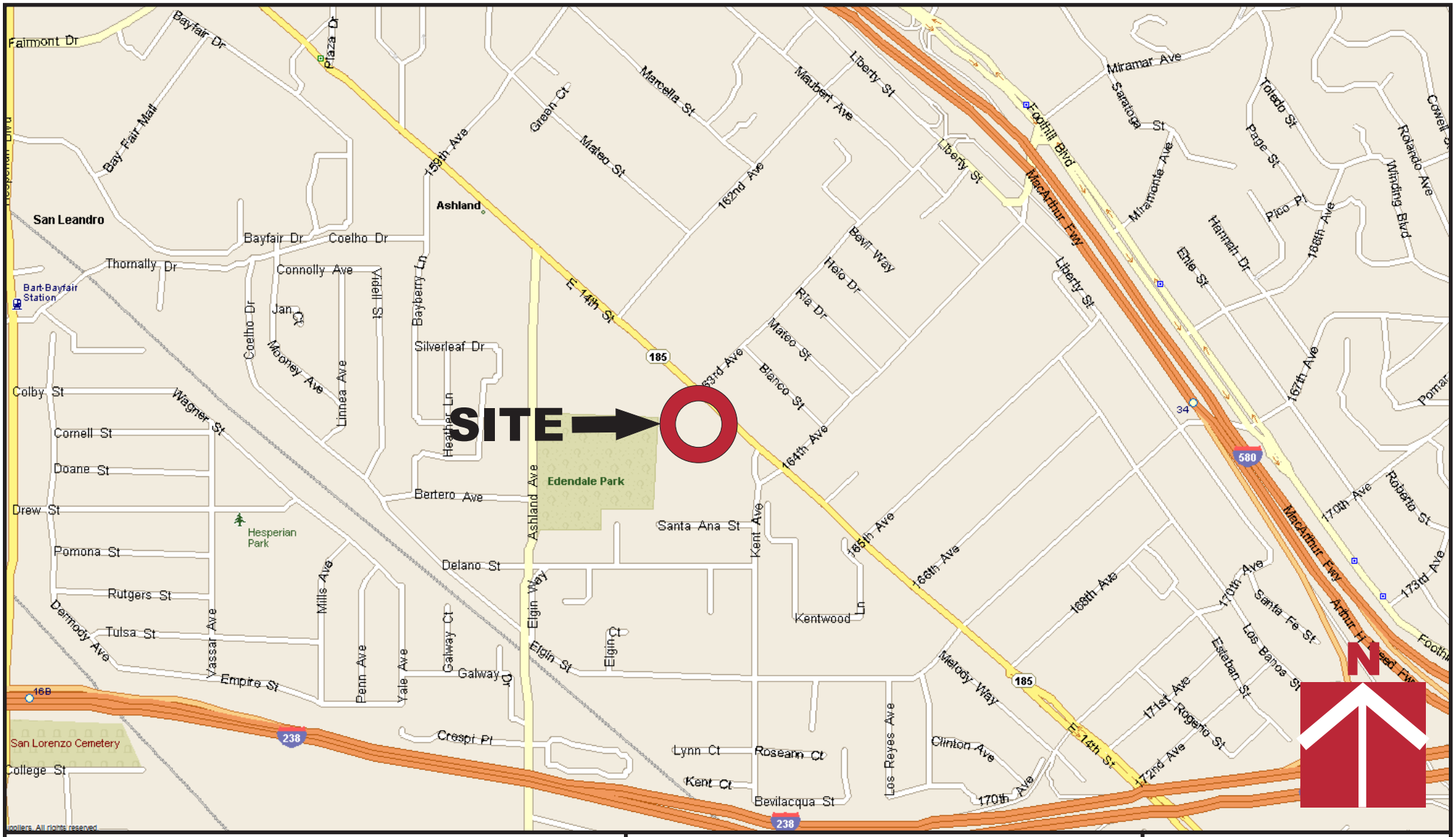
--- Probe not sampled due to water in the tubing

Table 2. Analytical Results of Selected Soil Vapor Samples - Oxygen, Methane, and Carbon Dioxide

(Concentrations in %)

Sample Location	Date	Depth (feet)	Oxygen	Methane	Carbon Dioxide
SV-1	4/6/2012	5	9.6	0.00023	0.78
SV-2	4/6/2012	5	---	---	---
SV-3	4/6/2012	5	1.6	0.13	3.1

--- Probe could not be sampled due to water in the tubing



CORNERSTONE EARTH GROUP

Vicinity Map

Ashland Youth Center
16335 East 14th Street
San Lorenzo, CA

Project Number	165-11-2
Figure Number	Figure 1
Date	April 2012
Drawn By	RRN

EAST 14TH STREET
(STATE HIGHWAY 185)

YOUTH CENTER
FF=38.50
(SEE ARCHITECTURAL PLANS FOR ALL BUILDING DETAILS)

SV-1

SV-2

SV-3

VS-5

Approximate Site Boundary

PROPERTY LINE

Legend

Approximate location of Soil Vapor Probe (SV)

Approximate location of former soil sample VS-5

N

0 80 160

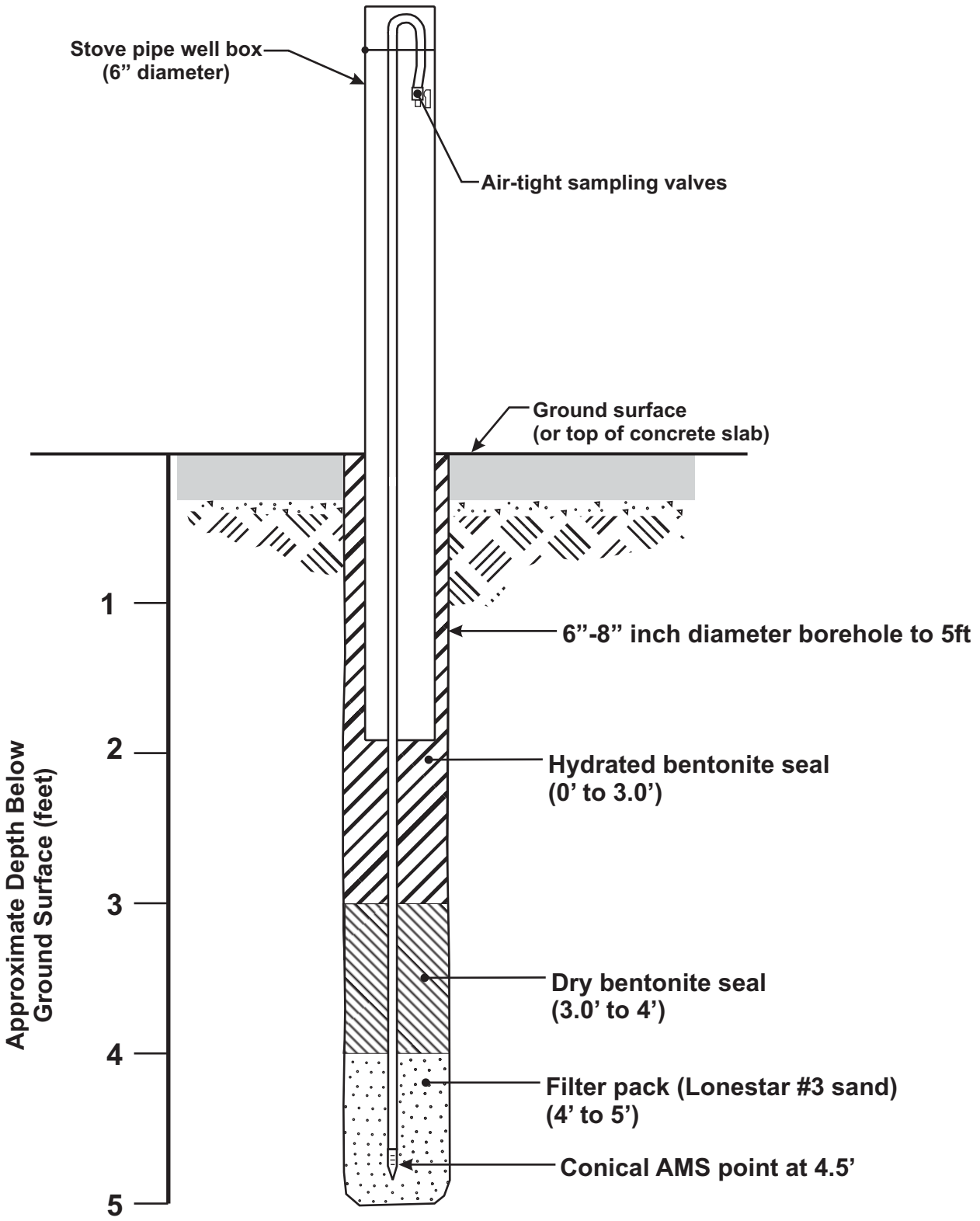
APPROXIMATE SCALE (FEET)

Project Number	165-11-2
Figure Number	Figure 2
Date	April 2012
Drawn By	RRN

Site Plan

Ashland Youth Center
16335 East 14th Street
San Lorenzo, CA

CORNERSTONE EARTH GROUP



Soil Vapor Probe Construction Detail

Not to Scale

CORNERSTONE EARTH GROUP

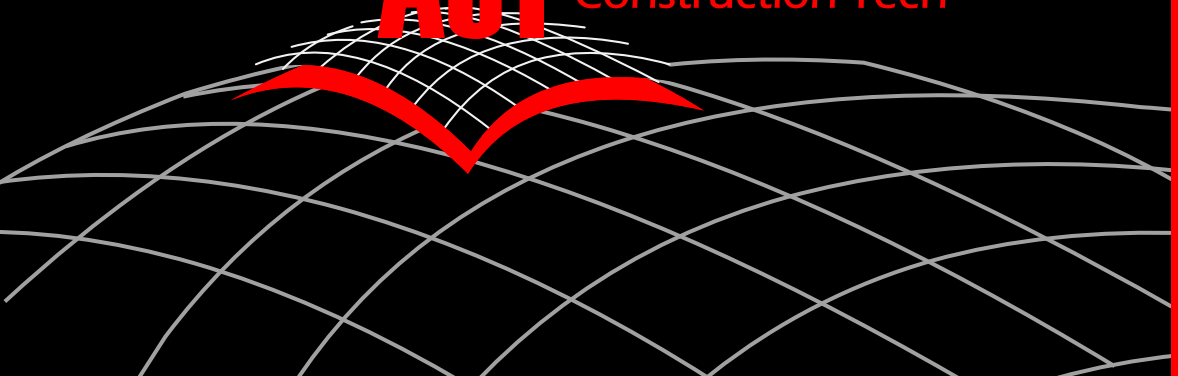
Soil Vapor Probe Construction Detail	
Ashland Youth Center 16335 East 14th Street San Lorenzo, CA	
Project Number	165-11-2
Figure Number	Figure 3
Date	April 2012
Drawn By	FLL, RRN

CORNERSTONE EARTH GROUP

APPENDIX A – SOIL VAPOR INTRUSION MITIGATION SYSTEM DOCUMENTATION

.

