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July 26, 2016

Preliminary Mitigation Plan

Property Identification:
Lucasey Manufacturing Site
2744 East Eleventh Street
Oakland, California
Toxics Case No. RO0003183

AEI Project No. 345989

Prepared for:
Risa Investments, LLC

Prepared by:
AEI Consultants
2550 Camino Diablo
Walnut Creek, California 94567
(925) 746-6000

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RIAZ
CAPITAL

July 26, 2016

Dilan Roe
Alameda County Department of Environmental Health
1131 Harbor Parkway
Alameda, California 94502

Subject: Transmittal, *Preliminary Mitigation Plan*
Lucasey Manufacturing Site
2744 East Eleventh Street, Oakland, California
Toxics Case No. RO0003183

Dear Miss Roe:

Enclosed is the *Preliminary Mitigation Plan* which was prepared in general accordance with the request by the Alameda County Department of Environmental Health (ACDEH) during the April 1, 2016 meeting between AEI Consultants, Risa Investments, LLC, and the ACDEH.

On behalf of Risa Investments, LLC, I declare under penalty of perjury, that the information and/or recommendations contained in the attached plan for the above-referenced site are true and correct to the best of my knowledge.

If you have any questions or need additional information, please do not hesitate to contact Mr. Trent Weise of AEI Consultants at (408) 559-7600.

Sincerely,

Risa Investments, LLC

Daniel Dunigan
Development Manager

Enclosures

2427 17TH ST SAN FRANCISCO CA 94110 O 415.675.1775 F 415.675.1978 WWW.RIAZCAPITAL.COM

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SIGNATURES

This document was prepared by, or under the direction of, the undersigned:

Jonathan Sanders, E.I.T.
Project Engineer

Trent A. Weise, P.E.
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
TRENT A. WEISE
No. C84480
Exp. 6/17
CIVIL
STATE OF CALIFORNIA

1. INTRODUCTION

On behalf of Risa Investments, LLC (Risa), AEI Consultants (AEI) is pleased to present this document describing the preliminary mitigation plan (PMP) for the Lucasey Manufacturing Site, Toxics Case No. RO0003183, located at 2744 East Eleventh Street in Oakland, California ("the Site"). The Site is currently in the planning stages of redevelopment that will include the partial residential use of the existing conjoined buildings (buildings 1 through 5) and construction of two podium style residential structures (buildings 6 and 7). Subsurface investigations performed at the Site have identified benzene and tetrachloroethylene (PCE) in soil vapor that pose a potential risk to indoor air quality. This PMP describes the proposed mitigation measures to protect indoor air quality. In accordance with the request by the Alameda County Department of Environmental Health (ACDEH) during the meeting held on April 1, 2016 between AEI, ACDEH, and Risa, AEI has prepared this PMP with the following objectives:

a) Provide details pertaining to the proposed layout and use of the existing on-site structures (Buildings 1 through 5) and the proposed new podium style residential structures (Buildings 6 and 7);

b) Provide conceptual design details and schematics of the proposed mitigation system;

c) Describe the general installation process and quality assurance and quality control (QA/QC) tests which will be conducted to test the integrity of the mitigation system.

2. BACKGROUND

The Site comprises approximately 2.32 acres and is located in an urban mixed use area of Oakland, California, consisting of commercial, residential, and industrial uses. The Site is currently developed with conjoined buildings comprising 104,008 square-feet built between 1920 and 1922. The current on-site structures are used for manufacturing, warehousing, and office space. The Site vicinity is shown on Figure 1.

The Site is underlain by generally discontinuous layers of fine-grained deposits comprised of gravely-silt, silty-sands, and clay. Two water-yielding horizons have been identified at the Site. First encountered water is observed in an upper unconfined to semi-confined zone present to a depth of approximately 21 feet below ground surface (bgs). A deeper confined zone is present from 24 feet bgs to an unknown depth, which is comprised of clayey-sands.

Petroleum hydrocarbons were released to the subsurface at the Site presumably from an underground storage tank (UST) used to store fuel oil formerly located in what is now a parking lot located in the southern corner of the Site.

The fuel release case (RO0002902) was granted closure by ACDEH in a letter dated July 31, 2014. The case was granted closure under Scenario 4 of the Low-Threat Underground Storage Tank Closure Policy (LTCP). The Site Management Requirements of the Case Closure Summary includes that "[b]ased on the depth and type of petroleum hydrocarbons, the potential for exposure is low and the contamination does not appear to present a risk unless exposed by excavation. Therefore, case closure is granted for the current commercial land use." The

conclusion section of the Case Closure Summary notes that "...re-evaluation of this case is required if any excavation takes place below a depth of 8 feet bgs."

Soil vapor samples collected prior to closure identified elevated concentrations in soil vapor. As part of an evaluation of whether the residual petroleum hydrocarbons present in the subsurface posed a potential unacceptable risk to future residential users of the property AEI performed several rounds of additional investigations to further characterize petroleum hydrocarbons in the subsurface, including:

In accordance with the *Work Plan, Soil Vapor Investigation* dated October 30, 2015, AEI advanced and installed temporary soil vapor probes at a depth of five feet below ground surface (bgs) and sub-slab vapor probes at eight locations (ASV-16, ASV-17, ASV-19, ASV-20, ASV-21, ASV-22, ASV-23, and ASV-24) in the vicinity of the known area were residual petroleum hydrocarbons are present beneath the Site. This initial scope of work was conducted in Building 1 (ASV-21 and ASV-22), Building 2 (ASV-24), and Building 3 (ASV-16, ASV-17, ASV-19, ASV-20, and ASV-23) and was completed in November, 2015. Soil vapor and sub-slab vapor samples from the November 2015 investigation identified benzene and PCE as chemicals of potential concern (COPC) with both these compounds present in sub-slab and soil vapor samples in excess of the conservative risk screening level for the protection of indoor air. Based on the results of the November 2015 investigation, AEI expanded the scope of the investigation to include an additional seventeen temporary soil vapor probes installed at five feet bgs in an approximate grid pattern throughout the interior of the on-site manufacturing building (ASV-25 through ASV-41).

Subsequent to the *Report on Soil Vapor Investigation* dated January 19, 2016, and as a result of the review of the compiled data, the ACDEH requested that additional work be conducted to attempt to identify an on-site source of PCE soil vapor. In accordance with the *Work Plan for Additional Subsurface Investigation* dated March 11, 2016, AEI conducted additional assessment activities which included the advancement and installation of twelve semi-permanent soil vapor probes to five and a half feet below ground surface and seven soil borings to groundwater for the collection of soil and groundwater samples. The semi-permanent soil vapor probes were installed in twinned locations of historical temporary soil vapor probes ASV-16 through ASV-29 excluding ASV-18, ASV-24, and ASV-26. Additionally, AEI conducted a survey of the on-site and historic sanitary sewer system to identify potential preferential pathways for soil vapor migration or potential migration pathways for contaminants. The results of this additional investigation are reported in the *Report on Additional Soil, Groundwater, and Soil Vapor Investigations* dated March 30, 2016. On April 1, 2016, AEI met with the ACEH to discuss the results of the March 30, 2016 *Report on Additional Soil, Groundwater, and Soil Vapor investigations* and their impact on the planned redevelopment of the Site for residential use. Based on this meeting, the ACEH agreed that a soil vapor mitigation system is likely appropriate for the protection of human health and the environment, and requested that additional investigation. The investigation included collecting and additional round of soil vapor samples, collecting additional soil vapor samples within the parking lot at the Site, and collecting vapor samples from within the on-site sanitary sewer lines.

The results of this additional investigation are reported in the *Report on Soil Vapor and Sewer Gas Investigation* dated May 23, 2016.

The findings of the investigations performed by AEI are summarized below:

- There was no primary source of benzene identified in soil nor groundwater that is the source of benzene observed in soil vapor samples. Therefore, AEI attributes the presence of benzene in soil vapor samples collected on-site to the off-site migration of benzene vapors through fill materials around on-site utility and sanitary sewer. Benzene concentrations observed in soil vapor were generally consistent with the December 2015 and November 2015 sampling events, with a maximum concentration observed of 260 µg/m^3. The concentrations of benzene observed in soil vapor represent a potential unacceptable risk to indoor air at the Site.
- No potential primary sources of PCE were identified in soil at the Site and only low-levels of PCE were observed in groundwater samples collected and analyzed. The presence of PCE in soil vapor is attributed to the volatilization from the low levels of PCE observed in groundwater. PCE concentrations observed in soil vapor were generally consistent with previous sampling events, with a maximum concentration observed of 800 µg /m^3. The concentrations of PCE observed in soil vapor represent a potential unacceptable risk to indoor air at the Site

Based on these findings, AEI suggested that the vapor intrusion mitigation system proposed in the RMP would be protective of indoor air within the building.

3. Planned Use and Development

The Site currently operates as a commercial manufacturing facility for Lucasey Manufacturing Inc. Risa is in the process of acquiring the Site with the intent to redevelop the existing on-site structure for work/live use. Portions of the existing structures will be converted to residential units with the remaining portions being utilized as work, open, or circulation spaces. As part of this re-development, Risa plans to install new structural elements to improve the existing structure for residential use. Such elements include the installation of grade beams to tie existing vertical supports together and the addition of two stories and three floors to Building 4 and Building 5. Three new elevators and various new stairwells are also planned, with the existing elevator in Building 2 being abandoned. In addition to the improvements to the existing structures, Risa also intends to construct two podium style residential units (Buildings 6 and 7) in what is currently the parking lot. The ground floor of these podium style buildings will be utilized for parking. Figures depicting the planned layout and intended use of the existing and proposed structures are provided in Appendix A and are summarized below:

Table A – Summary of Architectural Figures

Figure Name	Building(s) shown	Description
A111A	1, 2, 3, 4, 5, 6, 7	Site plan depicting the layout and intended use of the ground floor of all existing and proposed on-site structures. Includes locations of stairways and elevators as well as the proposed parking lot.

A305	6 & 7	Cross sections depicting (1) Building 6 North to South, (2) Building 6 East to West, (3) Building 7 North to South and, (4) Building 7 East to West (4). Each cross section depicts the general layout, including vertical access points such as stairways and elevators.
A306	1, 2, 5, and 7	Cross sections depiction (1) West to East transect of the planned layout of Buildings 1, 2, and 5, including two of the three elevators and several stair cases and a small cross section of Building 7 (2) North to South transect of Building 7 depicting both stairways and the elevator.

4. Chemicals of Potential Concern and Mitigation Goals

Chemicals of potential concern (COPCs) were selected based on the known historical use of the Site and available historical analytical data. A detailed description of the selection of COPCs is provided in the RMP. The primary COPCs identified include: benzene, PCE, trichloroethylene (TCE), cis-1,2-dichloroethene (DCE), and vinyl chloride.

To assess whether the concentrations of CPOCs identified in soil vapor beneath the Site pose a significant potential risk to a hypothetical future resident at the Site, AEI selected a set of Tier II environmental screening levels based on the conceptual site model (CSM) as outlined in the RMP and in accordance with the California Regional Water Quality Control Board, San Francisco Bay Region Interim Final Environmental Screening Levels (ESLs) dated February 2016. The maximum extents of COPCs in soil vapor in excess of their applicable ESLs is depicted on Figure 3. For the purposes of this mitigation system, the objective is to be protective of human health. The indoor air ESLs were therefore selected as the mitigation goal for the system. The system is thus considered to be successful if the flux of soil vapor to indoor air does not exceed the indoor air ESL. A List of the mitigation goals, as well as soil vapor screening levels, are presented in Table B below:

Table B - Indoor Air Goals and Soil Vapor Tier II ESL

	Benzene	***Ethylbenzene***	***PCE***	***TCE***	**cis-*1,2-DCE***	***VC***
Indoor Air Goal ($\mu g/m^3$)	0.097	1.1	0.48	0.48	8.3	0.0095
Soil Vapor Tier II ESL ($\mu g/m^3$)	48	560	240	340	4,200	4.7

5. Vapor Intrusion Controls

To address the potential risk to indoor air quality posed by the presence of benzene and PCE in soil vapor at concentrations above the Tier II ESL, AEI proposes to install a vapor intrusion mitigation system that will include both a venting system and a barrier system. The venting system provides a route for the COPC-affected soil vapor to vent directly to the atmosphere, and

reduces the potential convective effects generated by the building. The engineered barrier system is intended to sufficiently retard the migration of COPC-affected soil vapor into on-site buildings such that COPCs in soil vapor no longer represent a potentially unacceptable risk to human health. The proposed vapor mitigation system is designed to be passive and relies on thermal and wind effects to draw COPC-affected soil vapor from beneath the building to be vented to the atmosphere. If deemed necessary, the system can be converted to an active system with the addition of a blower connected to the vent piping. The blower would be used to mechanically extract COPC-affected soil vapor through the venting system.

The October 2011 *Vapor Intrusion Mitigation Advisory, Revision 1, Final* (VIMA) issued by the DTSC and the Regional Water Board's October 16, 2014 *Draft Interim Framework for Assessment of Vapor Intrusion at TCE-Contaminated Sites* in the San Francisco Bay Region, both of which provide the general requirements for the design, implementation, and long term operation and maintenance of vapor mitigation systems will be used to guide the final design of the proposed vapor mitigation system as described further below.

5.1. Design Basis

The purpose of the vapor intrusion mitigation system is to prohibit the intrusion of COPC-affected soil vapor from the subsurface to indoor air at concentrations that may pose a risk to human health. To provide a redundant system, the following elements will be included:

- **Post-slab vapor barrier system** – The post slab vapor barrier system will be comprised of a very low permeability layer such as Retro-Coat ™ applied to the building floor slab. This low permeability layer will act as a secondary system and will be applied across the foundation of existing structure. Figure 4 depicts a typical application of the post-slab vapor barrier system. Figure 5 depicts detailing for the application of the post-slab vapor barrier system and installation at vertical terminations and penetrations.
- **Sub-slab venting system** – The venting system includes a permeable layer constructed beneath the building using either a gravel bed or an engineered vent material such as Vapor-Vent™ and will include soil vapor collection pipes that will route soil vapor to the vent risers. Vent risers will convey the collected soil vapor to the roof of the on-site structures. Where possible, sub-slab venting systems will be installed in areas of the existing structure where foundation work will be completed as part of the redevelopment. Such areas include, but are not limited to, elevator pits, the installation of new structural elements such as grade beams, and the installation of new sanitary sewer lines. In areas where existing foundation work does not provide adequate coverage for the installation of the sub-slab venting system (such as in Building 1), additional foundation work will be authorized to allow for the installation of the sub-slab venting system. Sub-slab venting systems will also be installed in the proposed new construction in areas which represent a potential vertical migration pathway for soil vapors such as stairwells and elevator pits. The location of proposed new structural elements and elevator pits are depicted on Figure 2. Figure 4B depicts a typical installation of the sub-slab venting system around the proposed 4' grade beams. Figure 4C depicts a typical installation of the sub-slab venting system under newly constructed foundation such as would occur in the stairwells of the proposed new residential structures, Building 6 and Building 7.