Ashland Youth Center
San Lorenzo, Ca
Vapor Mtitigation
Material Submittals



8001 Irvine Center Drive
Suite 400
Irvine, CA 92618

February 14, 2012

Advanced Construction Tech

Material Submittals
Clark & Sullivan Construction – Ashland Youth Center
San Lorenzo, California

VAPOR MITIGATION SYSTEM:

Low Profile Vent Pipe (GeoVent)……. 1

Vent Riser Stub-ups (Cast Iron)……..…… 2

Base FabricT-60, 6oz. Carrier Fabric.……..……... 3

60-mil Liquid Boot 500 Membrane…..……..…… 4 - 6

Liquid Boot Ultra-Shield G-1000 Protection Course……. 7

Sikagard 62 (Elevator Pits)……..…….. 8 - 9

TECHNICAL DATA

GEOVENT™

ACTIVE/PASSIVE GAS VENTING SYSTEM

DESCRIPTION

GeoVent™ consists of a three-dimensional vent core that is wrapped in a non-woven, needle-punched filter fabric. GeoVent™ is manufactured to meet or exceed the minimum average roll values listed below.

APPLICATION

GeoVent™ is designed for use as active or passive venting when used with CETCO gas vapor mitigation systems.

INSTALLATION

Product should be installed in accordance with specific installation guide specifications.

BENEFITS

- Installed directly on subgrade eliminating trenching and potential interference or damage to existing underground utilities
- Placed in closer proximity to the gas vapor barrier allowing for more effective venting of any accumulated gas
- Greater opening area per lineal foot of pipe and integral filter fabric allows for higher ventilation efficiency

AVAILABILITY

GeoVent™ is available from two CETCO plant locations:

- 1001 S Linwood Ave., Santa Ana, CA
- 218 NE Industrial Park Rd., Cartersville, GA

GeoVent™ allows for ease of installation directly on the subgrade, eliminating the need for costly and labor-intensive trenching.

PACKAGING

- 1 ft. x 165 ft. Rolls

TESTING DATA

PHYSICAL PROPERTIES		
CORE PROPERTY	**TEST METHOD**	**RESULT**
Compressive Strength	ASTM D 1621	9,500 psf
Thickness	ASTM D 1777	1.0 in.
Flow Rate (Hydraulic gradient = .1)	ASTM D 4716	30 gpm/ft/width

FABRIC PROPERTY	**TEST METHOD**	**RESULT**
A.O.S.	ASTM D 4751	70 US Sieve
Grab Tensile Strength	ASTM D 4632	100 lbs.
Puncture Strength	ASTM D 4833	65 lbs.
Flow Rate	ASTM D 4491	140 gpm/ft^2
Permeability	ASTM D 4491	0.21 cm/sec
Fabric - Mass / Unit Area	ASTM D 5261	4.0 oz/yd^2
UV Resistance	ASTM D 4355	70%

2870 Forbs Avenue, Hoffman Estates, IL 60192
714.384.0111 | 800.527.9948 | cetco.com

REV: 10/10

SUBMITTAL DATA

Project: _____

_____

Architect: _____

Engineer: _____

Contractor: _____

Date: _____

No-Hub Pipe and Fittings
SV Hub & Spigot Pipe & Fittings
SuperGrip 304 LD Couplings
Anaco Standard Couplings
Husky Couplings
SuperGrip 2002 HD Couplings
Best-Set™ Closet Rings
Ty-Seal and EZ Tite Gaskets

No-Hub Pipe and Fittings of 1 1/2" to 15" diameter. Soil waste, vent lines, rain water conductors and storm drainage lines shall bear the registered insignia of the Cast Iron Soil Pipe Institute indicating that these items comply with CISPI Standard 301 or Federal Specification WW-P-401/E74, ASTM 888, as manufactured by AB&I. IAPMO File No. 3270.

☐ 

SV Hub & Spigot Pipe and Fittings in sizes from 2" to 15". Soil waste, vent lines, rain water conductors and storm drainage lines shall bear the registered insignia of the Cast Iron Soil Pipe Institute indicating that these items comply with ASTM A-74-98 and HS 74. IAPMO File No. 3274.

☐ 

SuperGrip 304 LD Couplings in 12" and 15" sizes shall be made with corrosion resistant clamp assemblies that bear the mark of the Uniform Plumbing Code, and that are comprised of a neoprene gasket (ASTM C-564) housed inside a .008" 304 stainless steel bidirectionally-corrugated shield surrounded by four or six (depending on size) 304 stainless steel clamps. Couplings shall meet requirements of Factory Mutual 1680. IAPMO listed.

☐ 

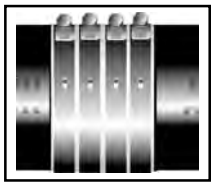
Standard Couplings shall be made with clamp assemblies that comply with the Cast Iron Soil Pipe Institute Standard 310, with shields made from series 301 stainless steel, ASTM C-564, latest revision, as manufactured by Anaco. They shall bear either the Uniform Plumbing Code (UPC) or IAPMO trademarks. IAPMO listed.

☐ 

Husky Couplings (SD 4000) shall be constructed from 304 stainless steel and provide a minimum shield thickness of .015" or greater. Shield shall be 3" wide for sizes 1 1/2" through 4", and 4" wide for 5" through 10." Couplings shall have four sealing bands on 1 1/2 through 4" sizes, and six bands on 5" through 10" sizes. All bands shall require 80 in-lbs of torque. Gaskets shall comply with ASTM C-564. Couplings shall meet the requirements of Factory Mutual 1680. IAPMO listed.

☐ 

SuperGrip 2002 Heavy Duty Coupling shall be constructed from 304 stainless steel and provide a minimum shield thickness of .010" or greater. Shield shall be 3" wide for sizes 1 1/2" through 4", and 4" wide for 5" through 10." Couplings shall have four sealing bands on 1 1/2 through 4" sizes, and six bands on 5" through 10" sizes. All bands shall require 80 in-lbs of torque. Gaskets shall comply with ASTM C-564. Shall meet the requirements of Factory Mutual 1680. IAPMO listed.

☐ 

Best-Set™ Closet Ring is a cast iron ring manufactured by AB&I. The Best-Set features a neoprene gasket which fills the space around the pipe and the space between the pipe and the closet ring. IAPMO File No. 3209.

☐ 

Ty-Seal and EZ-Tite gaskets in sizes from 2" to 15" shall comply with all requirements of ASTM C-564. IAPMO File No. 0391.

☐ 

Made in USA

AB&I strongly recommends that its No-Hub cast iron pipe and fittings be joined with shielded couplings manufactured in accordance with CISPI 310. The use of any coupling not meeting the above specifications will void the product warranty.

7825 San Leandro Street • Oakland, CA 94621 • 800/GOT-IRON • 510/632-3467 • Fax 510/632-8035

95014 - 03/02 Rev.

TECHNICAL DATA

BASEFABRIC™ T-60

NON-WOVEN GEOTEXTILE FABRIC

DESCRIPTION

BaseFabric™ T-60 is a long lasting, durable, non-woven geotextile manufactured from high quality polypropylene. BaseFabric™ T-60 is a continuous filament, heat-bonded geotextile fabric with superior uniformity that reinforces and separates the membrane from soil particles. BaseFabric™ T-60 is manufactured to meet or exceed the minimum average roll values listed in the table below.

APPLICATION

BaseFabric™ T-60 serves as the base layer to the Liquid Boot® and Liquid Boot® Plus gas vapor mitigation systems.

BENEFITS

Installed directly on the subgrade, BaseFabric™ T-60 provides a uniform substrate for the Liquid Boot® gas vapor barrier to be spray-applied to.

BaseFabric™ T-60 is a needle-punched, non-woven geotextile with superior tensile strength and puncture resistance.

INSTALLATION

Product should be installed in accordance with specific installation guide specifications.

PACKAGING

- 15.5 ft. x 300 ft. Rolls

TESTING DATA

PHYSICAL PROPERTIES		
PROPERTY	**TEST METHOD**	**RESULT**
Grab Tensile Strength	ASTM D 4632	240 lbs.
Elongation	ASTM D 4632	60%
Trapezoid Tear	ASTM D 4533	90 lbs.
Puncture	ASTM D 4833	70 lbs.
Mullen Burst	ASTM D 3786	2100 psi
UV Stability	ASTM D 4355	70%
A.O.S.	ASTM D 4751	140 US Sieve
Permittivity	ASTM D 4491	.1 sec^{-1}
Permeability Coefficient	ASTM D 4491	.01 cm/sec.
Vertical Water Flow Rate	ASTM D 4491	15 GPM/ft^2
Area		517 yd^2
Weight		209 lbs.
Diameter		10 in.

2870 Forbs Avenue, Hoffman Estates, IL 60192
800.527.9948 | http://remediation.cetco.com

REV: 2/12

LIQUID BOOT® 500 Brownfield Membrane/Liner Specifications

Section 2 | Version 4.0

These Specifications may have changed. Please contact CETCO Remediation Technologies at 714.384.0111 for the most recent version.

PART 1 - GENERAL

1.01 DESCRIPTION- General and Supplementary Conditions and Division 1- General Requirements applies to this section. Provide vapor barrier as indicated, specified and required.

A. Work in this section - principal items include: Vapor Barrier.

B. Related work NOT in this section: excavation and backfilling, parge coat on masonry to receive vapor barrier membrane, mortar beds or concrete toppings over vapor barrier membranes, damp-proofing, flashing and sheet metal, joint sealers, soil sterilant, and drainage.

1.02 QUALITY ASSURANCE- vapor barrier contractor/applicator shall be trained and approved by vapor barrier manufacturer, CETCO. A pre-installation conference shall be held prior to application of vapor barrier to assure proper substrate and installation conditions, to include contractor, applicator, architect/engineer and special inspector.

1.03 SUBMITTALS

A. Project Data - Submit manufacturer's product data and installation instructions for specific application.

B. Samples - Submit representative samples of the following for approval: vapor barrier membrane material, protection board and/or protection mat, prefabricated drainage mat, and geotextiles.

1.04 DELIVERY, STORAGE AND HANDLING- Deliver materials to site in original unbroken packages bearing manufacturers label showing brand, weight, volume, and batch number. Store materials at site in strict compliance with manufacturer's instructions. Do not allow materials to freeze in containers.

1.05 JOB CONDITIONS

A. Protect all adjacent areas not to receive vapor barrier. Where necessary, apply masking to prevent staining of surfaces to remain exposed wherever membrane abuts to other finish surfaces.

B. Perform work only when existing and forecasted weather conditions are within manufacturer's recommendations for the material and product used.

C. Minimum clearance of required for application of product: 90° spray wand- 2 feet / Conventional spray wand- 4 feet.

D. Ambient temperature shall be within manufacturer's specifications. If winter conditions apply, we recommend the use space of heaters and necessary cover (i.e. visqueen) to bring the ambient temperature to at least +45°F until the protection course and structural slab rebar or a mudslab protection course has been placed.

E. All plumbing, electrical, mechanical and structural items to be under or passing through the vapor barrier shall be positively secured in their proper positions and appropriately protected prior to membrane application.

F. Vapor barrier shall be installed before placement of reinforcing steel. When not possible, all exposed reinforcing steel shall be masked by General Contractor prior to membrane application.

G. Expansion joints must be filled with a conventional waterproof expansion joint material.

H. Surface preparation shall be per manufacturer's specification.

1.06 PRODUCT WARRANTY- CETCO warrants its products to be free of defects. This warranty only applies when the LIQUID BOOT® is applied by CETCO Approved Applicators and that the required respective CETCO products (such as LIQUID BOOT® UltraDrain. LIQUID BOOT® UltraShield, LIQUID BOOT® BaseFabric and LIQUID BOOT® GeoVent) are used. As factors, which affect the result obtained from this product, including weather, equipment utilized, construction, workmanship and other variables- are all beyond the manufacturer's control, CETCO warrants only that the material conforms to its product specifications. Under this warranty CETCO will replace at no charge any product not meeting these specifications within 12 months of manufacture, provided it has been applied in accordance with CETCO's written directions for use recommended as suitable for this product. Warranties are available for a longer period upon request and mutual written consent. This warranty is in lieu of any and all other warranties expressed or implied (including any implied warranty of merchantability or fitness for a particular use), and CETCO shall have no further liability of any kind including liability for consequential or incidental damages resulting from any defects or delays caused by replacement or otherwise.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Fluid applied gas vapor barrier system - LIQUID BOOT® 500, a single course, high build, polymer modified asphaltic emulsion. Water borne and spray applied at ambient temperatures. A minimum thickness of 60 dry mils, unless specified otherwise as some cities and engineers may require a thicker membrane. Non-toxic and odorless. LIQUID BOOT® Trowel Grade has similar properties with greater viscosity and is trowel applied. Manufactured by CETCO, Santa Ana, CA (714) 384-0111.

B. PHYSICAL PROPERTIES:

PHYSICAL PROPERTY	TEST METHOD	VALUE
Elongation	ASTM D412	800%
Bond Seam Strength Tests	ASTM D6392	Passed
Methane Permeability	ASTM D1434	None detected
Water Vapor Permeability	ASTM E96	0.18 perms

- Agency Approval- City of Los Angeles Research Report-RR 25549-Approved for "LIQUID BOOT® 500 Spray Applied Membrane for Below-Grade Waterproofing and Gas Barrier"

C. Protection-On vertical surfaces, use LIQUID BOOT® UltraShield P-100 or other protections as approved by the manufacturer, architect or engineer. On horizontal surfaces, use LIQUID BOOT® UltraShield G-1000 or other protections as approved by the manufacturer, architect or engineer. Due diverse jobsite conditions, all protection materials must be approved by the membrane manufacturer, including the use of the LIQUID BOOT® UltraShield products.

D. Prefabricated Drain Mat- On vertical surfaces, use LIQUID BOOT® UltraDrain 6200. On horizontal surfaces, use LIQUID BOOT® UltraDrain 9000

E. Adhesive system for LIQUID BOOT® UltraShield and LIQUID BOOT® UltraDrain: Use LIQUID BOOT® UltraGrip.

F. Gas vapor vent piping- LIQUID BOOT® GeoVent system

G. Base Geotextile- LIQUID BOOT® BaseFabric T-40 non-woven geotextile, unless otherwise specified and approved by membrane manufacturer. The heat-rolled side shall be used as the application surface. Some projects may require a heavier geotextile (LIQUID BOOT® BaseFarbic T-60.)

H. Cold Joints, Cracks, and Form Tie Holes: Covered with Hardcast CRT 1602 Tape 3" wide.

PART 3 - EXECUTION

3.01 EXAMINATION- All surfaces to receive vapor barrier shall be inspected and approved by the applicator at least one day prior to commencing work.

3.02 SURFACE PREPARATION- Provide 24 inch minimum clearance out from surfaces to receive the vapor barrier. The application surface shall be prepared and provided to the applicator in accordance with manufacturer's specifications listed below:

A. Concrete/Shotcrete/Masonry- Concrete surfaces shall be light broom finish or smoother, free of any dirt, debris, loose material, release agents or curing compounds. Fill all voids more than 1/4 inch deep and 1/4 inch wide. Masonry joints, cold joints, and form joints shall be struck smooth. All penetrations shall be prepared in accordance with manufacturer's specifications. Provide a 3/4 inch minimum cant of LIQUID BOOT® 500, or other suitable material as approved by manufacturer, at all horizontal to vertical transitions and other inside corners of 120° or less. Allow to cure overnight before the application of LIQUID BOOT® 500. All cracks or cold joints greater than 1/16 inch must be completely grouted with non-shrink grout as approved by engineer. Install Hardcast reinforcing tape over all cold joints, cracks and form tie holes (after holes and cracks are grouted).

B. Dirt & Gravel- The sub-grade shall be moisture conditioned and compacted to a minimum relative compaction of 90% or as specified by civil or geotechnical engineer. The finished surface shall be smooth, uniform, and free of debris and standing water. Remove all stones or dirt clods greater than 1/4 inch. Aggregate sub-bases shall be rolled flat, free from any protruding sharp edges. Penetrations shall be prepared in accordance with manufacturer's specifications. All form stakes that penetrate the membrane shall be of rebar, which shall be bent over and left in the slab. Trenches shall be cut oversize to accommodate gas vapor barrier membrane and protection course with perpendicular to sloped sides and maximum obtainable compaction. Adjoining grade shall be finish graded and compacted. Excavated walls shall be vertical or sloped back, free of roots and protruding rocks. Specific sub-grade preparation shall be designed by a qualified civil or geotechnical engineer. If organic materials with potential for growth (ie: seeds or grasses) exist within the sub-base, spray-apply soil sterilant at the sterilant manufacturer's recommended rate.

3.03 INSTALLATION

3.03.10 INSTALLATION ON CONCRETE/SHOTCRETE/MASONRY (Follow the procedures below carefully)

B. Refer to section 3.03.30, "Sealing Around Penetrations", for procedures to seal around penetrations.

B. Provide a ¾" minimum cant of LIQUID BOOT® 500, or other suitable material as approved by manufacturer, at all horizontal to vertical transitions and other inside corners of 120° or less. Allow to cure overnight before the application of LIQUID BOOT® 500.

C Select a test area on site with a minimum dimension of 10 feet by 10 feet (3m by 3m). Apply LIQUID BOOT® 500 to a thickness of 60 dry mils and let it cure for 24 hours. Observe for blisters. If minor or no blistering occurs, proceed to the next step. If significant blistering occurs, apply a thin (10 mil) tack coat of LIQUID BOOT® 500 "A" side without catalyst to the entire concrete surface and allow curing before proceeding. (See also information regarding blister repair).

D. Spray-apply LIQUID BOOT® 500 to a 60 mil minimum dry thickness. If a second coat is required, remove any standing water from the membrane before proceeding with the second application.

E. Do not penetrate membrane. Keep membrane free of dirt and debris and traffic until a protective cover is in place. It is the responsibility of the General Contractor to insure that the membrane and the protection system are not penetrated.

C. After membrane has cured and checked for proper thickness and flaws, install protection material pursuant to manufacturer's instructions.
NOTE: All testing or inspection to be performed prior to placing protection course.

NON-HORIZONTAL SURFACES: Spray on non-horizontal surfaces should begin at the bottom and work towards the top. This method allows the product to adhere to the surface before hitting catalyst runoff.

NOTE: Due to the nature of concrete as a substrate, it is normal for some blistering to occur. This is caused by either concrete's tendency to off-gas or water that is temporarily trapped between the concrete and the membrane. With time and the applied pressure of backfill or over-slab, blisters will absorb into the concrete without detriment to the membrane. A small number of blister heads should be sampled and checked for proper membrane thickness. If the samples have the minimum required membrane thickness, then the remaining blisters should not be punctured or cut. If the samples have less than the minimum required membrane thickness, then the area can either be re-sprayed to obtain the proper thickness, or the blisters can be cut out and the area re-sprayed or patched with LIQUID BOOT® Trowel Grade.

3.03.20 INSTALLATION ON DIRT SURFACES AND MUDSLABS

A. Roll out LIQUID BOOT® BaseFabric geotextile on sub-grade with the heat-rolled side facing up. Overlap seams a minimum of 6 inches. Lay geotextile tight at all inside corners. Apply a thin 10 mil tack coat of LIQUID BOOT® 500 "A" side without catalyst within the seam overlap. Line trenches with geotextile extending at least six inches onto adjoining sub-grade if slab and footings are to be sprayed separately. Overlap seams a minimum of 6 inches. Lay geotextile tight at all inside corners. Apply a thin 10 mil tack coat of LIQUID BOOT® 500 "A" side without catalyst within the seam overlap.

B. Minimize the use of nails to secure the geotextile to the dirt subgrade. Remove all nails before spraying membrane, if possible. Nails that cannot be removed from the dirt subgrade are to be patched with geotextile or Hardcast reinforcing tape overlapping the nail head by a minimum of two inches (2"). Apply a thin tack coat of LIQUID BOOT®500 under the geotextile patch, when patching with geotextile.

C. Refer to section 3.03.30, "Sealing Around Penetrations", for procedures to seal around penetrations.

D. Spray-apply LIQUID BOOT® 500 onto geotextile to a 60 mil minimum dry thickness.

E. Do not penetrate membrane. Keep membrane free of dirt, debris and traffic until a protective cover is in place. It is the responsibility of the General Contractor to insure that the membrane and the protection system are not penetrated.

F. After membrane has cured and checked for proper thickness and flaws, install protection material pursuant to manufacturer's instructions.
NOTE: All testing or inspection to be performed prior to placing protection course.

3.03.30 SEALING AROUND PENETRATIONS

3.03.31 OPTION 1

A. Clean all penetrations. All metal penetrations shall be sanded clean with emery cloth.

B. For applications requiring LIQUID BOOT® BaseFabric geotextile, roll out geotextile on sub-grade with the heat-rolled side facing up, overlapping seams a minimum of six inches (6"). Cut the geotextile around penetrations so that it lays flat on the sub-grade. Lay geotextile tight at all inside corners. Apply a thin (10 mil) tack coat of LIQUID BOOT® 500 "A" side without catalyst within the seam overlap.

C. At the base of penetration Install a minimum ¾ inch thick membrane cant of LIQUID BOOT® 500, or other suitable material as approved by manufacturer. Extend the membrane at a 60 mil thickness three inches (3") around the base of penetration and up the penetration a minimum of three inches (3"). Allow to cure overnight before the application of LIQUID BOOT® 500 membrane. (See manufacturer's standard detail.)