- **Sub-slab vapor barrier system** – The sub-slab barrier system includes a very low permeability layer such as Geo-Seal® constructed between the venting system and the building floor slabs and foundation. As with the sub-slab venting system, the sub-slab vapor barrier will be installed within the existing structures in areas where foundation work will be completed as part of redevelopment and within new construction in areas of potential vertical migration. Figure 4B depicts a typical installation of the vapor barrier system around a grade beam. Figure 4C depicts a typical installation of the vapor barrier system under newly constructed foundation such as would occur in the stairwells of the proposed new residential structures, Building 6 and Building 7.
- **Closure of Potential Preferential Pathways** – Potential preferential pathways such as cracks or penetrations to the foundation or unused sanitary sewer lines or other utilities will be closed and sealed. Cracks and minor punctures to the slab will be sealed using Retro-coat caulk sealant. Larger cracks, punctures, or penetrations will be sealed using neat cement grout. Unused utilities will be abandoned and sealed where appropriate.

The final design of the vapor mitigation system will be performed by a State of California-licensed Professional Engineer with the appropriate experience and knowledge in the design of vapor mitigation systems. The sub-slab venting system will be designed to be passive, with the appropriate connections to allow future modification to an active system, if deemed necessary. As part of the design process, appropriate operational performance measures will be developed based upon the final design. If successful, no further action is necessary and the long-term operation and maintenance plan will be implemented. If unsuccessful, modifications to the vapor intrusion mitigation system will be made, potentially making the system active, and the performance measures retested. A modified performance measure decision methodology (flow chart) on the protocol to evaluate whether an active system is necessary is provided as Figure 6.

5.2 Excavation and Sampling Plan

As part of the redevelopment of the Site for residential use, excavations are planned to allow for the installation of structural improvements and utilities, including the addition of grade-beams, sanitary sewer lines, and elevators. The excavations for the installation of structural improvements will generally be linear and will be aligned between the existing columns. Currently planned excavations will involve the exposure of roughly 3,700 square feet of soil and excavation of roughly 1,900 cubic yards of soil from the top three feet of soil across the Site. This represents the removal of roughly 29% of the soil from the top three feet of soil across the existing building footprint. These excavations have the potential to expose COPC-impacted soil and will thus present an opportunity for the removal of secondary source materials if present. In order to facilitate the identification of potentially impacted soils, the following screening and sampling protocols will be implemented in areas where potentially impacted soils are most likely to be encountered based upon the soil vapor data collected to-date as depicted on Figure 3:

- For linear excavations, for the installation of grade beams and utilities, soil samples will be collected from the excavation base at 20 linear foot intervals using En-core® samplers and analyzed for VOCs using US EPA Testing Method 8260b. Based on the current layout of the vapor mitigation system, AEI estimates approximately 102 samples will be collected as part of planned linear excavations.

- For elevator pits within the affected area, one sample will be collected from the base of the excavation within the soil sampling area. AEI estimates two soil samples will be collected as part of planned elevator pit excavations.

- For non-linear excavations greater than two feet in depth, no fewer than one sample will be collected from the base of the excavation for every 100-square feet of excavation area. At this time, no non-linear excavations are planned except for those associated with the installation of elevator pits.

The detection of COPCs above the laboratory reporting limit will trigger an evaluation to determine if over excavation is warranted and/or practically feasible. Excavations will not be extended vertically beyond the first encountered saturated water bearing zone or horizontally beyond perimeter walls or to an extent which may compromise the existing structural integrity of the on-site structures.

5.3 Construction Quality Assurance and Quality Control

The vapor intrusion mitigation design will include construction quality assurance and quality control (QA/QC) requirements to be implemented during the installation of the systems, including:

- Appropriately qualified and certified contractors will be used with experience installing the specified venting and barrier products.
- A pre-installation meeting will be held including the contractor, owner, architect/engineer, and other trades that may be affected by the installation of the systems, or must know to protect the systems during the performance of their activities.
- Installation materials will be purchased from a single manufacturer to ensure compatibility and conformity of the products. The manufacturer will provide certification-testing documentation that the materials specified meet or exceed the minimum design requirements.
- Field sampling will be performed on applied and constructed barrier systems to ensure that the system is an appropriate thickness.
- Testing procedures for ensuring that the installed venting system operates as designed will be conducted. These tests may include, but are not limited to, smoke or tracer tests, positive and negative pressure tests, and vapor sampling.
- Testing procedures to ensure that the vapor barrier system have been installed in accordance with the design and manufacturer recommendations and without defects. These tests may include, but are not limited to, visual inspection, smoke or tracer tests, and mass flux tests.

Upon completion of the final vapor intrusion mitigation system installation, a report will be prepared documenting that the installation was performed in accordance with the design and manufacturer specifications and that the specific construction QA/QC procedures were performed and yielded satisfactory results. The report will also include a signed and stamped record drawing set documenting the 'as-built' construction of the vapor intrusion mitigation system, including necessary field changes to the design.

5.4 Long-term Operation and Maintenance

Because the vapor mitigation system is an engineered protection for the building from the potential for vapor intrusion of COPC-affected soil vapor, proper operation and maintenance (O&M) is required to ensure that the systems are not damaged and remain operational over the life of the building. Therefore, as part of the design of the vapor mitigation system, a long-term O&M plan will be prepared that at a minimum will include:

- Written procedures for the evaluation of the integrity of the vent risers and floor systems, including visual observations for damage or activities that may have damaged the systems.
- A schedule for when to perform the inspections, who is qualified to perform the inspections, and the protocol for how to consider modifications to the schedule as warranted.
- Performance measures to ensure that the venting system is operating properly, which may include sampling of the soil vapor and/or indoor air of the building.
- Notification to the property owners that alteration or removal of the vapor mitigation systems is prohibited.
- The procedures and conditions under which the long-term O&M plan can be terminated.

Because the vapor mitigation system will be an integral part of the on-site structures, long-term O&M of the systems will be the responsibility of property owner. A draft of the Long-Term O&M Plan will be submitted to the ACDEH for review and comment prior to the issuance of a final copy.

5.5 Deed Restriction and CCRs

Long-term integrity of the vapor mitigation system will be ensured by recording a deed restriction and covenants, conditions and restrictions (CCRs) to the title of the property that document and communicate the environmental concerns related to residual COPCs that may be present following the remedial actions and require the implementation and operation of the system until such time that COPC concentrations in soil vapor no longer pose a threat to indoor air quality. The proposed deed restriction shall name the ACDEH as a beneficiary and shall anticipate that the ACDEH will be a signatory. A copy of the deed restriction and CCR's will be provided to the ACDEH for review and comment prior to final recording.

6. Hazard Communication

In accordance with the California Safe Drinking Water and Toxic Enforcement Act of 1986, tenants will be informed of the risk of potential exposure to benzene and PCE and of the presence of engineered control systems to mitigate potential exposure to benzene and PCE. This communication will be in the form of a disclosure statement included in the rental application. An initial draft copy of this disclosure statement is available in Appendix C. Long-term O&M and protection of the VIMS will be communicated through the above mentioned Long-Term O&M Plan.

7. References

The regulatory record for this Site can be found on the State of California GeoTracker Website at http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0600133151.

California Department of Toxic Substances Control (DTSC). 2015. *Advisory – Active Soil Gas Investigation*. July. http://www.dtsc.ca.gov/SiteCleanup/upload/VI_ActiveSoilGasAdvisory_FINAL_043012.pdf

California Regional Water Quality Control Board, San Francisco Bay Region. 2013. *User's Guide: Derivation and Application of Environmental Screening Levels – Interim Final*. December. http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/esl.shtml

Lindeburg, Machael R. *Civil Engineering Reference Manual, 10th Edition.* Belmont, CA

TABLES

TABLE 1
Summary of Soil Analytical Data
Lucasey Manufacturing Site
2744 East 11th Street, Oakland, California

Location ID	Date	Location (APN)	Depth (feet bgs)	Benzene (mg/kg)	Ethylbenze (mg/kg)	Toluene (mg/kg)	Xylenes, (mg/kg)	MTBE (mg/kg)	TPH-g (mg/kg)	TPH-d (mg/kg)	TPH-mo (mg/kg)	PCE (mg/kg)	TCE (mg/kg)	cis-1,2-DCE (mg/kg)
Comparison Value, Residential				0.044	1.4	2.9	2.3	0.023	770	570	---	0.42	0.46	0.19
Comparison Value, Construction Worker				26	510	4,200	2,500	2,400	2,800	900	31,000	34	23	1,100
B-1	03/04/10	off-site	4.5	<0.005	<0.005	<0.005	<0.010	--	<0.1	<9.5	<19	--	--	--
B-1	03/04/10	off-site	9.5	<0.048	<0.048	<0.048	<0.098	--	<0.098	<9.9	<20	--	--	--
B-1	03/04/10	off-site	15.5	<0.005	<0.005	<0.005	<0.099	--	<0.099	<10	<20	--	--	--
B-1	03/04/10	off-site	19.5	<0.005	<0.005	<0.005	<0.010	--	<0.1	<19	<38	--	--	--
B-2	03/04/10	off-site	4.5	<0.005	<0.005	<0.005	<0.099	--	<0.099	<10	<20	--	--	--
B-2	03/04/10	off-site	9.5	<0.005	<0.005	<0.005	<0.099	--	<0.099	<9.9	<20	--	--	--
B-2	03/04/10	off-site	15.5	<0.0049	<0.0049	<0.0049	<0.0098	--	<0.098	<9.9	<20	--	--	--
B-2	03/04/10	off-site	20	<0.005	<0.005	<0.005	<0.099	--	<0.099	<10	<20	--	--	--
BH-1	07/09/05	19-93-13	12	<0.005	<0.005	<0.005	<0.005	<0.05	<1	**22**	**83**	--	--	--
BH-1	07/09/05	19-93-13	16	<0.005	<0.005	<0.005	<0.005	<0.05	**4.8**	**48**	**46**	--	--	--
BH-2	07/09/05	19-93-13	12	<0.5	<0.5	<0.5	<0.5	<5	**700**	**8,900**	**7,500**	--	--	--
BH-3	07/09/05	19-93-13	7.5	<0.005	<0.005	<0.005	<0.005	<0.05	**4.7**	**50**	**79**	--	--	--
BH-4	07/09/05	19-93-13	12	<0.02	<0.2	<0.02	**0.23**	**2**	**89**	**2,800**	**3,000**	--	--	--
BH-6	07/09/05	19-93-13	12	<0.005	<0.005	<0.005	<0.005	<0.05	<1	**41**	**53**	--	--	--
BH-6	07/09/05	19-93-13	16	<0.05	<0.05	<0.05	<0.05	<0.5	**73**	**1,800**	**1,700**	--	--	--
SB-07	01/11/07	19-93-13	5	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	<5.0	--
SB-07	01/11/07	19-93-13	17.5	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	<5.0	--
SB-07	01/11/07	19-93-13	23	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	<5.0	--
SB-08	01/10/09	19-93-13	5	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-08	01/10/07	19-93-13	15	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-08	01/10/07	19-93-13	23.5	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-08	01/10/07	19-93-13	26.5	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-09	01/09/07	19-93-13	5	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-09	01/09/07	19-93-13	10	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-09	01/09/07	19-93-13	11.5	--	--	--	--	--	**VP**	--	--	--	--	--
SB-09	01/22/07	19-93-13	16	<0.005	<0.005	<0.005	<0.005	<0.005	<1	**140**	**93**	--	--	--
SB-09	01/09/07	19-93-13	18	<0.005	<0.005	<0.005	<0.005	<0.005	<1	**18**	<50	--	--	--
SB-09	01/09/07	19-93-13	22	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-10	01/10/07	19-93-13	5	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-10	01/10/07	19-93-13	12	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-10	01/10/07	19-93-13	23	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-11	01/09/07	19-93-13	5	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-11	01/10/07	19-93-13	12	<0.005	<0.005	<0.005	<0.005	<0.005	**11**	**3,300**	**2,500**	--	--	--

TABLE 1
Summary of Soil Analytical Data
Lucasey Manufacturing Site
2744 East 11th Street, Oakland, California

Location ID	Date	Location (APN)	Depth (feet bgs)	Benzene (mg/kg)	Ethylbenze (mg/kg)	Toluene (mg/kg)	Xylenes, (mg/kg)	MTBE (mg/kg)	TPH-g (mg/kg)	TPH-d (mg/kg)	TPH-mo (mg/kg)	PCE (mg/kg)	TCE (mg/kg)	cis-1,2-DCE (mg/kg)
Comparison Value, Residential				0.044	1.4	2.9	2.3	0.023	770	570	---	0.42	0.46	0.19
Comparison Value, Construction Worker				26	510	4,200	2,500	2,400	2,800	900	31,000	34	23	1,100
SB-11	01/09/07	19-93-13	22	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-11	01/09/07	19-93-13	23.5	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-12	01/08/07	19-93-13	5	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-12	01/08/07	19-93-13	11	<0.25	<0.25	<0.25	<0.25	<0.25	<1	**370**	**85**	--	--	--
SB-12	01/19/07	19-93-13	14	<0.005	<0.005	<0.005	<0.005	<0.005	<1	**470**	**270**	--	--	--
SB-12	01/08/07	19-93-13	26	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-12	01/08/07	19-93-13	34	<0.005	<0.005	<0.005	<0.005	<0.005	**1.4**	**170**	<50	--	--	--
SB-13	01/08/07	19-93-13	5	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-13	01/08/07	19-93-13	10	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-13	01/08/07	19-93-13	14	--	--	--	--	--	**VP**	--	--	--	--	--
SB-13	01/08/07	19-93-13	18	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-13	01/22/07	19-93-13	26	<0.005	<0.005	<0.005	<0.005	<0.005	<1	**170**	**110**	--	--	--
SB-13	01/08/07	19-93-13	30	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-14	01/12/07	19-93-13	10.5	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--		
SB-14	01/12/07	19-93-13	11.5	--	--	--	--	--	**VP**	--	--	--	--	--
SB-14	01/12/07	19-93-13	13.5	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-14	01/12/07	19-93-13	17	<0.005	<0.005	<0.005	<0.005	<0.005	**14**	**3,800**	**2,500**	--	--	--
SB-14	01/12/07	19-93-13	23	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
													--	--
SB-15	01/09/07	19-93-13	5	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--		
SB-15	01/19/07	19-93-13	15	<0.005	<0.005	<0.005	<0.005	<0.005	**21**	**5,300**	**3,400**	--	--	--
SB-15	01/22/07	19-93-13	19.5	<0.005	<0.005	<0.005	<0.005	<0.005	<1	**36**	**20**	--	--	--
SB-15	01/19/07	19-93-13	23	<0.005	<0.005	<0.005	<0.005	<0.005	**18**	**1,800**	**1,100**	--	--	--
SB-15	01/09/07	19-93-13	27	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
													--	--
SB-21	01/11/07	off-site	5	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-21	01/11/07	off-site	10	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-21	01/19/07	off-site	11	<0.005	<0.005	<0.005	<0.005	<0.005	**1.0**	**770**	**800**	--	--	--
SB-21	01/19/07	off-site	13.5	<0.005	<0.005	<0.005	<0.005	<0.005	<1	**520**	**630**	--	--	--
SB-21	01/11/07	off-site	22	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-22	01/12/07	off-site	10	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-22	01/24/07	off-site	11.5	<0.005	<0.005	<0.005	<0.005	<0.005	**4.3**	**2,600**	**3,800**	--	--	--
SB-22	01/12/07	off-site	15	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-23	01/11/07	19-93-13	5	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	<5.0	--
SB-23	01/11/07	19-93-13	15	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	<5.0	--
SB-23	01/11/07	19-93-13	23	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	<5.0	--
SB-23	01/11/07	19-93-13	29	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-24	01/12/07	off-site	5	<0.005	<0.005	<0.005	<0.005	<0.005	<1	**23**	<50	--	--	--