D. Spray apply LIQUID BOOT® 500 to an 60 mil minimum dry thickness around the penetration, completely encapsulating the collar assembly and to a height of one and one half inches (1 1/2") minimum above the membrane as described in 3.03.31 C above. Spray-apply LIQUID BOOT® 500 to surrounding areas as specified for the particular application. (SEE MANUFACTURER'S STANDARD DETAIL) Allow LIQUID BOOT® 500 to cure completely before proceeding to step "E".

E. Wrap penetration with polypropylene cable tie at a point two inches (2") above the base of the penetration. Tighten the cable tie firmly so as to squeeze, but not cut, the cured membrane collar.

3.04 FIELD QUALITY CONTROL- Field Quality Control is a very important part of all LIQUID BOOT® 500 applications. Applicators should check their own work for coverage, thickness, and all around good workmanship before calling for inspections. The membrane must be cured at least overnight before inspecting for dry-thickness, holes, shadow shrinkage, and any other membrane damage. If water testing is to be performed, allow the membrane to cure at least 72 hours prior to the water test. When thickness or integrity is in question the membrane should be tested in the proper manner as described below. However, over-sampling defeats the intent of inspections. Inspectors should always use visual and tactile measurement to guide them. Areas suspected of being too thin to the touch should be measured with the gauges to determine the exact thickness. With practice and by comparing tactile measurements with those of the gauges, fingers become very accurate tools.

3.04.10 ON CONCRETE/SHOTCRETE/MASONRY & OTHER HARD SURFACES- Membrane may be checked for proper thickness with a blunt-nose depth gauge, taking one reading every 500 square feet. Record the readings. Mark the test area for repair, if necessary. If necessary, test areas are to be patched over with LIQUID BOOT® 500 to a 60 mils minimum dry thickness, extending a minimum of one inch (1") beyond the test perimeter.

3.04.20 ON DIRT AND OTHER SOFT SUBSTRATES- Samples may be cut from the membrane and geotextile sandwich to a maximum area of 2 square inches. Measure the thickness with a mil-reading caliper, per 500 sq. feet. Deduct the plain geotextile thickness to determine the thickness of LIQUID BOOT® 500 membrane. Mark the test area for repair. Voids left by sampling are to be patched with geotextile overlapping the void by a minimum of two inches (2"). Apply a thin tack coat of LIQUID BOOT® 500 under the geotextile patch. Then spray or trowel-apply LIQUID BOOT® 500 to a 60 mils minimum dry thickness, extending at least three inches (3") beyond geotextile patch.

3.04.30 SMOKE TESTING FOR HOLES - Holes or other breaches in the membrane can be detected by conducting a smoke test. This involves pumping smoke under the membrane for a specified period of time, under a specified pressure, which varies from project to project. Contact CETCO for information about this test at 714-384-0111.

LIQUID BOOT® UltraShield G-1000

LIQUID BOOT® UltraShield G-1000 is a polypropylene, staple fiber, needle-punched, non-woven geotextile that meets the following Minimum Average Roll Values (MARV) when tested in accordance with the methods listed below. The fibers are needled to form a stable network that retains dimensional stability relative to each other. The geotextile is resistant to ultraviolet degradation and to biological and chemical environments normally found in soils. LIQUID BOOT® UltraShield G-1000 conforms to the property values listed below. Manufacturing Quality Control tests have been performed and are accredited by the Geosynthetic Accreditation Institute's Laboratory Accreditation Program (GAI-LAP).

PROPERTY	TEST METHOD	MINIMUM AVERAGE ROLL VALUES	
		ENGLISH	METRIC
Mass/Unit Area	ASTM D 5261	10.0 oz/yd^2	339 g/m^2
Thickness	ASTM D 5199	105 mils	2.7 mm
Tensile Strength	ASTM D 4632	270 lbs.	1202 N
Elongation	ASTM D 4632	50%	50%
Mullen Burst	ASTM D 3786	520 psi	3585 kPa
Puncture Strength	ASTM D 4833	180 lbs.	801 N
Trapezoid Tear	ASTM D 4533	105 lbs.	467 N
UV Resistance	ASTM D 4355	70%	70%
A.O.S.	ASTM D 4751	100 U.S. Sieve	0.150 mm
Permittivity	ASTM D 4491	1.2 sec^{-1}	1.2 sec^{-1}
Permeability	ASTM D 4491	0.30 cm/sec	0.30 cm/sec
Water Flow Rate	ASTM D 4491	85 gal/min//ft^2	3463 l/min/m^2
Roll Sizes		15 ft. x 300 ft.	4.57 m x 91.5 m

CETCO | Liquid Boot Company

Construction

Sikagard® 62

High-build, protective, solvent-free, colored epoxy coating

Description	Sikagard 62 is a 2-component, 100% solids, moisture-tolerant epoxy resin. It produces a high-build, protective, dampproofing and waterproofing vapor-barrier system.
Where to Use	Use as a high build, corrosion-resistant, protective coating, as a protective lining for secondary containment structures or as a seamless flooring system.
Advantages	■ Exceptional tensile strength. ■ Good chemical resistance for long-term protection. ■ Convenient A:B = 1:1 mixing ratio. ■ Easy, paint-like viscosity. ■ Available in 3 standard colors: gray, red, and tan. Special color matches available upon request. ■ Excellent bonding to all common structural substrates. ■ Super abrasion resistance for long-term wear. ■ Sikagard 62 gray, after cure, is approved for contact with potable water. ■ Material is USDA certifiable.
Coverage	Approximately 150-250 sq. ft./gal. depending on condition of substrate.
Packaging	4 gal. units; 1 qt. units, 12/case.

How to Use

Surface Preparation	Surface must be clean and sound. It may be dry or damp, but free of standing water. Remove dust, laitance, grease, curing compounds, impregnations, waxes and any other contaminants. **Preparation Work: Concrete** - Should be cleaned and prepared to achieve a laitance and contaminant free, open textured surface by blastcleaning or equivalent mechanical means. **Steel -** Should be cleaned and prepared thoroughly by blastcleaning.
Mixing	**Pre-mix each component.** Proportion equal parts by volume of Components 'A' and 'B' into a clean mixing container. Mix with a low-speed (400-600 rpm) drill using a Sika paddle for 3 minutes, until uniform in color.
Application	Apply coating using high-quality roller, brush or spray. Two coats are recommended. Apply second coat as soon as the first coat is tack-free and the traffic of application will not damage the first coat. The

Typical Data *(Material and curing conditions @ 73°F (23°C) and 50% R.H.)*

Shelf Life	2 years in original, unopened containers.
Storage Conditions	Store dry at 40°-95°F (4°-35°C). **Condition material to 65°-75°F (18°-24°C) before using.**
Color	Gray, red, tan.
Mixing Ratio	Component 'A' : Component 'B'=1:1 by volume.
Viscosity (Mixed)	Approximately 3,500 cps.
Pot Life	Approximately 35 to 40 minutes. (60 gram mass).
Tack-Free Time	Approximately 4 hours.
Open Time	Light foot traffic: 5-7 hours. Rubber-wheel traffic: 8-10 hours.
Immersion and Chemical Exposure	Minimum cure: 3 days
Tensile Properties (ASTM D-638)	
14 day	Tensile Strength 5,400 psi (37.3 MPa) Elongation at Break 2.7 %
Abrasion (ASTM D-1044) (Taber Abrader)	
7 day	Weight loss, 1,000 cycles (H-22 wheel, 1,000 gm weight) 0.61 gm
Abrasion Resistance (ASTM D-968)	
14 day	Abrasion Coefficient 51 liters/mil.
Adhesion (ASTM D-3359)	
1 day	Adhesion Classification 4A
Water Absorption (ASTM D-570)	
7 day	(24 hour immersion) 0.1%

Construction

second coat, however, **must** be applied within 48 hours since a longer delay will require additional surface preparation.

Do not spray with slip resistant granules mixed into the coating. For use as a seamless flooring system, consult Technical Service.

Limitations

- Minimum substrate and ambient temperature for application 50°F (10°C).
- Do not apply over wet, glistening surface.
- Material is a vapor barrier after cure.
- Do not apply to porous surfaces exhibiting moisture-vapor transmission during the application. Consult Technical Service.
- Minimum age of concrete prior to application is 21-28 days, depending on curing and drying conditions.
- Do not apply to exterior, on-grade substrates.
- Use oven-dried aggregate only.
- Do not thin with solvents.
- Color may alter due to variations in lighting and/or UV exposure.
- On 'green or 'damp' concrete, EpoCem can be used as a pore filler to reduce vapor drive and potential osmotic blistering.

Caution

Component 'A' - Irritant; Sensitizer - Contains epoxy resin. Can cause sensitization after prolonged or repeated contact. Skin and eye irritant. Vapors may cause respiratory irritation. Use only with adequate ventilation. Use of safety goggles and chemical resistant gloves is recommended. In case of high vapor concentrations, use an appropriate NIOSH approved respirator. Remove contaminated clothing.

Component 'B' - Sensitizer - Contains amines. Contact with eyes or skin may cause severe burns. Can cause sensitization after prolonged or repeated contact. Skin and eye irritant. Vapors may cause respiratory irritation. Use only with adequate ventilation. Use of safety goggles and chemical resistant gloves is recommended. In case of high vapor concentrations, use an appropriate NIOSH approved respirator. Remove contaminated clothing.

First Aid

Eyes: Hold eyelids apart and flush thoroughly with water for 15 minutes. **Skin:** Remove contaminated clothing. Wash skin thoroughly for 15 minutes with soap and water. **Inhalation:** Remove person to fresh air. **Ingestion:** Do not induce vomiting.

In all cases, contact a physician immediately if symptoms persist.

Clean Up

Ventilate area. Confine spill. Collect with absorbent material. Dispose of in accordance with current, applicable local, state and federal regulations. Uncured material can be removed with approved solvent. Cured material can only be removed mechanically.

Chemical Resistance

Specimen: Two Coats - 10 mils Total
Cured 10 days
Substrate: asbestos cement

Chemical	Test Temp.	Storage Time and Evaluation				
		1 Day	1 Month	2 Months	6 Months	12 Months
Water	75°F (24°C) 100°F (38°C) 140°F (60°C)	A A A	A A A	A A A	A A A, D	A A A, D
Sodium Chloride Solution (Saturated)	75°F (24°F) 100°F (38°C)	A A	A A	A A	A A	A A
Sodium Hydroxide 30%	75°F (24°C)	A	A	A	A	A
Cement Water (Saturated)	75°F (24°C)	A	A	A	A	A
Detergent Solution (5% Ajax)	75°F (24°C) 140°F (60°C)	A A	A A	A A	A A, D	A A, D
Hydrochloric Acid 10%	75°F (24°C)	A	A	A	A	A
Sulfuric Acid 10%	75°F (24°C)	A	A	A	B	B
Oxalic Acid 10%	75°F (24°C)	A	A, D	A, D	A, D	A, D
Citric Acid 10%	75°F (24°C)	A	A, D	A, D	A, D	A, D
Fuel Oil (Home Heating)	75°F (24°C)	A	A	A	A	A, D
Gasoline (Unleaded)	75°F (24°C)	A	A	A	A	A, D
Iso-Octane	75°F (24°C)	A	A	A	A	A, D
Toluol	75°F (24°C)	A	A	A	A	A, D
Silage	75°F (24°C)	A	A	A, D	A, D	B, D
Synthetic Silage	75°F (24°C)	A	A	B, D	B, D	B, D
Ethyl Alcohol	75°F (24°C)	A	C	-	-	-

A: Resistant in permanent contact
B: Temporary resistance
C: Destroyed
D: Discolored

KEEP CONTAINER TIGHTLY CLOSED
NOT FOR INTERNAL CONSUMPTION
KEEP OUT OF REACH OF CHILDREN
FOR INDUSTRIAL USE ONLY
CONSULT MATERIAL SAFETY DATA SHEET FOR MORE INFORMATION

Sika warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Technical Data Sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor.

NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.

Visit our website at www.sikaconstruction.com **1-800-933-SIKA NATIONWIDE**

Regional Information and Sales Centers. For the location of your nearest Sika sales office, contact your regional center.

Sika Corporation
201 Polito Avenue
Lyndhurst, NJ 07071
Phone: 800-933-7452
Fax: 201-933-6225

Sika Canada Inc.
601 Delmar Avenue
Pointe Claire
Quebec H9R 4A9
Phone: 514-697-2610
Fax: 514-694-2792

Sika Mexicana S.A. de C.V.
Carretera Libre Celaya Km. 8.5
Corregidora, Queretaro
C.P. 76920 A.P. 136
Phone: 52 42 25 0122
Fax: 52 42 25 0537

QUALITY ISO 9001 9002 ACHIEVEMENT

Quality Certification Numbers: Lyndhurst: FM 69711 (ISO 9000), FM 70421 (QS 9000), Marion: FM 69715, Kansas City: FM 69107, Santa Fe Springs: FM 69408

1ST FLOOR
NOT TO SCALE

A B C D E F G H

1 2 2.5 2.8 3 4 5

REQUIRES MOVING AND THICKENING WALL WOULD LOOSE 4" IN MA STATION

STRAIGHT SHOT, NO WALL MODIFICATIONS

STRAIGHT SHOT, NO WALL MODIFICATIONS

ZONE 1=3828 SF

ZONE 2=3828 SF

ZONE 3=3994 SF

ZONE 4=3994 SF

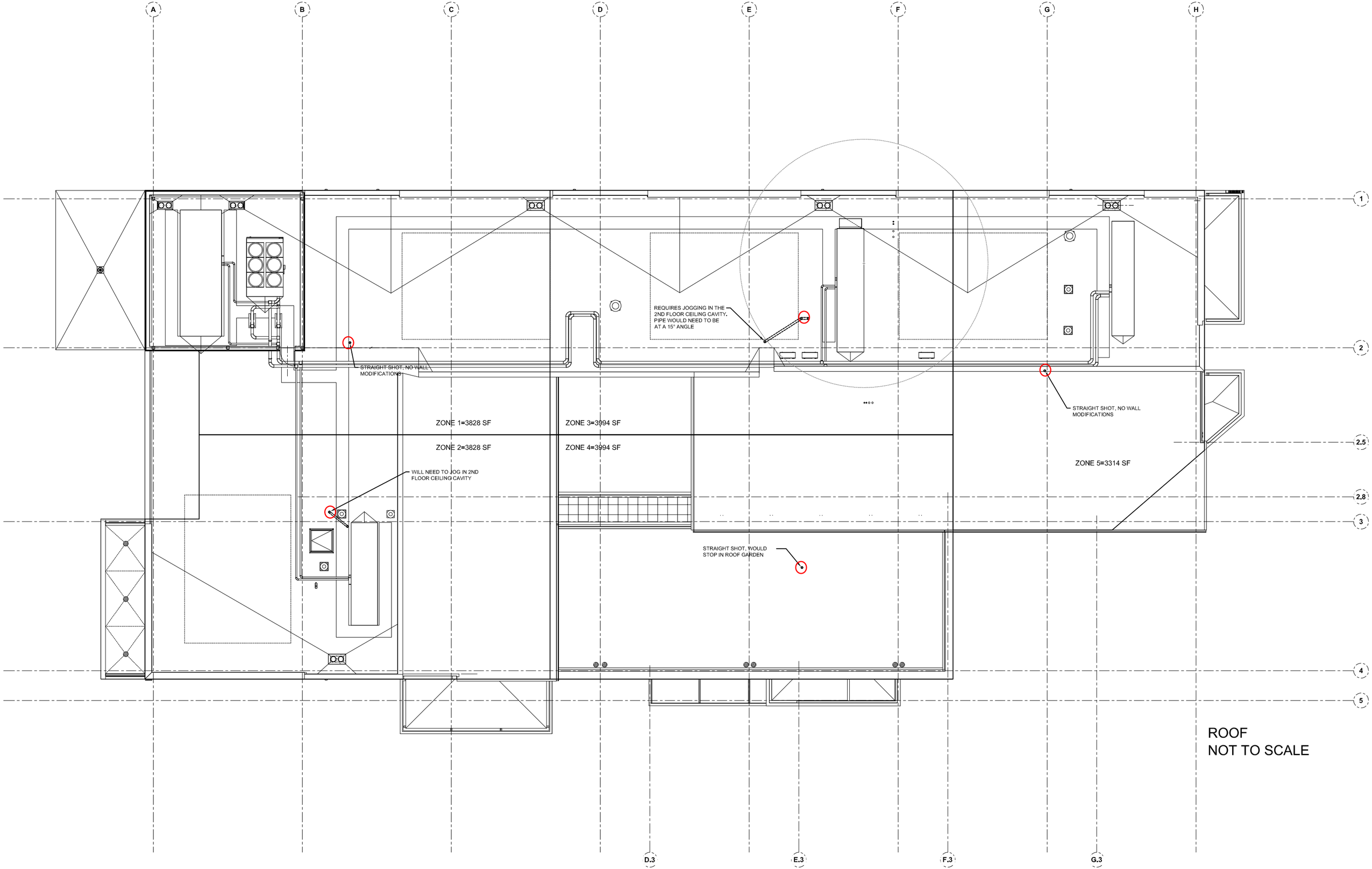
ZONE 5=3314 SF

STRAIGHT SHOT, NO WALL MODIFICATIONS

STRAIGHT SHOT, NO WALL MODIFICATIONS

D.3 E.3 F.3 G.3

2ND FLOOR
NOT TO SCALE



ROOF
NOT TO SCALE

EAST 14th STREET

Building Footprint

Approximate conceptual layout of GeoVent piping

TP–1 TP–2 TP–3 TP–4 TP–5 TP–6 TP–7 TP–8 TP–9 TP–10 TP–11 TP–12 TP–13 TP–14 TP–15 TP–16 TP–17 TP–18 TP–19 TP–20 TP–21 TP–22

SW-1 SW-2 SW-3 SW-4 SW-4A

Vault #1 bottom

Vault #2 bottom

Vault #1

Vault #2

VS-1 VS-2 VS-3 VS-4 VS-5 VS-6 VS-7 VS-8

B1

B2

Benzene > ESL @ 8' depth

N

0 30 60

APPROXIMATE SCALE (FEET)

LEGEND:

- 3' EXCAVATION & OFFHAUL TO CLASS II FACILITY
- 6' EXCAVATION & OFFHAUL TO CLASS II FACILITY
- 3' EXCAVATION & OFFHAUL TO CLASS I FACILITY
- 0'–3' EXCAVATION & OFFHAUL TO CLASS II FACILITY
- 3'–6' EXCAVATION & OFFHAUL TO CLASS I FACILITY

- TP–1 TEST PIT (APPROXIMATE LOCATION)
- Approximate boundary of vault excavation
- Approximate location of soil sample
- Approximate location of sidewall soil sample
- Approximate location of underground vault
- Area of additional excavation and off-haul to Class II facility, 6' to 8' depth

Base by Sandis, "Soils Management Excavation Plan," dated 9/20/2011

Project Number 165-11-1

Figure Number Figure 2

Drawn By RRN

Date December 2011

Soil Removal Areas

Ashland Youth Center
16335 East 14th Street
San Lorenzo, CA

CORNERSTONE EARTH GROUP

County of Alameda
Ashland Youth Center
Inspection of the Vapor Mitigation System

Attention: Charles "Trip" Miller
Alameda County, GSA-TSD

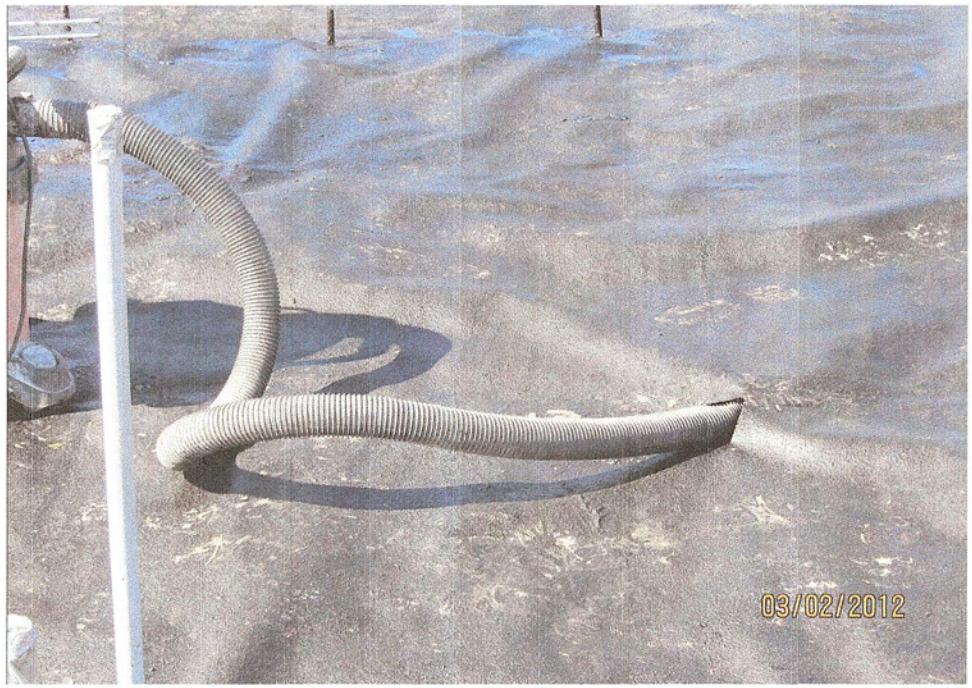
Dear Mr. Miller,

During the week of February 27, 2012 I observed and inspected the installation and testing of the Vapor Mitigation system for the Ashland Youth Center. I met with Francisco with ACT who walked me through their current construction activities and sequence of operations for the days to come. I also received a copy of his as-builts for the vent pipe layout and it was accurate to the observed installation. Immediately following placement of the vent pipe was the BaseFabric T-60 and Liquid Boot 500 for containment of the underground gases. The Liquid Boot was spray-applied for complete coverage over the BaseFabric to achieve a minimum thickness of 60 dry mils. The riser pipes were then capped and the membrane was penetrated for the forced injection of smoke to test for leaks. Minor leakage was found and immediately repaired with additional liquid boot. At each test penetration, a coupon of the BaseFabric and Liquid Boot 500 membrane was taken to ensure 60 dry mils thickness was being accomplished. Finally the layer of Liquid Boot UltraShield G-1000 was placed with a minimum 6" overlay for protection of the gas containment layer. All installation procedures appeared to be in accordance with the manufacturers specifications.