TABLE 1
Summary of Soil Analytical Data
Lucasey Manufacturing Site
2744 East 11th Street, Oakland, California

Location ID	Date	Location (APN)	Depth (feet bgs)	Benzene (mg/kg)	Ethylbenze (mg/kg)	Toluene (mg/kg)	Xylenes, (mg/kg)	MTBE (mg/kg)	TPH-g (mg/kg)	TPH-d (mg/kg)	TPH-mo (mg/kg)	PCE (mg/kg)	TCE (mg/kg)	cis-1,2-DCE (mg/kg)
Comparison Value, Residential				0.044	1.4	2.9	2.3	0.023	770	570	---	0.42	0.46	0.19
Comparison Value, Construction Worker				26	510	4,200	2,500	2,400	2,800	900	31,000	34	23	1,100
SB-24	01/19/07	off-site	11.5	<0.005	<0.005	<0.005	<0.005	<0.005	**29**	**2,300**	**3,600**	--	--	--
SB-24	01/12/07	off-site	18	<0.005	<0.005	<0.005	<0.005	<0.005	<1	<10	<50	--	--	--
SB-25	03/01/16	19-93-13	1.5	--	--	--	--	--	--	--	--	<0.0085	<0.0085	<0.0085
SB-25	03/01/16	19-93-13	5	--	--	--	--	--	--	--	--	<0.0085	<0.0085	<0.0085
SB-26	03/01/16	19-93-13	5	--	--	--	--	--	--	--	--	<0.0085	<0.0085	<0.0085
SB-26	03/01/16	19-93-13	9	--	--	--	--	--	--	--	--	<0.0085	<0.0085	<0.0085
SB-27	03/01/16	19-93-13	3	--	--	--	--	--	--	--	--	<0.0087	<0.0087	<0.0087
SB-27	03/01/16	19-93-13	7	--	--	--	--	--	--	--	--	<0.0082	<0.0082	<0.0082
SB-28	03/01/16	19-93-13	1	--	--	--	--	--	--	--	--	<0.0080	<0.0080	<0.0080
SB-28	03/01/16	19-93-13	5	--	--	--	--	--	--	--	--	<0.0089	<0.0089	<0.0089
SB-29	03/01/16	19-93-13	1	--	--	--	--	--	--	--	--	<0.0088	<0.0088	<0.0088
SB-29	03/01/16	19-93-13	5	--	--	--	--	--	--	--	--	<0.0083	<0.0083	<0.0083
SB-30	03/01/16	19-93-13	2	--	--	--	--	--	--	--	--	<0.0079	<0.0079	<0.0079
SB-30	03/01/16	19-93-13	11	--	--	--	--	--	--	--	--	<0.0092	<0.0092	<0.0092
SB-31	03/01/16	19-93-13	2	--	--	--	--	--	--	--	--	<0.0093	<0.0093	<0.0093
SB-31	03/01/16	19-93-13	11	--	--	--	--	--	--	--	--	<0.0082	<0.0082	<0.0082

Notes:

mg/kg	milligrams per kilogram
<	Analyte not present at or above the method detection limit
bgs	below ground surface
TPH-g	Total Petroleum Hydrocarbons as gasoline
TPH-d	Total Petroleum Hydrocarbons as diesel
TPH-mo	Total Petroleum Hydrocarbons as motor oil
VP	Consultant reported sampled contained visible product, therefore not run for analysis at laboratory
Bold	Analyte present above detection limit
	Data from April sampling event

Comparison Values

Residential	Tier II Screening Level for Residential Land Use, Shallow Soil Exposure Scenario excluding direct contact exposure route (Tables S-2, S-3, and S-4) from the DTSC Environmental Screening Levels (February 2016).
Construction Worker	Final Risk Based Screening Level for Construction Worker direct exposure pathway for Shallow and Deep Soil Exposure Scenario (Table S-1) from the DTSC Environmental Screening Levels (February 2016).

TABLE 2
Summary of Groundwater Analytical Data
Lucasey Manufacturing Site
2744 East 11th Street, Oakland, California

Location ID	Date	Location APN	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Xylenes, Total (µg/L)	MTBE (µg/L)	TPH-g (µg/L)	TPH-d (µg/L)	TPH-mo (µg/L)	PCE (µg/L)	TCE (µg/L)	cis-1,2-DCE (µg/L)
Comparison Value, Vapor Intrusion			1.4	16	4,300	1,600	1,500	---	---	---	3.7	7	140
SB-1W	08/31/04	19-93-13	<50	<50	<50	<50	<50	**650**	**520,000**	**520,000**	<0.50	<0.50	<0.50
SB-2W	08/31/04	19-93-13	<50	<50	<50	<50	<50	**2,200**	**110,000**	**89,000**	<0.50	<0.50	**0.71**
SB-3W	08/31/04	19-93-13	<50	<50	<50	<50	<50	<50	<50	<250	**8.8**	<0.50	<0.50
SB-4W	08/31/04	19-93-13	<50	<50	<50	<50	<50	**3,800**	**560,000**	**410,000**	<0.50	<0.50	<0.50
SB-6W	08/31/04	19-93-13	<50	<50	<50	<50	<50	**130**	**8,700**	**6,900**	<0.50	<0.50	<0.50
BH-2	07/09/06	19-93-13	<50	<50	<50	<50	<50	**310**	**580,000**	**510,000**	0.68	<0.50	**0.57**
BH-4	07/09/06	19-93-13	<50	<50	<50	<50	<50	<50	**160,000**	**150,000**	<0.50	<0.50	**1.4**
BH-6	07/09/06	19-93-13	<50	<50	<50	<50	<50	<50	**670**	**2,800**	<0.50	<0.50	<0.50
SB-7	01/11/07	19-93-13	<50	<50	<50	<50	<50	<25	<50	<500	**3.0**	**6.6**	--
SB-8	01/10/07	19-93-13	<50	<50	<50	<50	<50	<25	<50	<500	--	--	--
SB-8-D	01/10/07	19-93-13	<50	<50	<50	<50	<50	<25	**390**	<500	--	--	--
SB-9	No Data Available	19-93-13											
SB-10-W16	01/10/07	19-93-13	<50	<50	<50	<50	<50	<25	<50	<500	**16**	<0.50	--
SB-10-W23	01/10/07	19-93-13	<50	<50	<50	<50	<50	<25	**340**	<500	**15**	<0.50	--
SB-11	No Data Available	19-93-13											
SB-12	No Data Available	19-93-13											
SB-13-W	01/22/07	19-93-13	<0.5	<0.5	<0.5	**0.84**	<0.5	**560**	**5,800,000**	**3,000,000**	--	--	--
SB-13-W2	01/22/07	19-93-13	<0.5	<0.5	<0.5	<0.5	**0.56**	**150**	**140,000**	**70,000**	--	--	--
SB-14-W	01/12/07	19-93-13	<50	<50	<50	<50	<50	<25	**11,000**	**4,500**	--	--	--
SB-15	No Data Available	19-93-13											
SB-21-W17	01/11/07	19-93-13	<50	<50	<50	<50	<50	<25	**730**	<500	**3.9**	**0.5**	--
SB-21-W26	01/11/07	19-93-13	<50	<50	**0.54**	**1.7**	**1.2**	<25	**1,500**	**580**	**4.2**	<0.50	--
SB-23-W	01/11/07	19-93-13	<50	<50	<50	<50	<50	<25	**2,800**	**150**	<0.5	<0.50	--
SB-23-W23	01/11/07	19-93-13	<50	<50	<50	<50	<50	<25	**2,800**	**150**	**1.5**	<0.50	--
SB-23-W23-D	01/11/07	19-93-13	<50	<50	<50	<50	<50	<25	**630**	<500	**1.4**	<0.50	--
SB-24	01/23/07	19-93-13	<0.50	<0.50	<0.50	<0.50	<0.50	**1,400**	**430,000**	**210,000**	--	--	--

TABLE 2
Summary of Groundwater Analytical Data
Lucasey Manufacturing Site
2744 East 11th Street, Oakland, California

Location ID	Date	Location APN	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Xylenes, Total (µg/L)	MTBE (µg/L)	TPH-g (µg/L)	TPH-d (µg/L)	TPH-mo (µg/L)	PCE (µg/L)	TCE (µg/L)	cis-1,2-DCE (µg/L)
Comparison Value, Vapor Intrusion			1.4	16	4,300	1,600	1,500	---	---	---	3.7	7	140
B-1	03/04/10	19-93-13	<1	<1	<1	<2	--	<50	<97	<190	--	--	--
B-2	03/04/10	19-93-13	<1	<1	<1	<2	--	<50	<98	<200	--	--	--
RW-1	06/08/09	19-93-13	--	--	--	--	--	--	**58/<50[1]**	--	--	--	--
RW-2	06/08/09	19-93-13	--	--	--	--	--	--	**140/<50[1]**	--	--	--	--
RW-2 DUP	06/08/09	19-93-13	--	--	--	--	--	--	<50[1]	--	--	--	--
RW-3	06/08/09	19-93-13	--	--	--	--	--	--	**210/88[1]**	--	--	--	--
SB-25	03/01/16	19-93-13	--	--	--	--	--	--	--	--	<0.50	<0.50	<0.50
SB-26	03/01/16	19-93-13	--	--	--	--	--	--	--	--	<0.820 *	<0.60 *	<0.50 *
SB-27	03/01/16	19-93-13	--	--	--	--	--	--	--	--	<0.50	<0.50	<0.50
SB-28	03/01/16	19-93-13	--	--	--	--	--	--	--	--	<0.50	<0.50	**0.89**
SB-29	03/01/16	19-93-13	--	--	--	--	--	--	--	--	**10**	<0.50	<0.50
SB-30	03/01/16	19-93-13	--	--	--	--	--	--	--	--	**3.7**	<0.50	<0.50
SB-31	03/01/16	19-93-13	--	--	--	--	--	--	--	--	**0.81**	<0.50	<0.50

Notes:

µg/L	micrograms per liter
<	Analyte not present at or above the method detection limit
bgs	below ground surface
TPH-g	Total Petroleum Hydrocarbons as gasoline
TPH-d	Total Petroleum Hydrocarbons as diesel
TPH-mo	Total Petroleum Hydrocarbons as motor oil
MTBE	Volatile Organic Compounds
PCE	Tetrachloroethene
cis-1,2-DCE	cis-1,2-Dichloroethene
Values[1]	First value without silica gel cleanup, second value with silica gel cleanup
Bold	Analyte present above detection limit
	Data from April sampling event
*	Dilution factor of 10 due to presence of high organics, sample assessed to the method detection limit instead of the laboratory reporting limit.

Comparison Value

Vapor Intrusion — Groundwater Vapor Intrusion Human Health Risk Levels (Table W-3) from the DTSC Environmental Screening Levels (Feb 2016).

TABLE 3
Summary of Soil Vapor Analytical Data
Lucasey Manufacturing Site
2744 East 11th Street, Oakland, California

Sample Location	Date	Location APN	Depth (feet bgs)	Benzene (µg/m³)	Ethylbenzene (µg/m³)	Toluene (µg/m³)	Xylenes, (µg/m³)	TPH-g (µg/m³)	TPH-d (µg/m³)	PCE (µg/m³)	TCE (µg/m³)	cis-1,2-DCE (µg/m³)	Methane (µL/L)	Oxygen (µL/L)	2-propanol (µL/L)	Helium (%)
Tier II Residential ESL				48	560	160,000	52,000	300,000	68,000	240	340	4,200	NA	NA		
Vapor Barrier Screening Level (VBSL)				480	5,600	1,600,00	520,000	3,000,000	680,000	24,000	34,000	41,000	NA	NA		
Abmient Air	05/10/10	unknown	5[A]	<36	<50	<43	<50	<940	<5,000	--	--	--	--	--	--	
Ambient Air	06/18/09	unknown	5[A]	**4.0**	<4.7	7.00	<4.7	--	--	--	--	--	--	--	--	
ASV-1	06/17/09	off-site	5[A]	**150**	**130**	**2,100**	**327**	--	--	--	--	--	--	--	--	
ASV-1 duplicate	06/17/09	off-site	5[A]	**170**	**140**	**2,200**	**362**	--	--	--	--	--	--	--	--	
ASV-2	06/17/09	off-site	5[A]	**110**	**250**	**2,900**	**990**	--	--	--	--	--	--	--	--	
ASV-3	06/17/09	off-site	5[A]	**740**	**1,900**	**20,000**	**2,500**	--	--	--	--	--	--	--	--	
ASV-4	06/17/09	off-site	5[A]	**570**	**2,600**	**22,000**	**12,900**	--	--	--	--	--	--	--	--	
ASV-5	06/17/09	off-site	5[A]	**33**	**62.0**	**690**	**299**	--	--	--	--	--	--	--	--	
ASV-6	06/18/09	19-93-13	5[A]	**14**	**44**	**470**	**235**	--	--	--	--	--	--	--	--	
ASV-7	06/18/09	19-93-13	5[A]	**21**	**70**	**700**	**380**	--	--	--	--	--	--	--	--	
ASV-7 duplicate	06/18/09	19-93-13	5[A]	**22**	**71**	**720**	**378**	--	--	--	--	--	--	--	--	
ASV-8	06/18/09	19-93-13	5[A]	**18**	**54**	**690**	**292**	--	--	--	--	--	--	--	--	
ASV-9	06/18/09	19-93-13	5[A]	**12**	**55**	**500**	**300**	--	--	--	--	--	--	--	--	
ASV-10	06/18/09	19-93-13	5[A]	**12**	**40**	**370**	**214**	--	--	--	--	--	--	--	--	
ASV-11	06/18/09	19-93-13	5[A]	**15**	**49**	**480**	**265**	--	--	--	--	--	--	--	--	
ASV-12	05/10/10	off-site	5[A]	<36	<49	**39J**	**37J**	<920	<5,000	--	--	--	--	--	--	
ASV-12 duplicate	05/10/10	off-site	5[A]	<36	<49	**38J**	**39J**	<920	<5,000	--	--	--	--	--	--	
ASV-13	05/10/10	off-site	5[A]	<36	<49	<42	<49	<920	<5,000	--	--	--	--	--	--	
ASV-14	05/24/10	off-site	5[A]	<42	<58	<50	<58	<1,100	<5,000	--	--	--	--	--	--	
ASV-14 duplicate	05/24/10	off-site	5[A]	<42	<57	<42	<57	<1,100	<5,000	--	--	--	--	--	--	
ASV-15	05/24/10	off-site	5[A]	<42	<58	<50	<58	<1,100	<5,000	--	--	--	--	--	--	
ASV-16	11/06/15	19-93-13	sub-slab	**3.52**	**5.48**	**15.1**	**28.04**	--	--	**14.2**	**2.43**	<1.59	--	--	**2,900**	
ASV-16	11/06/15	19-93-13	5.0	**32.3**	**21.8**	**167**	**103.8**	--	--	**22.4**	<2.14	<1.59	--	--	**337**	
ASV-16	03/03/16	19-93-13	5.0	**23**	**100**	**430**	**410**	--	--	**18**	<2.8	<2.0	<2.0	**150,000**	**160**	
ASV-16	04/14/16	19-93-13	5.0	<1.6	<2.2	**5.6**	<6.6	---	---	**14**	<2.8	<2.0	--	--	--	<0.050
ASV-17	11/06/15	19-93-13	sub-slab	<1.28	<1.73	<1.51	<3.47	--	--	**236**	<2.14	<1.59	--	--	**8.65**	
ASV-17	11/06/15	19-93-13	5.0	**36.4**	**18.4**	**181**	**19.9**	--	--	**169**	<2.14	<1.59	--	--	**61.8**	