Sincerely,

Aaron Dodge
Vice President– CIS, Inc.
State Certified Building Inspector #5538
adodge@cisbuildinginspections.com
(650) 208-3620


02/29/2012


03/02/2012


02/28/2012


03/03/2012

CORNERSTONE EARTH GROUP

APPENDIX B – LABORATORY ANALYTICAL REPORTS

Air Toxics LTD.

CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

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

Project Manager: Peter Lowstry
Collected by: (Print and Sign) Ross Tuttle
Company: Cornerstone Earth Group Email: plowstry@cornerstoneearth.com
Address: 2737 N. Main St. #10 City: Walnut Creek State: CA Zip: 94597
Phone: 925 988 9500 Fax: 925 988 9501

Project Info:
P.O. #:
Project #: 165-11-2
Project Name: Ashland Youth Center

Turn Around Time:
☑ Normal
☐ Rush
5-Day (specify)

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Prem Fri FC

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)	
	SV-1	3464	4-6-12	1020-1025	TO15-VOCs include TPHs(C5-C11), BTEX naphthalene + ASTM1946 for O_2, CO_2 and methane.	-29.75	-5.14			20313
	SV-3	37391	4-6-12	1125-1132		-29.66	-5.40			20131
	Trip Blank	12387	4-6-12		VOCs by TO15	—	—			20315
OQA	SV-3 (IPA)	3218	4-6-12	1126-1129	2 propanol only (TO15 5920)	-29.6	-4.5			100037

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
[signature]	4/6/12 1810	Fedex	4/6/12 1810
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
		[signature] AIZ	04.12 0835
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	fedex		NA	Good	Yes No None	1204162

Form 1293 rev.11

eurofins | Air Toxics

4/16/2012
Mr. Peter Langtry
Cornerstone Earth Group
2737 North Main St.
Suite 10
Walnut Creek CA 94597

Project Name: Ashland Youth Center
Project #: 165-11-2
Workorder #: 1204162C

Dear Mr. Peter Langtry

The following report includes the data for the above referenced project for sample(s) received on 4/9/2012 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 (5&20 ppbv) are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kyle Vagadori at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kyle Vagadori

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1204162C

Work Order Summary

CLIENT:	Mr. Peter Langtry Cornerstone Earth Group 2737 North Main St. Suite 10 Walnut Creek, CA 94597	**BILL TO:**	Accounts Payable Cornerstone Earth Group 1259 Oakmead Parkway Sunnyvale, CA 94085
PHONE:	925-988-9500	**P.O. #**	
FAX:		**PROJECT #**	165-11-2 Ashland Youth Center
DATE RECEIVED:	04/09/2012	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	04/16/2012		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
04A	SV-3 (IPA)	Modified TO-15 (5&20 ppbv	2.6 "Hg	15.0 psi
05A	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
06A	CCV	Modified TO-15 (5&20 ppbv	NA	NA
07A	LCS	Modified TO-15 (5&20 ppbv	NA	NA
07AA	LCSD	Modified TO-15 (5&20 ppbv	NA	NA

CERTIFIED BY: Linda D. Frumarn DATE: 04/16/12

Laboratory Director

Certfication numbers: AZ Licensure AZ0719, CA NELAP - 02110CA, LA NELAP - 02089, NY NELAP - 11291, TX NELAP - T104704434-11-3, UT NELAP -CA009332011-1, WA NELAP - C935
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act, Accreditation number: E87680, Effective date: 07/01/11 , Expiration date: 06/30/12.
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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

eurofins | Air Toxics

LABORATORY NARRATIVE
EPA Method TO-15 Soil Gas
Cornerstone Earth Group
Workorder# 1204162C

One PAC250 Canister sample was received on April 09, 2012. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode. The method involves concentrating up to 50 mLs of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Dilution was performed on sample SV-3 (IPA) due to the presence of high level target species.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit.
UJ- Non-detected compound associated with low bias in the CCV and/or LCS.
N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

eurofins | Air Toxics

Summary of Detected Compounds
EPA METHOD TO-15 GC/MS

Client Sample ID: SV-3 (IPA)

Lab ID#: 1204162C-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
2-Propanol	280	51000	680	120000

eurofins | Air Toxics

Client Sample ID: SV-3 (IPA)

Lab ID#: 1204162C-04A

EPA METHOD TO-15 GC/MS

File Name:	**14041117**	**Date of Collection:**	**4/6/12 11:29:00 AM**
Dil. Factor:	**13.8**	**Date of Analysis:**	**4/11/12 07:12 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
2-Propanol	280	51000	680	120000

Container Type: PAC250 Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	101	70-130

eurofins | Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1204162C-05A

EPA METHOD TO-15 GC/MS

File Name:	**14041105**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/11/12 12:37 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
2-Propanol	20	Not Detected	49	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	104	70-130

eurofins | Air Toxics

Client Sample ID: CCV

Lab ID#: 1204162C-06A

EPA METHOD TO-15 GC/MS

File Name:	**14041102**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/11/12 10:55 AM**	

Compound	**%Recovery**
2-Propanol	99

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	110	70-130

eurofins | Air Toxics

Client Sample ID: LCS

Lab ID#: 1204162C-07A

EPA METHOD TO-15 GC/MS

File Name:	**14041103**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/11/12 11:14 AM**	

Compound	**%Recovery**
2-Propanol	113

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	110	70-130

eurofins | Air Toxics

Client Sample ID: LCSD
Lab ID#: 1204162C-07AA
EPA METHOD TO-15 GC/MS

File Name:	**14041104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/11/12 11:32 AM**	

Compound	%Recovery
2-Propanol	117

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	110	70-130

Air Toxics LTD.

CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

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

Project Manager Peter Longtry
Collected by: (Print and Sign) Ross Tinline
Company Cornerstone Earth Group Email plongtry@cornerstoneearth.com
Address 2737 N. Main St. #10 City Walnut Creek State CA Zip 94597
Phone 925 988 9500 Fax 925 988 9501

Project Info:
P.O. #
Project # 165-11-2
Project Name Ashland Youth Center

Turn Around Time:
☑ Normal
☐ Rush
5-Day
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Press Fnl FC

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)	
01A	SV-1	34464	4-6-12	1020 – 1025	TO15 – VOCs include TPHg (C_5-C_{11}), BTEX, naphthalene + ASTM1946 for O_2, CO_2 and methane.	-29.75	-5.14			20313
02A	SV-3	37391	4-6-12	1125-1132		-29.66	-5.40			20131
	Trip Blank	12387	4-6-12	—	VOCs by TO15	—	—			20321
	SV-3 (IPA)	3218	4-6-12	1126 – 1129	2 propanol only (TO15 5+20)	-29.6	-4.5			10003

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
	4/6/12 1810	Fedex	4/6/12 1810
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
		ATL	4.9.12 0835
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	Fed Ex		NA	Good	Yes No (None)	1204162

eurofins | Air Toxics

4/17/2012

Mr. Peter Langtry
Cornerstone Earth Group
2737 North Main St.
Suite 10
Walnut Creek CA 94597

Project Name: Ashland Youth Center
Project #: 165-11-2
Workorder #: 1204162B

Dear Mr. Peter Langtry

The following report includes the data for the above referenced project for sample(s) received on 4/9/2012 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kyle Vagadori at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kyle Vagadori

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1204162B

Work Order Summary

CLIENT:	Mr. Peter Langtry Cornerstone Earth Group 2737 North Main St. Suite 10 Walnut Creek, CA 94597	**BILL TO:**	Accounts Payable Cornerstone Earth Group 1259 Oakmead Parkway Sunnyvale, CA 94085
PHONE:	925-988-9500	**P.O. #**	
FAX:		**PROJECT #**	165-11-2 Ashland Youth Center
DATE RECEIVED:	04/09/2012	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	04/17/2012		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SV-1	Modified ASTM D-1946	3.5 "Hg	5 psi
02A	SV-3	Modified ASTM D-1946	5.5 "Hg	5 psi
03A	Lab Blank	Modified ASTM D-1946	NA	NA
04A	LCS	Modified ASTM D-1946	NA	NA
04AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Linda D. Frumarn DATE: 04/17/12

Laboratory Director

Certfication numbers: AZ Licensure AZ0719, CA NELAP - 02110CA, LA NELAP - 02089,
NY NELAP - 11291, TX NELAP - T104704434-11-3, UT NELAP -CA009332011-1, WA NELAP - C935
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/11 , Expiration date: 06/30/12.
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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

LABORATORY NARRATIVE
Modified ASTM D-1946
Cornerstone Earth Group
Workorder# 1204162B

Two 1 Liter Summa Canister samples were received on April 09, 2012. The laboratory performed analysis via Modified ASTM Method D-1946 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***ASTM D-1946***	***ATL Modifications***
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A 3-point calibration curve is performed. Quantitation is based on a daily calibration standard which may or may not resemble the composition of the associated samples.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a >/= 95% accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 25% RPD for detections > 5 X's the RL.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.
File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

eurofins | Air Toxics

Summary of Detected Compounds
MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

Client Sample ID: SV-1

Lab ID#: 1204162B-01A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	9.6
Methane	0.00021	0.00023
Carbon Dioxide	0.021	0.78

Client Sample ID: SV-3

Lab ID#: 1204162B-02A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.16	1.6
Methane	0.00016	0.13
Carbon Dioxide	0.016	3.2

eurofins | Air Toxics

Client Sample ID: SV-1

Lab ID#: 1204162B-01A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**9041614**	**Date of Collection: 4/6/12 10:25:00 AM**	
Dil. Factor:	**2.07**	**Date of Analysis: 4/16/12 11:45 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	9.6
Methane	0.00021	0.00023
Carbon Dioxide	0.021	0.78

Container Type: 1 Liter Summa Canister

eurofins | Air Toxics

Client Sample ID: SV-3

Lab ID#: 1204162B-02A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**9041609**	**Date of Collection: 4/6/12 11:32:00 AM**	
Dil. Factor:	**1.64**	**Date of Analysis: 4/16/12 09:39 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.16	1.6
Methane	0.00016	0.13
Carbon Dioxide	0.016	3.2

Container Type: 1 Liter Summa Canister

eurofins | Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1204162B-03A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**9041607**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/16/12 08:51 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	Not Detected
Methane	0.00010	Not Detected
Carbon Dioxide	0.010	Not Detected

Container Type: NA - Not Applicable

eurofins | Air Toxics

Client Sample ID: LCS

Lab ID#: 1204162B-04A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**9041602**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/16/12 06:37 AM**	

Compound	%Recovery
Oxygen	100
Methane	99
Carbon Dioxide	101

Container Type: NA - Not Applicable

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 1204162B-04AA

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**9041630**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/16/12 06:45 PM**	

Compound	%Recovery
Oxygen	99
Methane	100
Carbon Dioxide	101

Container Type: NA - Not Applicable

Air Toxics LTD.

CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

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

Project Manager Peter Lowery

Collected by: (Print and Sign) Ross Tinline

Company Cornerstone Earth Grp. Email plowery@cornerstoneearth.com

Address 2737 N. Main St. #10 City Walnut Creek State CA Zip 94597

Phone 925 988 9500 Fax 925 988 9501

Project Info:
P.O. #
Project # 165-11-2
Project Name Ashland Youth Center

Turn Around Time:
☑ Normal
☐ Rush
5-Day
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Prem Frit FC

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)	
01A	SV-1	34464	4-6-12	1020-1025	TO15-VOCs include TPHs(C_5-C_{12}), BTEX naphthalene + ASTM1946 for O_2, CO_2 and methane	-29.75	-5.14			20313
02A	SV-3	37391	4-6-12	1125-1132		+29.66	-5.40			20131
03A	Trip Blank	12387	4-6-12	—	VOCs by TO15	—	—			20315
	SV-3 (IPA)	3218	4-6-12	1126-1129	2 proposed only (TO15 5420)	+29.6	-4.5			100037

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Ross Tinline	4/6/12 1810	Fedex	4/6/12 1810
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
		John ATL	4.9.12 0835
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	Fed Ex		NA	Good	Yes No (None)	1204162

Form 1293 rev.11

eurofins | Air Toxics

4/17/2012
Mr. Peter Langtry
Cornerstone Earth Group
2737 North Main St.
Suite 10
Walnut Creek CA 94597

Project Name: Ashland Youth Center
Project #: 165-11-2
Workorder #: 1204162A

Dear Mr. Peter Langtry

The following report includes the data for the above referenced project for sample(s) received on 4/9/2012 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kyle Vagadori at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kyle Vagadori

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1204162A

Work Order Summary

CLIENT:	Mr. Peter Langtry Cornerstone Earth Group 2737 North Main St. Suite 10 Walnut Creek, CA 94597	**BILL TO:**	Accounts Payable Cornerstone Earth Group 1259 Oakmead Parkway Sunnyvale, CA 94085
PHONE:	925-988-9500	**P.O. #**	
FAX:		**PROJECT #**	165-11-2 Ashland Youth Center
DATE RECEIVED:	04/09/2012	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	04/17/2012		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SV-1	Modified TO-15	3.5 "Hg	5 psi
02A	SV-3	Modified TO-15	5.5 "Hg	5 psi
03A	Trip Blank	Modified TO-15	27.5 "Hg	5 psi
04A	Lab Blank	Modified TO-15	NA	NA
05A	CCV	Modified TO-15	NA	NA
06A	LCS	Modified TO-15	NA	NA
06AA	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Linda D. Frumarn DATE: 04/17/12

Laboratory Director

Certfication numbers: AZ Licensure AZ0719, CA NELAP - 02110CA, LA NELAP - 02089, NY NELAP - 11291, TX NELAP - T104704434-11-3, UT NELAP -CA009332011-1, WA NELAP - C935
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act, Accreditation number: E87680, Effective date: 07/01/11 , Expiration date: 06/30/12.
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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

LABORATORY NARRATIVE
EPA Method TO-15
Cornerstone Earth Group
Workorder# 1204162A

Three 1 Liter Summa Canister samples were received on April 09, 2012. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

A single point calibration for TPH referenced to Gasoline was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

Dilution was performed on sample SV-3 due to the presence of high level target species.

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit.
UJ- Non-detected compound associated with low bias in the CCV and/or LCS.
N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

eurofins | Air Toxics

Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SV-1

Lab ID#: 1204162A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	7.6	12	18	28
Carbon Disulfide	3.0	6.9	9.5	21
m,p-Xylene	0.76	0.84	3.3	3.6

Client Sample ID: SV-3

Lab ID#: 1204162A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Hexane	63	910	220	3200
Cyclohexane	63	860	220	2900
2,2,4-Trimethylpentane	63	15000	290	69000
Benzene	63	64	200	200
Heptane	63	190	260	790
Trichloroethene	63	62 J	340	340 J
TPH ref. to Gasoline (MW=100)	3200	310000	13000	1200000

Client Sample ID: Trip Blank

Lab ID#: 1204162A-03A

No Detections Were Found.

eurofins | Air Toxics

Client Sample ID: SV-1

Lab ID#: 1204162A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p041015**	**Date of Collection:**	**4/6/12 10:25:00 AM**
Dil. Factor:	**1.52**	**Date of Analysis:**	**4/10/12 04:01 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.76	Not Detected	3.8	Not Detected
Freon 114	0.76	Not Detected	5.3	Not Detected
Chloromethane	7.6	Not Detected	16	Not Detected
Vinyl Chloride	0.76	Not Detected	1.9	Not Detected
1,3-Butadiene	0.76	Not Detected	1.7	Not Detected
Bromomethane	7.6	Not Detected	30	Not Detected
Chloroethane	3.0	Not Detected	8.0	Not Detected
Freon 11	0.76	Not Detected	4.3	Not Detected
Ethanol	3.0	Not Detected	5.7	Not Detected
Freon 113	0.76	Not Detected	5.8	Not Detected
1,1-Dichloroethene	0.76	Not Detected	3.0	Not Detected
Acetone	7.6	12	18	28
2-Propanol	3.0	Not Detected	7.5	Not Detected
Carbon Disulfide	3.0	6.9	9.5	21
3-Chloropropene	3.0	Not Detected	9.5	Not Detected
Methylene Chloride	7.6	Not Detected	26	Not Detected
Methyl tert-butyl ether	0.76	Not Detected	2.7	Not Detected
trans-1,2-Dichloroethene	0.76	Not Detected	3.0	Not Detected
Hexane	0.76	Not Detected	2.7	Not Detected
1,1-Dichloroethane	0.76	Not Detected	3.1	Not Detected
2-Butanone (Methyl Ethyl Ketone)	3.0	Not Detected	9.0	Not Detected
cis-1,2-Dichloroethene	0.76	Not Detected	3.0	Not Detected
Tetrahydrofuran	0.76	Not Detected	2.2	Not Detected
Chloroform	0.76	Not Detected	3.7	Not Detected
1,1,1-Trichloroethane	0.76	Not Detected	4.1	Not Detected
Cyclohexane	0.76	Not Detected	2.6	Not Detected
Carbon Tetrachloride	0.76	Not Detected	4.8	Not Detected
2,2,4-Trimethylpentane	0.76	Not Detected	3.6	Not Detected
Benzene	0.76	Not Detected	2.4	Not Detected
1,2-Dichloroethane	0.76	Not Detected	3.1	Not Detected
Heptane	0.76	Not Detected	3.1	Not Detected
Trichloroethene	0.76	Not Detected	4.1	Not Detected
1,2-Dichloropropane	0.76	Not Detected	3.5	Not Detected
1,4-Dioxane	3.0	Not Detected	11	Not Detected
Bromodichloromethane	0.76	Not Detected	5.1	Not Detected
cis-1,3-Dichloropropene	0.76	Not Detected	3.4	Not Detected
4-Methyl-2-pentanone	0.76	Not Detected	3.1	Not Detected
Toluene	0.76	Not Detected	2.9	Not Detected
trans-1,3-Dichloropropene	0.76	Not Detected	3.4	Not Detected
1,1,2-Trichloroethane	0.76	Not Detected	4.1	Not Detected
Tetrachloroethene	0.76	Not Detected	5.2	Not Detected
2-Hexanone	3.0	Not Detected	12	Not Detected

eurofins | Air Toxics

Client Sample ID: SV-1

Lab ID#: 1204162A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p041015**	**Date of Collection: 4/6/12 10:25:00 AM**	
Dil. Factor:	**1.52**	**Date of Analysis: 4/10/12 04:01 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.76	Not Detected	6.5	Not Detected
1,2-Dibromoethane (EDB)	0.76	Not Detected	5.8	Not Detected
Chlorobenzene	0.76	Not Detected	3.5	Not Detected
Ethyl Benzene	0.76	Not Detected	3.3	Not Detected
m,p-Xylene	0.76	0.84	3.3	3.6
o-Xylene	0.76	Not Detected	3.3	Not Detected
Styrene	0.76	Not Detected	3.2	Not Detected
Bromoform	0.76	Not Detected	7.8	Not Detected
Cumene	0.76	Not Detected	3.7	Not Detected
1,1,2,2-Tetrachloroethane	0.76	Not Detected	5.2	Not Detected
Propylbenzene	0.76	Not Detected	3.7	Not Detected
4-Ethyltoluene	0.76	Not Detected	3.7	Not Detected
1,3,5-Trimethylbenzene	0.76	Not Detected	3.7	Not Detected
1,2,4-Trimethylbenzene	0.76	Not Detected	3.7	Not Detected
1,3-Dichlorobenzene	0.76	Not Detected	4.6	Not Detected
1,4-Dichlorobenzene	0.76	Not Detected	4.6	Not Detected
alpha-Chlorotoluene	0.76	Not Detected	3.9	Not Detected
1,2-Dichlorobenzene	0.76	Not Detected	4.6	Not Detected
1,2,4-Trichlorobenzene	3.0	Not Detected	22	Not Detected
Hexachlorobutadiene	3.0	Not Detected	32	Not Detected
Naphthalene	3.0	Not Detected	16	Not Detected
TPH ref. to Gasoline (MW=100)	38	Not Detected	160	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	89	70-130