TABLE 3
Summary of Soil Vapor Analytical Data
Lucasey Manufacturing Site
2744 East 11th Street, Oakland, California

Sample Location	Date	Location APN	Depth (feet bgs)	Benzene (µg/m³)	Ethylbenzene (µg/m³)	Toluene (µg/m³)	Xylenes, (µg/m³)	TPH-g (µg/m³)	TPH-d (µg/m³)	PCE (µg/m³)	TCE (µg/m³)	cis-1,2-DCE (µg/m³)	Methane (µL/L)	Oxygen (µL/L)	2-propanol (µL/L)	Helium (%)
Tier II Residential ESL				48	560	160,000	52,000	300,000	68,000	240	340	4,200	NA	NA		
Vapor Barrier Screening Level (VBSL)				480	5,600	1,600,00	520,000	3,000,000	680,000	24,000	34,000	41,000	NA	NA		
ASV-17	03/03/16	19-93-13	5.0	<1.6	**4.4**	**16**	**17**	--	--	**760**	<2.8	<2.0	<2.0	**120,000**	<50	
ASV-17	04/14/16	19-93-13	5.0	<1.6	<2.2	**3.8**	<6.6	---	---	**800**	<2.8	<2.0	--	--	--	<0.050
ASV-19	11/06/15	19-93-13	sub-slab	**3.22**	**2.96**	**17.1**	**18.6**	--	--	**561**	<2.14	<1.59	--	--	**7.06**	
ASV-19	11/06/15	19-93-13	5.0	<1.28	<1.73	**4.74**	<3.47	--	--	**1100**	<2.14	<1.59	--	--	**392**	
ASV-19	03/03/16	19-93-13	5.0	**44**	**160**	**590**	**710**	--	--	**96**	<5.0	<3.6	4.8	**130,000**	<91	
ASV-19	04/13/16	19-93-13	5.0	**3.7**	**23**	**69**	**160**	---	---	**280**	<4.5	<3.3	--	--	--	0.67
ASV-20	11/06/15	19-93-13	sub-slab	**3.85**	<1.73	**8.88**	**3.49**	--	--	**188**	<2.14	<1.59	--	--	**7.60**	
ASV-20	11/06/15	19-93-13	5.0	**27.6**	**11.8**	**118**	**55.5**	--	--	**45.7**	<2.14	<1.59	--	--	**8.55**	
ASV-20	03/03/16	19-93-13	5.0	**38**	**96**	**360**	**430**	--	--	**190**	<2.8	<2.0	2.6	**130,000**	<50	
ASV-20	04/13/16	19-93-13	5.0	**4.5**	**37**	**100**	**140**	---	---	**520**	<2.8	<2.0	--	--	--	0.052
ASV-21	11/06/15	19-93-13	sub-slab	**3.89**	**3.31**	**17.1**	**13.52**	--	--	**26.9**	<2.14	<1.59	--	--	**14.7**	
ASV-21	11/06/15	19-93-13	5.0	**29.2**	**12.4**	**134**	**55.6**	--	--	**87**	<2.14	<1.59	--	--	**14.8**	
ASV-21	03/03/16	19-93-13	5.0	**260**	**250**	**2,700**	**1,000**	---	---	**56**	<2.8	<2.0	<2.0	**130,000**	<50	
ASV-22	11/06/15	19-93-13	sub-slab	<1.28	**2.07**	**34.4**	**11.55**	--	--	**227**	<2.14	<1.59	--	--	**9.17**	
ASV-22	11/06/15	19-93-13	5.0	**46.9**	**14.3**	**156**	**59.3**	--	--	**243**	<2.14	<1.59	--	--	**105**	
ASV-22	03/03/16	19-93-13	5.0	**280**	**280**	**2,900**	**1,100**	--	--	**240**	<2.8	<2.0	<2.0	**94,000**	<50	
ASV-22	04/14/16	19-93-13	5.0	**16**	**170**	**600**	**740**	---	---	**390**	<2.8	<2.0	--	--	--	<0.050
ASV-23	11/06/15	19-93-13	sub-slab	<1.28	<1.73	**4.27**	<3.47	--	--	**340**	<2.14	<1.59	--	--	**226**	
ASV-23	11/06/15	19-93-13	5.0	**17.4**	**7.48**	**75.4**	**36.9**	--	--	**56.1**	<2.14	<1.59	--	--	**132,000**	
ASV-23	03/03/16	19-93-13	5.0	**11**	**95**	**280**	**420**	--	--	**120**	<2.8	<2.0	**2.1**	**130,000**	<50	
ASV-23	04/14/16	19-93-13	5.0	<1.6	<2.2	**4.5**	**11**	---	---	**150**	<2.8	<2.0	--	--	--	<0.050
ASV-24	11/06/15	19-93-13	sub-slab	<1.28	<1.73	**4.63**	**1.77**	--	--	**63.4**	<2.14	<1.59	--	--	**20.1**	
ASV-24	11/06/15	19-93-13	5.0	**10.9**	**4.48**	**22.1**	**36.9**	--	--	**452**	<2.14	<1.59	--	--	**31.9**	
ASV-25	12/16/15	19-93-13	5.0	**10.6**	**6.29**	**183**	**26.8**	--	--	**47.9**	<2.14	<1.59	--	--	**1,100**	
ASV-26	12/16/15	19-93-13	5.0	**6.94**	**5.07**	**181**	**23.2**	--	--	**38.8**	<2.14	<1.59	--	--	**1,010**	
ASV-26	03/03/16	19-93-13	5.0	**220**	**210**	**2,400**	**850**	--	--	**4.7**	<2.8	<2.0	<2.0	**140,000**	<50	
ASV-26	04/14/16	19-93-13	5.0	**69**	**260**	**1,300**	**1,400**	---	---	<21	<17	<12	--	--	--	<0.050
ASV-27	12/16/15	19-93-13	5.0	**14.4**	**8.77**	**240**	**41.0**	--	--	**680**	<2.14	<1.59	--	--	**1,150**	
ASV-27	01/08/16	19-93-13	5.0	**65.2**	**36.6**	**332**	**204**	--	--	**35.8**	<8.57	<6.34	--	--	<24.6	
ASV-27	03/03/16	19-93-13	5.0	**96**	**110**	**1,100**	**460**	--	--	**73**	<2.8	<2.0	<2.0	**130,000**	<50	
ASV-27	04/14/16	19-93-13	5.0	**2.0**	**17**	**60**	**96**	---	---	**88**	<2.8	<2.0	--	--	--	<0.050
ASV-28	12/17/15	19-93-13	5.0	**11.9**	**20.5**	**146**	**125**	--	--	**98.9**	<2.14	<1.59	--	--	**1,870**	
ASV-28	03/03/16	19-93-13	5.0	**90**	**100**	**720**	**360**	--	--	**78**	<2.8	<2.0	<2.0	**120,000**	<50	
ASV-28	04/14/16	19-93-13	5.0	<1.6	**25**	**87**	**100**	---	---	**120**	<2.8	<2.0	--	--	--	<0.050

TABLE 3
Summary of Soil Vapor Analytical Data
Lucasey Manufacturing Site
2744 East 11th Street, Oakland, California

Sample Location	Date	Location APN	Depth (feet bgs)	Benzene (µg/m³)	Ethylbenzene (µg/m³)	Toluene (µg/m³)	Xylenes, (µg/m³)	TPH-g (µg/m³)	TPH-d (µg/m³)	PCE (µg/m³)	TCE (µg/m³)	cis-1,2-DCE (µg/m³)	Methane (µL/L)	Oxygen (µL/L)	2-propanol (µL/L)	Helium (%)
Tier II Residential ESL				48	560	160,000	52,000	300,000	68,000	240	340	4,200	NA	NA		
Vapor Barrier Screening Level (VBSL)				480	5,600	1,600,00	520,000	3,000,000	680,000	24,000	34,000	41,000	NA	NA		
ASV-29	12/17/15	19-93-13	5.0	**9.20**	**11.1**	**193**	**49.2**	--	--	**7.77**	<2.14	<1.59	--	--	**1,080**	
ASV-29	03/03/16	19-93-13	5.0	**180**	**230**	**2,100**	**990**	--	--	**15 J**	<4.7 J	<2.8 J	<2.0	**130,000**	<50	
ASV-29	04/14/16	19-93-13	5.0	**5.9**	**73**	**260**	**340**	---	---	**33**	<2.8	<2.0	--	--	--	<0.050
ASV-30	12/17/15	19-93-13	5.0	**5.37**	**4.51**	**65.4**	**18.9**	--	--	**4.05**	<2.14	<1.59	--	--	**2,050**	
ASV-31	12/17/15	19-93-13	5.0	**4.16**	**3.83**	**79.6**	**16.7**	--	--	**4.30**	<2.14	<1.59	--	--	**2,500**	
ASV-32	12/17/15	19-93-13	5.0	**19.1**	**6.48**	**88.9**	**25.3**	--	--	**8.98**	3.26	<1.59	--	--	**1,410**	
ASV-33	12/16/15	19-93-13	5.0	**6.58**	**13.9**	**181**	**75.0**	--	--	**26.3**	<2.14	<1.59	--	--	**594**	
ASV-34	12/16/15	19-93-13	5.0	**7.32**	**32.4**	**88.0**	**167**	--	--	**7.91**	<2.14	<1.59	--	--	**1,380**	
ASV-35	12/16/15	19-93-13	5.0	**6.19**	**7.48**	**70.1**	**33.7**	--	--	**7.54**	<2.14	<1.59	--	--	**1,790**	
ASV-36	12/16/15	19-93-13	5.0	**4.51**	**12.9**	**144**	**62.2**	--	--	**30.3**	<2.14	<1.59	--	--	**3,090**	
ASV-36	01/08/16	19-93-13	5.0	**28.6**	**22.2**	**193**	**115**			**5.93**	<2.14	<1.59	--	--	<6.15	
ASV-37	12/16/15	19-93-13	5.0	**3.32**	**2.51**	**72.1**	**10.3**	--	--	<2.72	<2.14	<1.59	--	--	**333**	
ASV-38	12/16/15	19-93-13	5.0	**1.62**	<1.73	**13.6**	**3.89**	--	--	<2.72	<2.14	<1.59	--	--	**274**	
ASV-38	01/08/16	19-93-13	5.0	**17.9**	**10.0**	**119**	**53.9**			**12.9**	<2.14	<1.59	---	---	**10**	
ASV-39	12/16/15	19-93-13	5.0	**4.55**	**3.21**	**57.8**	**13.8**	--	--	**3.22**	<2.14	<1.59	--	--	**1,850**	
ASV-40	12/16/15	19-93-13	5.0	**8.46**	**8.54**	**192**	**39.8**	--	--	**30.7**	<2.14	<1.59	--	--	**926**	
ASV-41	12/18/15	19-93-13	5.0	**5.37**	**6.05**	**180**	**26.2**	--	--	**33.0**	<2.14	<1.59	--	--	**973**	
ASV-42	03/03/16	19-93-13	5.0	**4.9**	**20**	**61**	**96**	--	--	**16**	<2.8	<2.0	<2.0	**120,000**	<50	
ASV-42	04/14/16	19-93-13	5.0	<1.6	<2.2	**4.8**	<6.6	---	---	**21**	<2.8	<2.0	---	**---**	---	<0.050
ASV-43	04/15/16	19-93-13	5.0	**7.4**	**8.3**	**16**	**19**	---	---	<5.1	<4.0	<2.9	---	**---**	---	0.092
ASV-44	04/15/16	19-93-13	5.0	**13**	**10**	**23**	**32**	---	---	**69**	<4.1	<3.0	---	**---**	---	0.22
ASV-45	04/15/16	19-93-13	5.0	<16	**2,600**	**170**	**9,900**	---	---	<34	<28	<20	---	**---**	---	<0.050
ASV-46	04/15/16	19-93-13	5.0	**33**	**20**	**31**	**70**	---	---	<8.8	<7.0	<5.1	---	**---**	---	0.13
ASV-47	04/15/16	19-93-13	5.0	**44**	**5.8**	**18**	**19**	---	---	**26**	<2.8	<2.0	---	**---**	---	0.16

TABLE 3
Summary of Soil Vapor Analytical Data
Lucasey Manufacturing Site
2744 East 11th Street, Oakland, California