eurofins | Air Toxics

Client Sample ID: SV-3

Lab ID#: 1204162A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p041017**	**Date of Collection:**	**4/6/12 11:32:00 AM**
Dil. Factor:	**126**	**Date of Analysis:**	**4/10/12 04:36 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	63	Not Detected	310	Not Detected
Freon 114	63	Not Detected	440	Not Detected
Chloromethane	630	Not Detected	1300	Not Detected
Vinyl Chloride	63	Not Detected	160	Not Detected
1,3-Butadiene	63	Not Detected	140	Not Detected
Bromomethane	630	Not Detected	2400	Not Detected
Chloroethane	250	Not Detected	660	Not Detected
Freon 11	63	Not Detected	350	Not Detected
Ethanol	250	Not Detected	470	Not Detected
Freon 113	63	Not Detected	480	Not Detected
1,1-Dichloroethene	63	Not Detected	250	Not Detected
Acetone	630	Not Detected	1500	Not Detected
2-Propanol	250	Not Detected	620	Not Detected
Carbon Disulfide	250	Not Detected	780	Not Detected
3-Chloropropene	250	Not Detected	790	Not Detected
Methylene Chloride	630	Not Detected	2200	Not Detected
Methyl tert-butyl ether	63	Not Detected	230	Not Detected
trans-1,2-Dichloroethene	63	Not Detected	250	Not Detected
Hexane	63	910	220	3200
1,1-Dichloroethane	63	Not Detected	260	Not Detected
2-Butanone (Methyl Ethyl Ketone)	250	Not Detected	740	Not Detected
cis-1,2-Dichloroethene	63	Not Detected	250	Not Detected
Tetrahydrofuran	63	Not Detected	180	Not Detected
Chloroform	63	Not Detected	310	Not Detected
1,1,1-Trichloroethane	63	Not Detected	340	Not Detected
Cyclohexane	63	860	220	2900
Carbon Tetrachloride	63	Not Detected	400	Not Detected
2,2,4-Trimethylpentane	63	15000	290	69000
Benzene	63	64	200	200
1,2-Dichloroethane	63	Not Detected	250	Not Detected
Heptane	63	190	260	790
Trichloroethene	63	62 J	340	340 J
1,2-Dichloropropane	63	Not Detected	290	Not Detected
1,4-Dioxane	250	Not Detected	910	Not Detected
Bromodichloromethane	63	Not Detected	420	Not Detected
cis-1,3-Dichloropropene	63	Not Detected	280	Not Detected
4-Methyl-2-pentanone	63	Not Detected	260	Not Detected
Toluene	63	Not Detected	240	Not Detected
trans-1,3-Dichloropropene	63	Not Detected	280	Not Detected
1,1,2-Trichloroethane	63	Not Detected	340	Not Detected
Tetrachloroethene	63	Not Detected	430	Not Detected
2-Hexanone	250	Not Detected	1000	Not Detected

eurofins | Air Toxics

Client Sample ID: SV-3

Lab ID#: 1204162A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p041017**	**Date of Collection:**	**4/6/12 11:32:00 AM**
Dil. Factor:	**126**	**Date of Analysis:**	**4/10/12 04:36 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	63	Not Detected	540	Not Detected
1,2-Dibromoethane (EDB)	63	Not Detected	480	Not Detected
Chlorobenzene	63	Not Detected	290	Not Detected
Ethyl Benzene	63	Not Detected	270	Not Detected
m,p-Xylene	63	Not Detected	270	Not Detected
o-Xylene	63	Not Detected	270	Not Detected
Styrene	63	Not Detected	270	Not Detected
Bromoform	63	Not Detected	650	Not Detected
Cumene	63	Not Detected	310	Not Detected
1,1,2,2-Tetrachloroethane	63	Not Detected	430	Not Detected
Propylbenzene	63	Not Detected	310	Not Detected
4-Ethyltoluene	63	Not Detected	310	Not Detected
1,3,5-Trimethylbenzene	63	Not Detected	310	Not Detected
1,2,4-Trimethylbenzene	63	Not Detected	310	Not Detected
1,3-Dichlorobenzene	63	Not Detected	380	Not Detected
1,4-Dichlorobenzene	63	Not Detected	380	Not Detected
alpha-Chlorotoluene	63	Not Detected	330	Not Detected
1,2-Dichlorobenzene	63	Not Detected	380	Not Detected
1,2,4-Trichlorobenzene	250	Not Detected	1900	Not Detected
Hexachlorobutadiene	250	Not Detected	2700	Not Detected
Naphthalene	250	Not Detected	1300	Not Detected
TPH ref. to Gasoline (MW=100)	3200	310000	13000	1200000

J = Estimated value.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	114	70-130
4-Bromofluorobenzene	94	70-130

eurofins | Air Toxics

Client Sample ID: Trip Blank

Lab ID#: 1204162A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p041016**	**Date of Collection: 4/6/12**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/10/12 04:19 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

eurofins | Air Toxics

Client Sample ID: Trip Blank

Lab ID#: 1204162A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p041016**	**Date of Collection: 4/6/12**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/10/12 04:19 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
Naphthalene	2.0	Not Detected	10	Not Detected
TPH ref. to Gasoline (MW=100)	25	Not Detected	100	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	92	70-130

eurofins | Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1204162A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p041008**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/10/12 11:29 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

eurofins | Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1204162A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p041008**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/10/12 11:29 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
Naphthalene	2.0	Not Detected	10	Not Detected
TPH ref. to Gasoline (MW=100)	25	Not Detected	100	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	92	70-130

eurofins | Air Toxics

Client Sample ID: CCV

Lab ID#: 1204162A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p041002**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/10/12 08:05 AM**	

Compound	%Recovery
Freon 12	102
Freon 114	101
Chloromethane	127
Vinyl Chloride	101
1,3-Butadiene	91
Bromomethane	102
Chloroethane	98
Freon 11	101
Ethanol	93
Freon 113	98
1,1-Dichloroethene	96
Acetone	91
2-Propanol	92
Carbon Disulfide	93
3-Chloropropene	93
Methylene Chloride	100
Methyl tert-butyl ether	91
trans-1,2-Dichloroethene	96
Hexane	94
1,1-Dichloroethane	94
2-Butanone (Methyl Ethyl Ketone)	92
cis-1,2-Dichloroethene	91
Tetrahydrofuran	89
Chloroform	94
1,1,1-Trichloroethane	93
Cyclohexane	91
Carbon Tetrachloride	95
2,2,4-Trimethylpentane	88
Benzene	95
1,2-Dichloroethane	100
Heptane	95
Trichloroethene	92
1,2-Dichloropropane	93
1,4-Dioxane	90
Bromodichloromethane	95
cis-1,3-Dichloropropene	91
4-Methyl-2-pentanone	88
Toluene	91
trans-1,3-Dichloropropene	93
1,1,2-Trichloroethane	96
Tetrachloroethene	97
2-Hexanone	93

eurofins | Air Toxics

Client Sample ID: CCV

Lab ID#: 1204162A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p041002**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/10/12 08:05 AM**	

Compound	%Recovery
Dibromochloromethane	100
1,2-Dibromoethane (EDB)	97
Chlorobenzene	93
Ethyl Benzene	94
m,p-Xylene	93
o-Xylene	91
Styrene	92
Bromoform	96
Cumene	93
1,1,2,2-Tetrachloroethane	92
Propylbenzene	91
4-Ethyltoluene	91
1,3,5-Trimethylbenzene	80
1,2,4-Trimethylbenzene	83
1,3-Dichlorobenzene	87
1,4-Dichlorobenzene	86
alpha-Chlorotoluene	87
1,2-Dichlorobenzene	87
1,2,4-Trichlorobenzene	84
Hexachlorobutadiene	83
Naphthalene	80
TPH ref. to Gasoline (MW=100)	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	94	70-130

eurofins | Air Toxics

Client Sample ID: LCS

Lab ID#: 1204162A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p041003**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/10/12 08:35 AM**	

Compound	%Recovery
Freon 12	107
Freon 114	105
Chloromethane	135 Q
Vinyl Chloride	107
1,3-Butadiene	95
Bromomethane	107
Chloroethane	103
Freon 11	106
Ethanol	88
Freon 113	103
1,1-Dichloroethene	109
Acetone	94
2-Propanol	96
Carbon Disulfide	118
3-Chloropropene	112
Methylene Chloride	103
Methyl tert-butyl ether	96
trans-1,2-Dichloroethene	113
Hexane	98
1,1-Dichloroethane	98
2-Butanone (Methyl Ethyl Ketone)	97
cis-1,2-Dichloroethene	97
Tetrahydrofuran	89
Chloroform	99
1,1,1-Trichloroethane	98
Cyclohexane	95
Carbon Tetrachloride	101
2,2,4-Trimethylpentane	91
Benzene	99
1,2-Dichloroethane	104
Heptane	97
Trichloroethene	98
1,2-Dichloropropane	98
1,4-Dioxane	92
Bromodichloromethane	99
cis-1,3-Dichloropropene	96
4-Methyl-2-pentanone	91
Toluene	94
trans-1,3-Dichloropropene	97
1,1,2-Trichloroethane	101
Tetrachloroethene	101
2-Hexanone	96

eurofins | Air Toxics

Client Sample ID: LCS

Lab ID#: 1204162A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p041003**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/10/12 08:35 AM**	

Compound	**%Recovery**
Dibromochloromethane	103
1,2-Dibromoethane (EDB)	102
Chlorobenzene	98
Ethyl Benzene	97
m,p-Xylene	98
o-Xylene	95
Styrene	98
Bromoform	98
Cumene	97
1,1,2,2-Tetrachloroethane	97
Propylbenzene	96
4-Ethyltoluene	92
1,3,5-Trimethylbenzene	84
1,2,4-Trimethylbenzene	86
1,3-Dichlorobenzene	92
1,4-Dichlorobenzene	90
alpha-Chlorotoluene	93
1,2-Dichlorobenzene	91
1,2,4-Trichlorobenzene	88
Hexachlorobutadiene	85
Naphthalene	58 Q
TPH ref. to Gasoline (MW=100)	Not Spiked

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	95	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 1204162A-06AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p041004**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/10/12 08:52 AM**	

Compound	%Recovery
Freon 12	107
Freon 114	106
Chloromethane	136 Q
Vinyl Chloride	107
1,3-Butadiene	96
Bromomethane	108
Chloroethane	104
Freon 11	108
Ethanol	87
Freon 113	107
1,1-Dichloroethene	111
Acetone	98
2-Propanol	97
Carbon Disulfide	123
3-Chloropropene	115
Methylene Chloride	106
Methyl tert-butyl ether	99
trans-1,2-Dichloroethene	117
Hexane	100
1,1-Dichloroethane	102
2-Butanone (Methyl Ethyl Ketone)	100
cis-1,2-Dichloroethene	103
Tetrahydrofuran	94
Chloroform	103
1,1,1-Trichloroethane	103
Cyclohexane	99
Carbon Tetrachloride	106
2,2,4-Trimethylpentane	98
Benzene	100
1,2-Dichloroethane	106
Heptane	98
Trichloroethene	99
1,2-Dichloropropane	99
1,4-Dioxane	93
Bromodichloromethane	101
cis-1,3-Dichloropropene	96
4-Methyl-2-pentanone	91
Toluene	95
trans-1,3-Dichloropropene	99
1,1,2-Trichloroethane	102
Tetrachloroethene	102
2-Hexanone	96

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 1204162A-06AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p041004**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/10/12 08:52 AM**	

Compound	%Recovery
Dibromochloromethane	103
1,2-Dibromoethane (EDB)	104
Chlorobenzene	100
Ethyl Benzene	100
m,p-Xylene	100
o-Xylene	98
Styrene	100
Bromoform	99
Cumene	100
1,1,2,2-Tetrachloroethane	99
Propylbenzene	98
4-Ethyltoluene	95
1,3,5-Trimethylbenzene	86
1,2,4-Trimethylbenzene	88
1,3-Dichlorobenzene	95
1,4-Dichlorobenzene	93
alpha-Chlorotoluene	94
1,2-Dichlorobenzene	94
1,2,4-Trichlorobenzene	94
Hexachlorobutadiene	88
Naphthalene	62
TPH ref. to Gasoline (MW=100)	Not Spiked

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	105	70-130
4-Bromofluorobenzene	98	70-130