Sample Location	Date	Location APN	Depth (feet bgs)	Benzene (µg/m³)	Ethylbenzene (µg/m³)	Toluene (µg/m³)	Xylenes, (µg/m³)	TPH-g (µg/m³)	TPH-d (µg/m³)	PCE (µg/m³)	TCE (µg/m³)	cis-1,2-DCE (µg/m³)	Methane (µL/L)	Oxygen (µL/L)	2-propanol (µL/L)	Helium (%)
Tier II Residential ESL				48	560	160,000	52,000	300,000	68,000	240	340	4,200	NA	NA		
Vapor Barrier Screening Level (VBSL)				480	5,600	1,600,00	520,000	3,000,000	680,000	24,000	34,000	41,000	NA	NA		
ASV-48	04/15/16	19-93-13	5.0	**19**	**31**	**44**	**120**	---	---	**70**	<8.9	<6.5	---	**---**	---	<0.16
ASV-49	04/15/16	19-93-13	5.0	**47**	**4.3**	**18**	<6.6	---	---	**13**	<2.8	<2.0	---	**---**	---	<0.050
ASV-50	04/15/16	19-93-13	5.0	**17**	**8.1**	**25**	**25**	---	---	**13**	<7.9	<5.8	---	**---**	---	0.21
ASV-51	04/15/16	19-93-13	5.0	**29**	**46**	**30**	**190**	---	---	**20**	**11**	<2.0	---	**---**	---	<0.050
ASV-52	04/15/16	19-93-13	5.0	**9.8**	<2.2	**7.2**	<6.6	---	---	**14**	<2.8	<2.0	---	**---**	---	<0.050
ASV-53	04/15/16	19-93-13	5.0	**12**	**8.0**	**27**	**25**	---	---	**33**	<5.5	<4.0	---	**---**	---	<0.099
ASV-53D	04/15/16	19-93-13	5.0	**11**	**7.3**	**25**	**23**	---	---	**28**	<5.4	<3.9	---	**---**	---	<0.098
PSG-01	04/15/16	19-93-13	Sewer Line	<31	<4.1	**23**	<8.0	---	---	<4.4	<6.6	<9.0	---	**---**	---	---
GSG-01	04/14/16	19-93-13	Sewer Line	<1.6	<2.2	<1.9	<6.6	---	---	<3.4	**2.9**	<2.0	---	**---**	---	<0.050
PSG-02	04/15/16	19-93-13	Sewer Line	<31	<4.1	**22**	<8.0	---	---	<4.4	<6.6	<9.1	---	**---**	---	---
GSG-02	04/14/16	19-93-13	Sewer Line	<2.4	<3.3	<2.9	<9.9	---	---	<5.2	<4.1	<3.0	---	**---**	---	0.45
GSG-03	04/13/16	19-93-13	Toilet	<1.6	<2.2	<1.9	<6.6	--	--	<3.4	<2.8	<2.0	---	**---**	---	<0.050
GSG-04	04/13/16	19-93-13	Toilet	<1.6	<2.2	<1.9	<6.6	--	--	<3.4	<2.8	<2.0	---	**---**	---	0.081

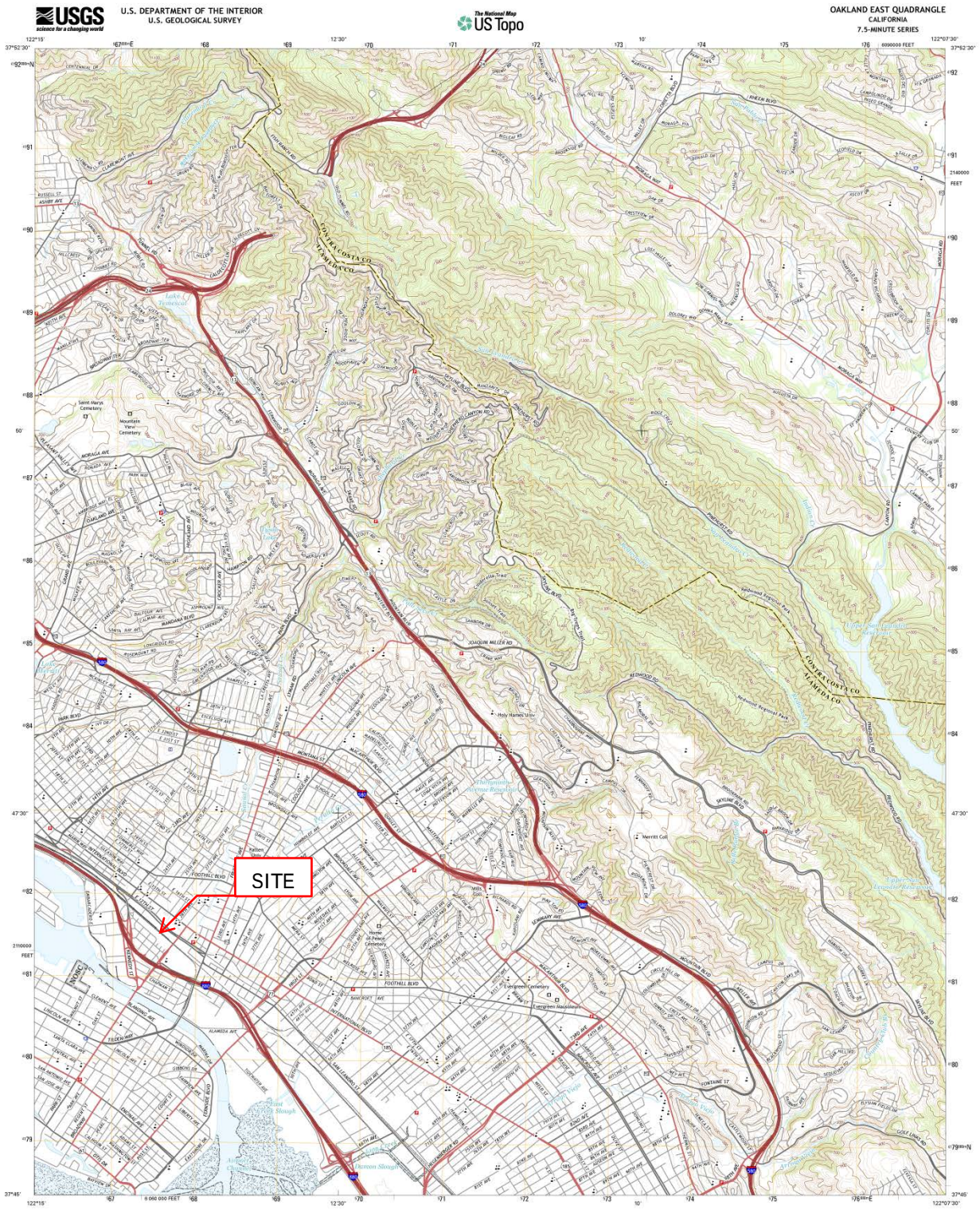
Notes:

µg/m³	micrograms per cubic meter
<	Analyte not present at or above the method detection limit
bgs	below ground surface
PCE	Tetrachloroethylene
TCE	Trichloroethylene
DCE	Dichloroethylene
	Data from April sampling event
Bold	Analyte present above detection limit
5.0[A]	Depth inferred from context.

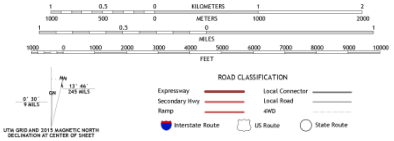
Comparison Values:

Tier II Residential ESL	Tier II Subslab/Soil Gas Vapor Intrusion Screening level with HHR and nuisance odor (Tables SG-1 and SG-2) DTSC Environmental Screening Levels (Feb 2016).
Vapor Barrier Screening Level (VBSL)	Calculated using the manufacture provided attentuation factor for Liquid Boot (0.0002) from the residential indoor air goals (Tables IA-1 and IA-2) DTSC Environmental Screening Levels (Feb 2016)

FIGURES



QUADRANGLE LOCATION



AEI Consultants

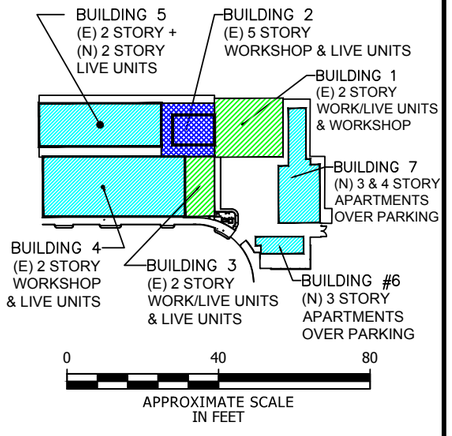
2500 CAMINO DIABLO, WALNUT CREEK, CALIFORNIA

SITE LOCATION MAP

2744 East 11th Street Oakland, CA	FIGURE 1 Project No. 345989

LEGEND

- Proposed Living Area (Ground Floor)
- Building Footprint
- ASV-24 — Semi-Permenant Soil Vapor Probes (AEI)
- ASV-24 — Temporary Soil Vapor Probes (AEI)
- ASV-18 — Not Completed Soil Vapor Sample Location (AEI 11/2015)
- RW-3 — Product Recovery Well (Clearwater)
- PMW-3 — Product Monitoring Well (ERM)
- SB-24 — Soil Boring (Clearwater)
- SB-6 — Soil Boring (Terra Firma)
- SB-14 — Soil Boring (AEI)
- B-2 — Soil Boring (ERM 2010)
- ASV-11 — Soil Vapor Sample Location (ERM, 2009)
- ASV-15 — Soil Vapor Sample Location (ERM, 2010)
- Proposed Sewer Gas Grab Sample Location
- Proposed Sewer Gas Passive Sample Location
- Sanitary Sewer and Manhole Locations (Arrow Indicates Flow Direction)
- Storm Drain and Cleanout Locations
- Proposed 2" Grade Beams
- Proposed 4" Grade Beams
- Proposed 4" Footing
- Soil Cross Section Lines



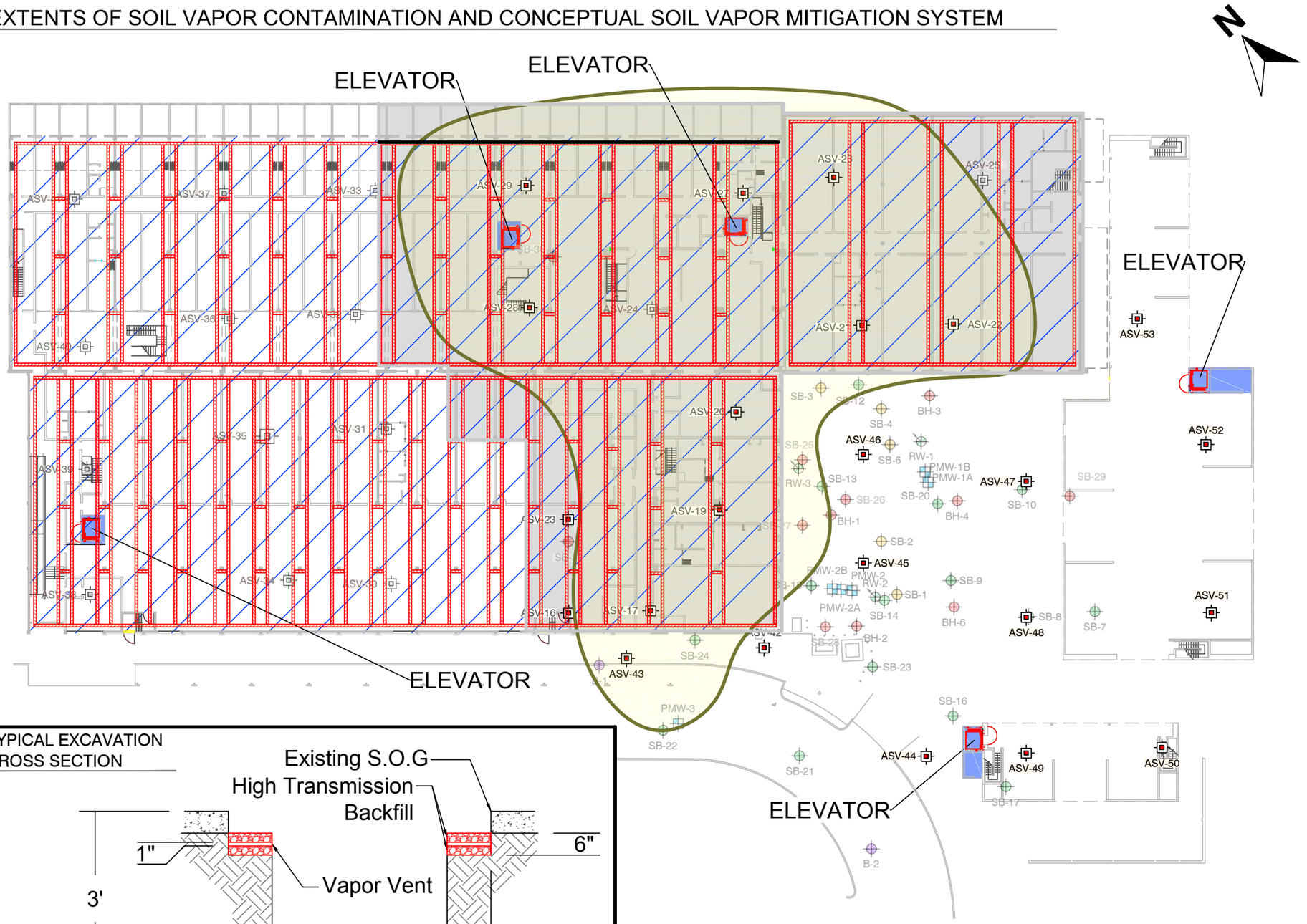
AEI Consultants
2500 Camino Diablo
Walnut Creek, California

Site Map

2744 East 11th Street
Oakland, California

FIGURE 02
Project No. 345989

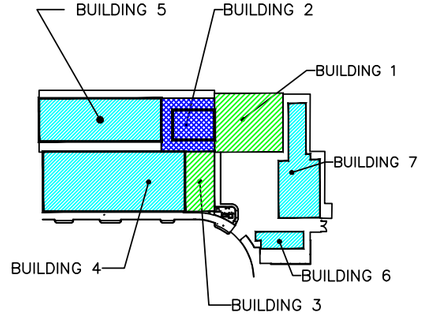
1 EXTENTS OF SOIL VAPOR CONTAMINATION AND CONCEPTUAL SOIL VAPOR MITIGATION SYSTEM



2 TYPICAL EXCAVATION CROSS SECTION

LEGEND

- Proposed Extents of Soil Sampling Area
- Extents of Soil Vapor Contamination above Tier II ESL (Benzene or PCE)
- Proposed Extents of Post-Slab Vapor Barrier
- Proposed Sub-slab Vent installations
- Proposed Sub-Slab Barrier Installations
- ASV-24 — Semi-Permenant Soil Vapor Probes (AEI 3/1/16)
- ASV-24 — Temporary Soil Vapor Probes (AEI)
- ASV-18 — Not Completed Soil Vapor Sample Location (AEI 11/2015)
- RW-3 — Product Recovery Well (Clearwater)
- PMW-3 — Product Monitoring Well (ERM)
- SB-24 — Soil Boring (Clearwater)
- SB-6 — Soil Boring (Terra Firma)
- SB-14 — Soil Boring (AEI)
- B-2 — Soil Boring (ERM 2010)
- ASV-11 — Soil Vapor Sample Location (ERM, 2009)
- ASV-15 — Soil Vapor Sample Location (ERM, 2010)



0 40 80

APPROXIMATE SCALE IN FEET

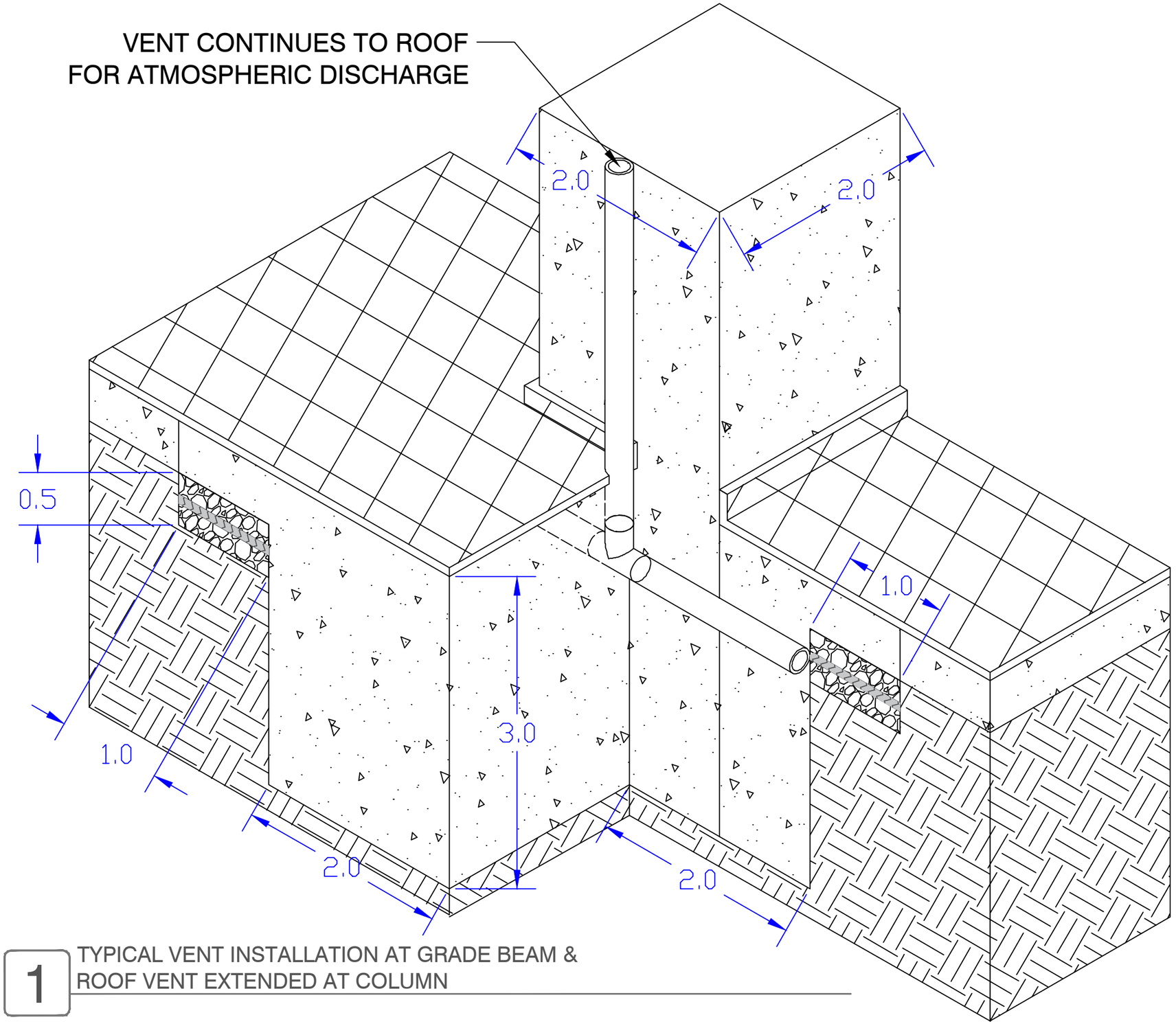
NOT FOR CONSTRUCTION

AEI Consultants
2500 Camino Diablo
Walnut Creek, California

Conceptual Soil Vapor Mitigation System Layout

2744 East 11th Street
Oakland, California

FIGURE 03
Project No. 345989



1 TYPICAL VENT INSTALLATION AT GRADE BEAM & ROOF VENT EXTENDED AT COLUMN

LEGEND

- Retro Coat
- Concrete
- Gravel
- Vapor Vent
- Fill

0 4 8
APPROXIMATE SCALE IN FEET

NOT FOR CONSTRUCTION

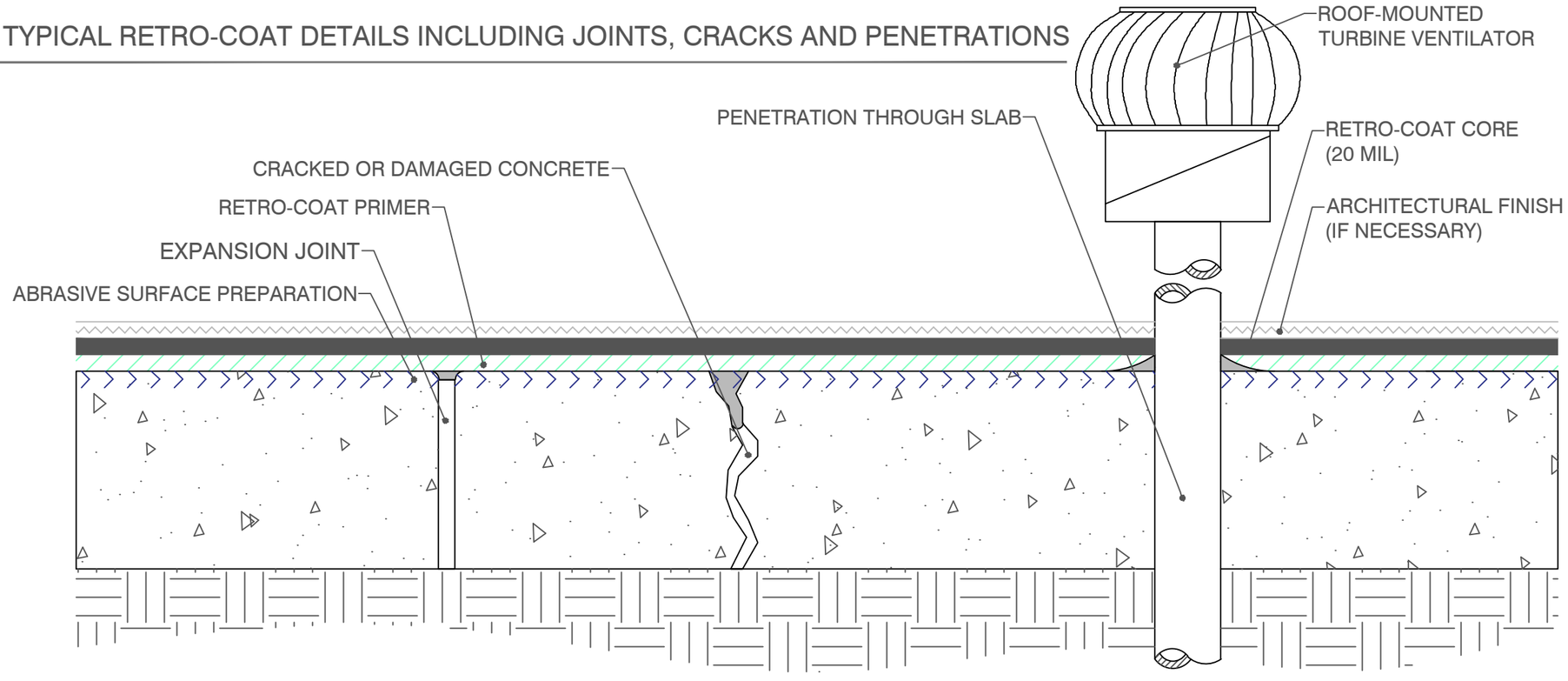
AEI Consultants
San Jose, California

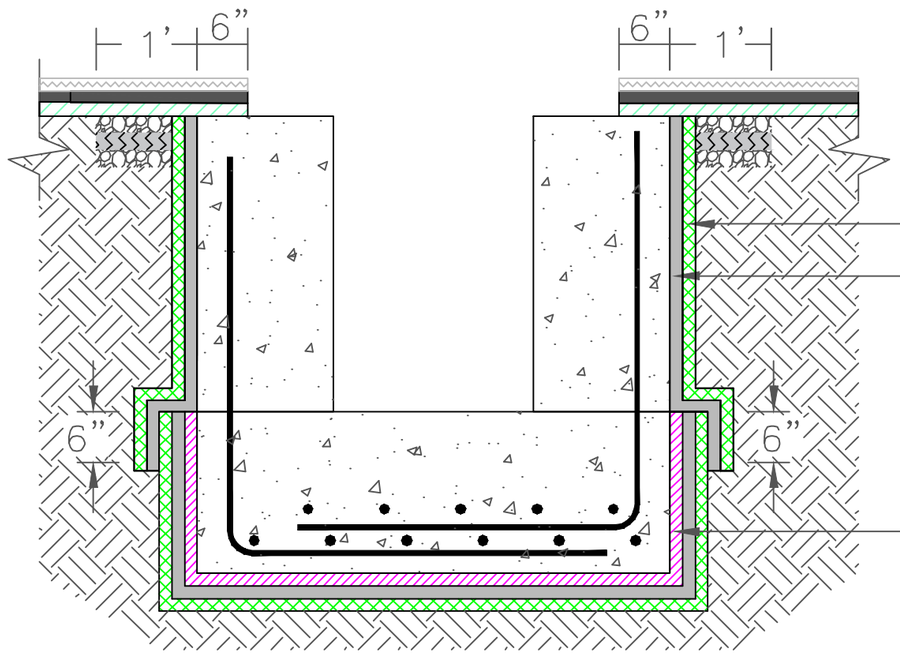
CONCEPTUAL VAPOR MITIGATION SYSTEM DETAILING

2744 East 11th Street
Oakland, California

FIGURE 4
Project No. 345989

1 TYPICAL RETRO-COAT DETAILS INCLUDING JOINTS, CRACKS AND PENETRATIONS





2 TYPICAL ELEVATOR DETAILING

LEGEND

- Architectural Finish (as needed)
- Retro-coat core vapor barrier
- Retro-coat Primer
- Retro-coat caulk sealant
- Abbrasive preparation
- Geo-Seal Bond
- Geo-Seal Core
- Geo-Seal Base
- Vapor-Vent
- Gravel

NOT TO SCALE
NOT FOR CONSTRUCTION

AEI Consultants
San Jose, California

CONCEPTUAL VAPOR MITIGATION SYSTEM DETAILS

2744 East 11th Street
Oakland, California

FIGURE 5
Project No. 345989

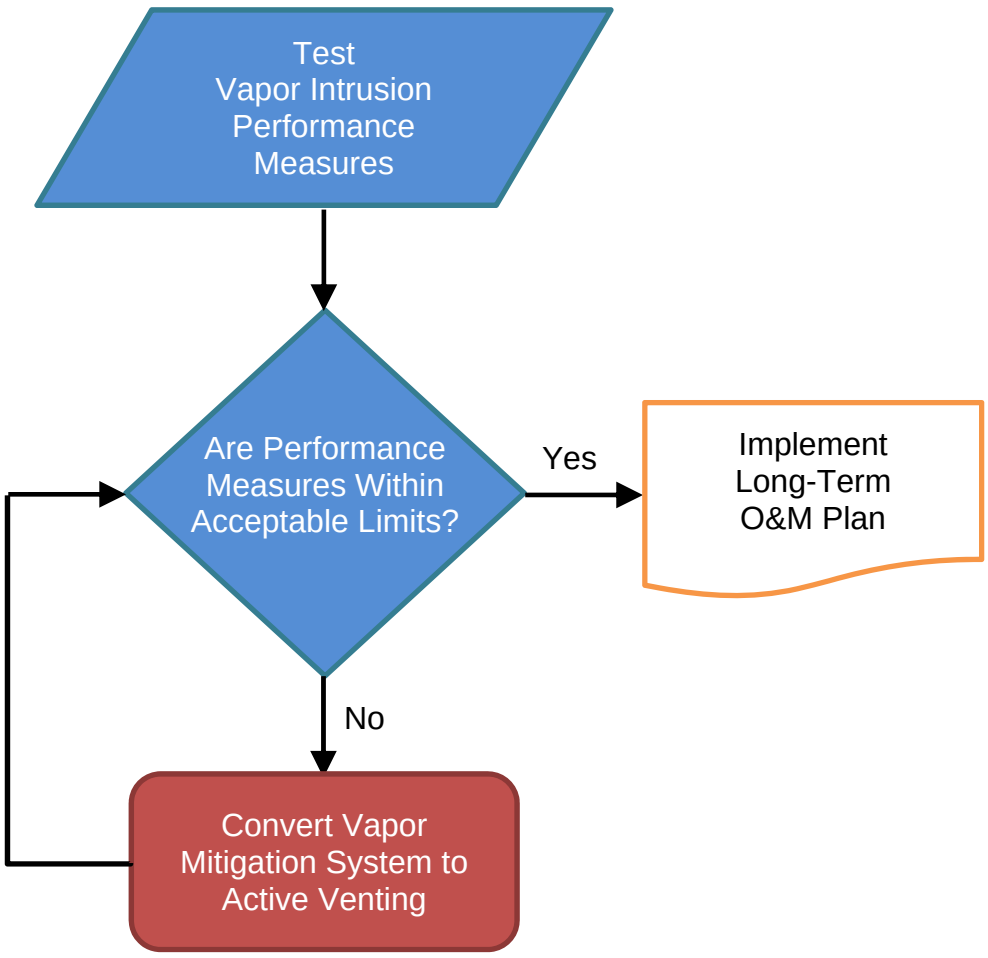


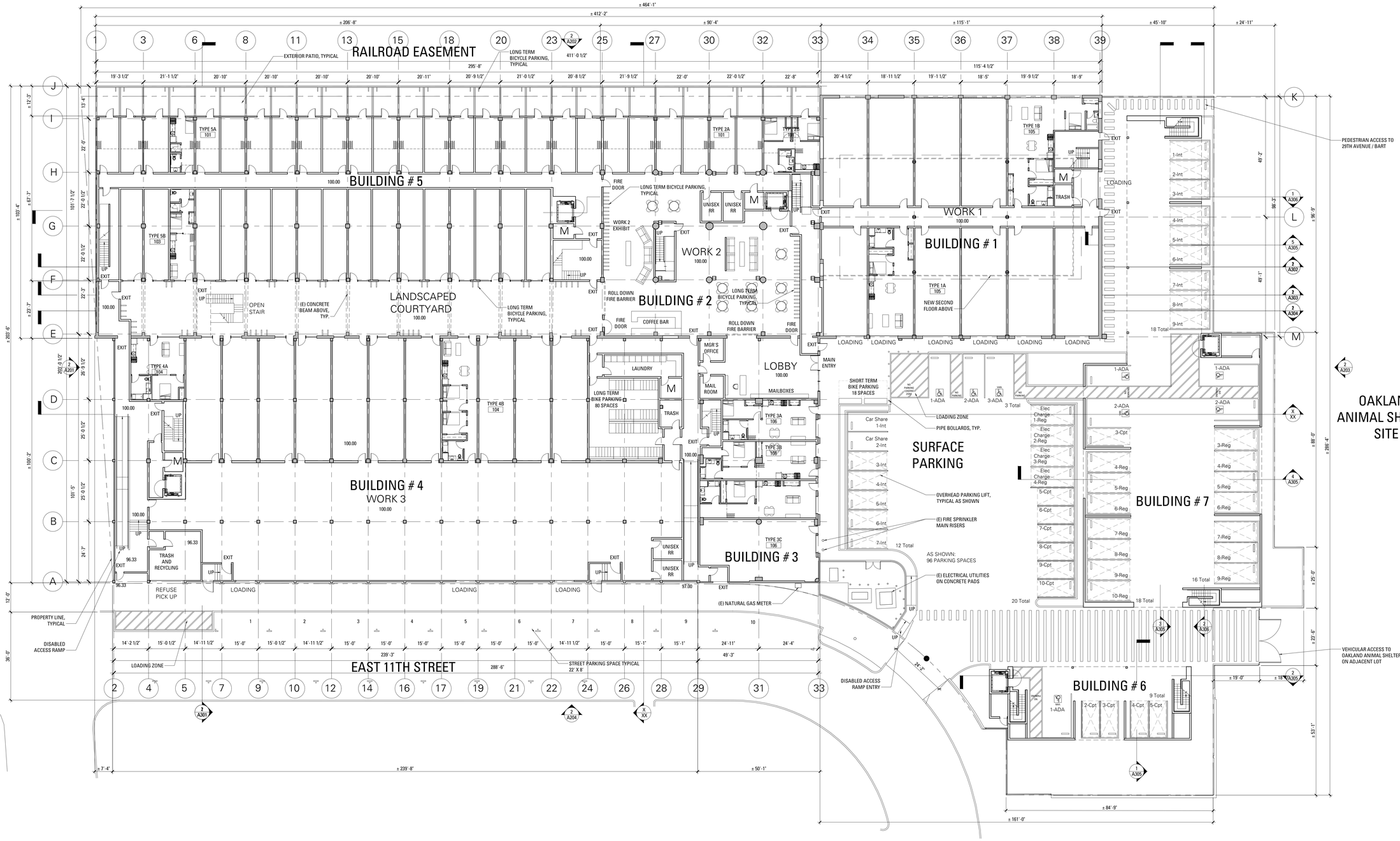
FIGURE 6: Vapor Intrusion Mitigation System Performance Measure Evaluation Methodology

2744 East Eleventh Street
Oakland, California
Project Number: 345989

AEI Consultants

APPENDIX A

ARCHITECTURAL DRAWINGS



1 PROPOSED SITE PLAN

SCALE: 1/16" = 1'-0"

BICYCLE PARKING

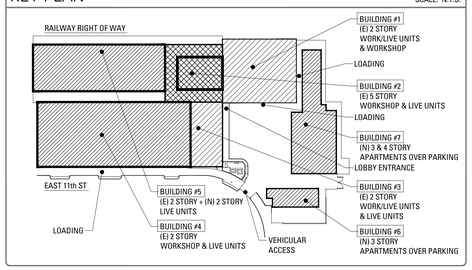
TYPE	LOCATION	RACK COMPONENT	AMOUNT
PRIVATE LONG TERM	UNIT TYPE 5A	BIKEPARKING.COM VERITRACK II	28
SEMI-PRIVATE LONG TERM	LANDSCAPED COURTYARD	BIKEPARKING.COM VERITRACK II	44
SEMI-PRIVATE LONG TERM	BUILDING #2	BIKEPARKING.COM VERITRACK II	44
CONGREGATE LONG TERM	BUILDING #4	BIKEPARKING.COM DOUBLE DECKER	80
SHORT TERM	OUTDOOR AT MAIN ENTRY	BIKEPARKING.COM PORTABLE	18
TOTALS			214

AUTOMOBILE PARKING

TYPE	STALL DIMENSIONS	AMOUNT
REGULAR	8'-6" X 18'-0"	18
REGULAR (UPPER TIER)	8'-6" X 18'-0"	18
INTERMEDIATE (CAR SHARE)	8'-0" X 16'-0"	2
INTERMEDIATE	8'-0" X 16'-0"	14
INTERMEDIATE (UPPER TIER)	8'-0" X 16'-0"	14
COMPACT	7'-6" X 15'-0"	11
COMPACT (UPPER TIER)	7'-6" X 15'-0"	11
STANDARD ADA	9'-0" X 18'-0" WITH 5'-0" X 18'-0" LOADING SPACE	5
VAN ADA	9'-0" X 18'-0" WITH 5'-0" X 18'-0" LOADING SPACE	3
TOTALS		96

KEY PLAN

SCALE: N.T.S.



WORK/LIVE CONVERSION
LUCASEY BUILDING

2744 EAST 11TH STREET
OAKLAND, CA 94601

ARCHITECT:

MARTINKOVIC MILFORD ARCHITECTS

101 MONTGOMERY STREET
SUITE 650
SAN FRANCISCO, CA 94104
T 415 346 9990

PROJECT SPONSOR:

RIAZ DESIGN

RIAZ DESIGN, INC.
2427 17TH STREET
SAN FRANCISCO CA 94110
T 415.675.1775
F 415.675.1978

LICENSED ARCHITECT BRIAN T. MILFORD No.C28480 Exp. 6/30/2017 STATE OF CALIFORNIA

RECORD OF DRAWING ISSUANCE

PLANNING SUBMITTAL	01.20.2016
HISTORIC REVIEW	04.08.2016

PROJECT NORTH

OAKLAND PLANNING RESUBMITTAL

DRAWN BY:	K.B./K.A.
PROJECT NUMBER:	1535.8

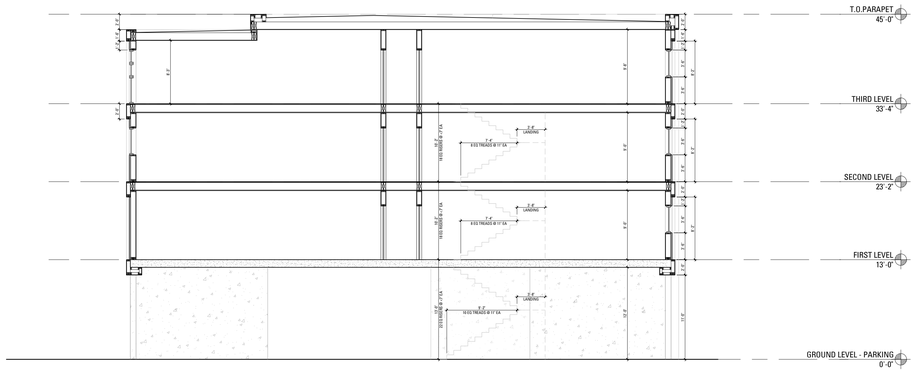
PROPOSED SITE PLAN

SHEET NUMBER

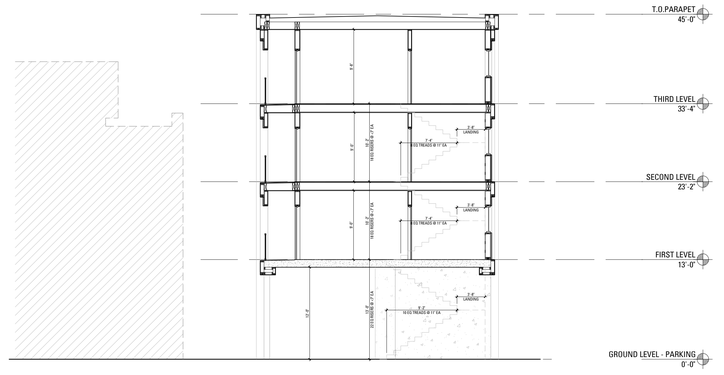
A002

2016/Ma /19

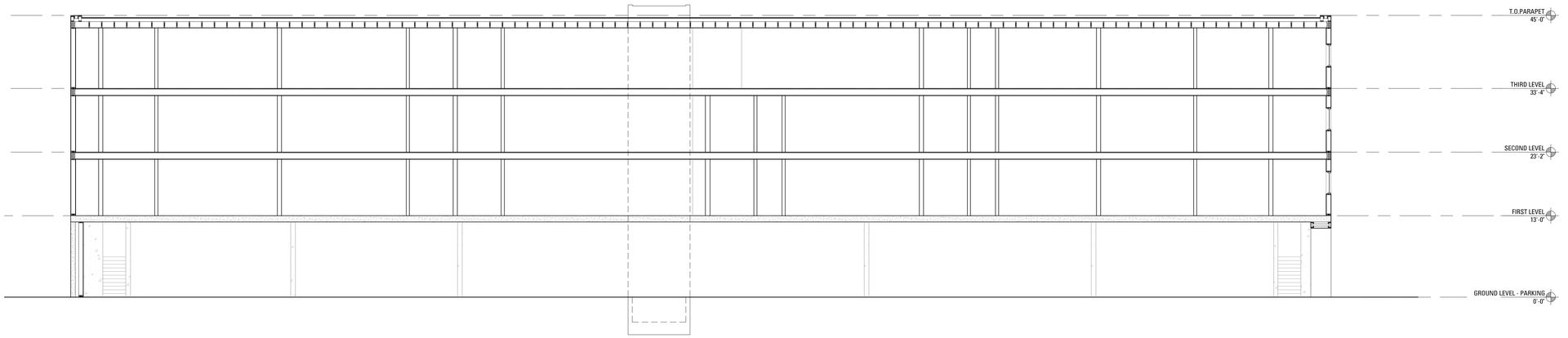
A002-PROPOSED SITE PLAN.DWG



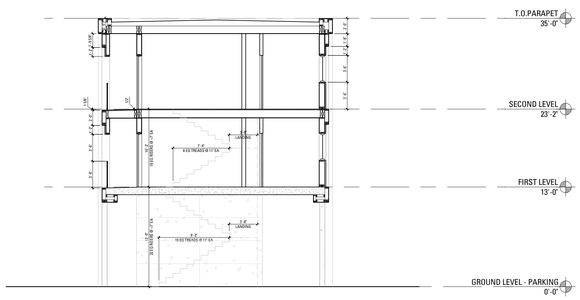
4 BUILDING 7 E-W SECTION 1
SCALE: 1/8" = 1'-0"



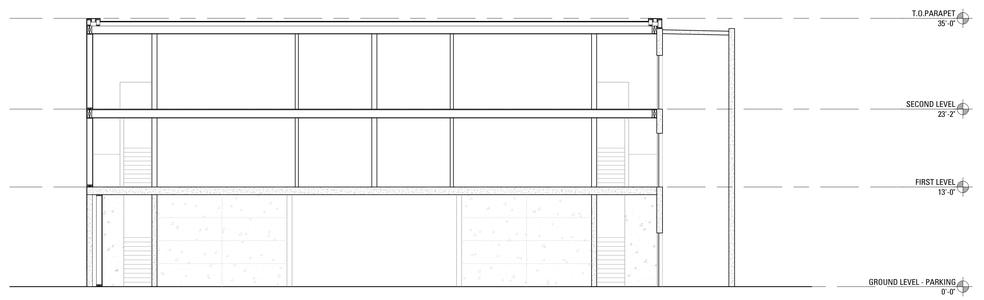
5 BUILDING 7 E-W SECTION 2
SCALE: 1/8" = 1'-0"



3 BUILDING 7 N-S SECTION
SCALE: 1/8" = 1'-0"



1 BUILDING 6 N-S SECTION
SCALE: 1/8" = 1'-0"



2 BUILDING 6 E-W SECTION
SCALE: 1/8" = 1'-0"

EXTERIOR ELEVATION GENERAL NOTES

1. CONTRACTOR SHALL COORDINATE THE EXTENT OF THE DEMOLITION WITH CONSTRUCTION PLANS AND PROTECT ALL PORTIONS OF (E) STRUCTURE TO REMAIN.
2. ENTIRE EXTERIOR OF BUILDING TO BE REPAINTED AND DAMAGED FINISHES WILL BE REPAIRED IN KIND.
3. EXISTING ROOF TO REMAIN AND BE REPAIRED AS REQUIRED.
4. NO EXTERIOR WORK PROPOSED FOR BUILDING #3.

ELEVATION KEYNOTES

N	(N) DOOR OR WINDOW
E	(N) DOOR OR WINDOW TO REMAIN
D	(N) DOOR OR WINDOW TO BE REMOVED
1	(N) PAINTED EXTERIOR FINISH
2	(E) ROOF TO REMAIN OR REPAIR IF NECESSARY
3	(D) ROOF AND/OR WALLS TO BE REMOVED
4	(E) COLUMNS TO REMAIN
5	(E) SKYLIGHT TO REMAIN
6	(E) TOWER TO REMAIN
7	(D) CONCRETE STAIRS TO BE REMOVED
8	(E) STRUCTURAL BEAM TO REMAIN
9	(D) EXISTING COLUMNS TO BE REMOVED
10	(E) DETAILED TRIM TO REMAIN AND BE REPAINTED
11	(E) GRADE SIDEWALK, SEE CIVIL AND LANDSCAPE DRAWINGS
12	(E) DETAILED TRIM TO REMAIN AND BE REPAINTED
13	(N) COURTYARD LEVEL, SEE LANDSCAPE PLAN
14	(N) LANDSCAPE FENCE, SEE LANDSCAPE PLAN
15	(N) LANDSCAPE WALL, SEE LANDSCAPE PLAN
16	(N) LEVEL GRADE CHANGE TO BE ALTERED, SEE CIVIL AND LANDSCAPE PLANS
17	(N) PARTIAL HEIGHT WALL
18	(N) METAL HORIZONTAL GUARDRAILS
19	(N) CORRUGATED METAL SIDING
20	(N) COMPOSITE RESIN PANEL
21	(N) GARAGE ROLL UP DOOR WITH GLASS FINISH
22	(N) METAL HORIZONTAL GUARDRAILS
23	(E) ROOF TO REMAIN AND COVERED BY NEW STRUCTURE ABOVE
24	(N) ROOF EXTENSION
25	(N) EXTENDED WALK WAY
26	(N) METAL ANGLED PANEL UNDER WALK WALK
27	(N) BICYCLE PARKING, TYPICAL
28	(N) SOLAR PANELS (FUTURE INSTALLATION)

WORK/LIVE
CONVERSION
LUCASEY BUILDING

2744 EAST 11TH STREET
OAKLAND, CA 94601

ARCHITECT:

MARTINKOVIC MILFORD ARCHITECTS

101 MONTGOMERY STREET
SUITE 650
SAN FRANCISCO, CA 94104
T 415 346 9990

PROJECT SPONSOR:

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SAN FRANCISCO CA 94110
T 415.675.1775
F 415.675.1978

LICENSED ARCHITECT
BRIAN T. MILFORD
No.C28480
Exp. 6/30/2017
STATE OF CALIFORNIA

RECORD OF DRAWING ISSUANCE

PLANNING SUBMITTAL	01.20.2016
HISTORIC REVIEW	04.06.2016

PROJECT NORTH

OAKLAND PLANNING RESUBMITTAL

DRAWN BY:	K.B./K.A.
PROJECT NUMBER:	1535.8

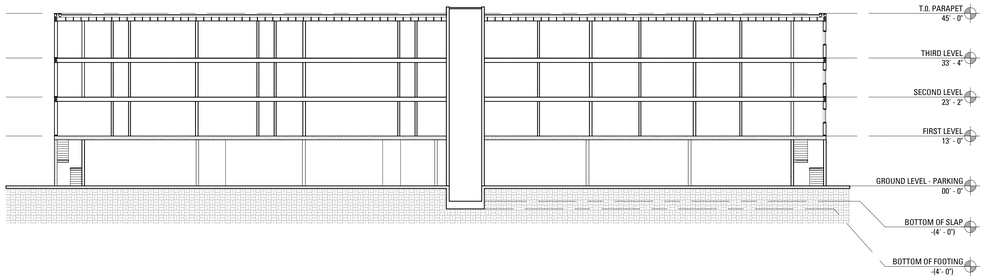
BUILDING SECTIONS

SHEET NUMBER

A305

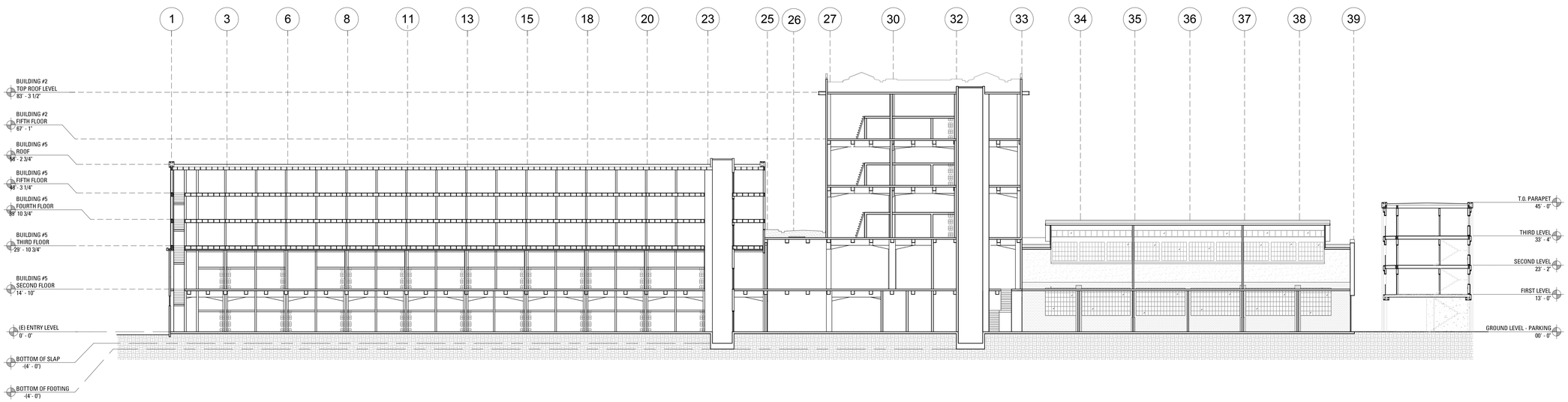
2016/Mar /19

A305- BUILDING SECTIONS.DWG



2 BUILDING 7 SECTION

SCALE: 1/16" = 1'-0"



1 BUILDING 1, 2, 5 and 7

SCALE: 1/16" = 1'-0"

2016Ma /19

A306- BUILDING SECTIONS.DWG

WORK/LIVE
CONVERSION
LUCASEY BUILDING

2744 EAST 11TH STREET
OAKLAND, CA 94601

ARCHITECT:

MARTINKOVIC MILFORD ARCHITECTS

101 MONTGOMERY STREET
SUITE 650
SAN FRANCISCO, CA 94104
T 415 346 9990

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BRIAN T. MILFORD
No.C28480
Exp. 6/30/2017
STATE OF CALIFORNIA

RECORD OF DRAWING ISSUANCE

PLANNING SUBMITTAL	01.20.2016
HISTORIC REVIEW	04.06.2016

PROJECT NORTH

OAKLAND PLANNING
RESUBMITTAL

DRAWN BY:	K.B./K.A.
PROJECT NUMBER:	1535.8

BUILDING SECTIONS

SHEET NUMBER

A306

APPENDIX B

MATERIALS FACT SHEETS

Land Science® Technologies

VAPOR INTRUSION SOLUTIONS

landsciencetech.com

Land Science® Technologies

VAPOR INTRUSION SOLUTIONS

Once thought to be only a concern associated with Brownfield redevelopments, the threat of contaminant vapor intrusion into buildings is becoming a prevalent concern for all structures. Vapor intrusion occurs when contaminant vapors are found in close proximity to a building foundation and then migrate into the enclosed space of an overlying structure.

Environmental consultants, building owners and regulators are looking to find innovative solutions to manage both the short and long-term vapor intrusion risk. As risk standards continue to evolve, engineered controls provide a practical and cost-effective solution when compared to remediating the soil to acceptable standards or collecting enough data to eliminate the risk.

Barrier technologies, alone or when combined with active or passive gas collection systems, physically block contaminated vapor from entering the structure and safely protect building occupants.

Geo-Seal® Vapor Intrusion Barrier

Vapor-Vent™ Vapor Collection System

Retro-Coat™ Vapor Intrusion Coating

Land Science Technologies develops vapor intrusion mitigation solutions that protect people and invigorate renewal of contaminated properties. We leverage our industry expertise to assist clients in developing site specific solutions that are technically sound and cost-effective. Land Science Technologies is a division of REGENESIS, Inc., a global leader in groundwater and soil remediation technologies since 1994.

REGENESIS®

REGENESIS has been a recognized leader in the environmental industry since 1994, developing and supplying proven, innovative remediation technologies that significantly reduce the cost, time, and difficulty of restoring contaminated soil and groundwater. REGENESIS products have been used by leading multi-national environmental engineering and consulting firms on more than 20,000 soil and groundwater cleanup projects worldwide and across the USA.

For more information about Regenesis products visit, REGENESIS.COM or contact your local representative.

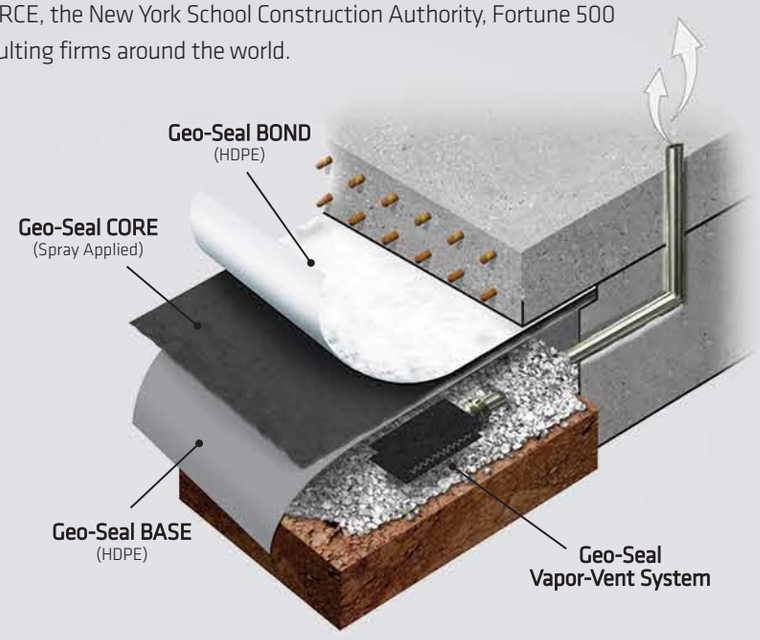
GEO-SEAL® PROJECTS

Geo-Seal®
Vapor Intrusion Barrier

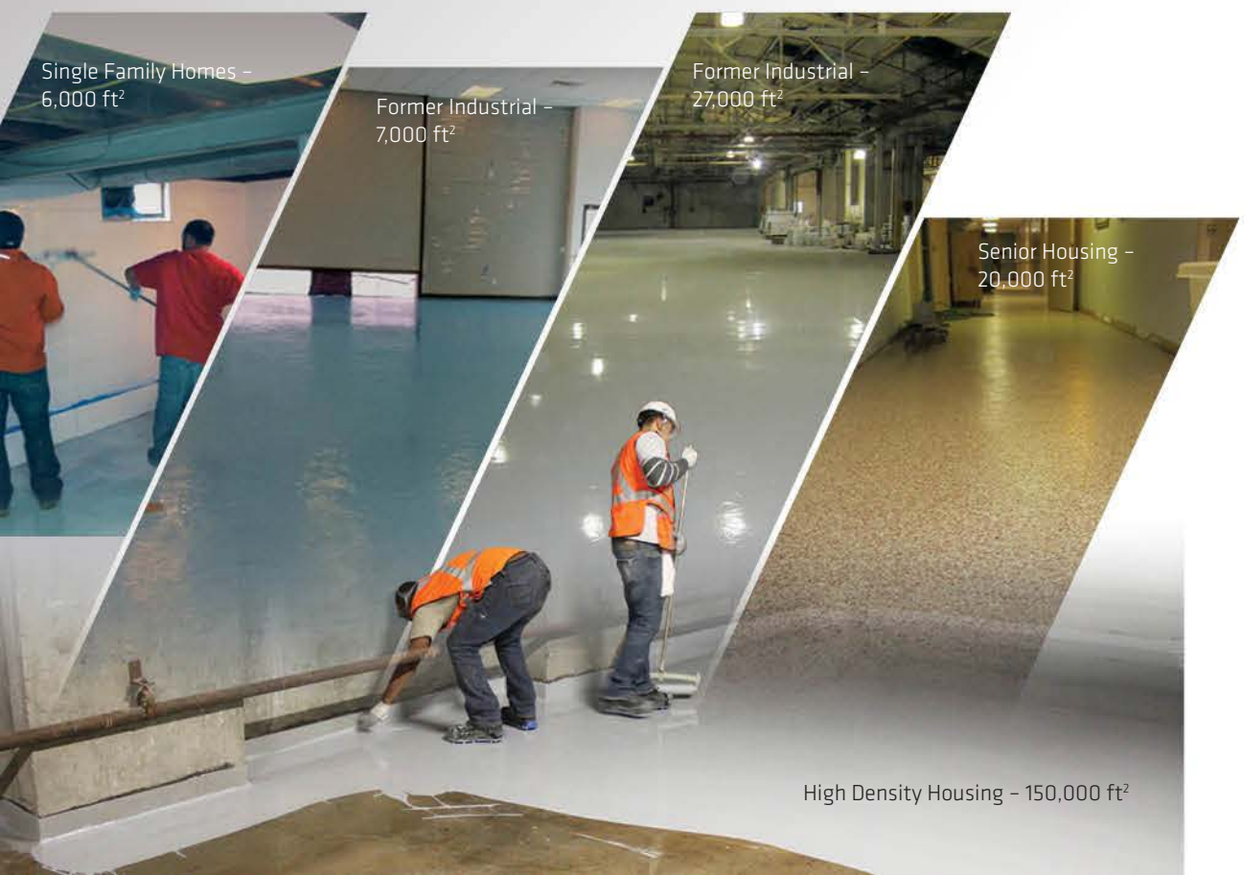
Geo-Seal is a composite membrane system and is the only patented contaminant vapor barrier system in the world today. Geo-Seal combines the advantage of chemically resistant high-density polyethylene (HDPE) and the constructability benefits of spray-applied membranes. This results in one robust system that is designed specifically to mitigate contaminant vapor intrusion. Ideal for new construction, Geo-Seal has been accepted by state environmental agencies across the country, the US NAVY, US AIR FORCE, the New York School Construction Authority, Fortune 500 Companies and leading environmental consulting firms around the world.

Advantages of Geo-Seal:

- Industry leading warranty
- Composite technology provides multiple layers of protection
- Lowest diffusion rates in the industry
- Waterproofing system configurations available



RETRO-COAT™ PROJECTS

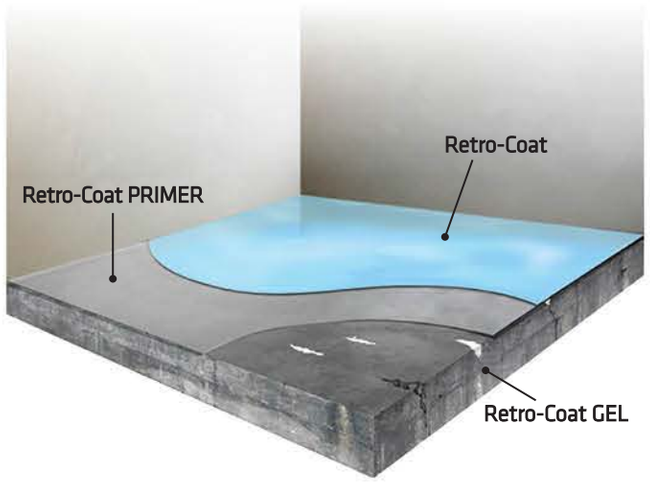


Retro-Coat™
Vapor Intrusion Coating

Retro-Coat™ is a chemically resistant coating specifically designed to mitigate contaminant vapor intrusion into existing structures. Applying Retro-Coat to existing concrete slabs provides a physical barrier to contaminant vapors. When combined with an active sub-slab depressurization system, Retro-Coat will maximize the performance of the system and provide continued protection when the system is not active.

Advantages of Retro-Coat:

- Specifically formulated to mitigate PCE, TCE and Benzene vapors
- Laboratory testing shows a 6 order of magnitude reduction of contaminant vapors
- Designed to withstand foot traffic and industrial settings
- Carpet, laminate and tile floors can be placed directly on Retro-Coat
- No VOCs and fast curing process reduce building downtime



Available Colors and Finishes

GEO-SEAL® APPLICATION

Vapor-Vent should be installed in a permeable subgrade to maximize vapor collection ability

Geo-Seal BASE is a composite sheet material comprised of HDPE and non-woven geotextile

Geo-Seal CORE is spray applied to increase the systems tensile strength and provide a seamless membrane

Penetrations are sealed individually

Geo-Seal BOND is applied over the Geo-Seal CORE to provide additional protection

Concrete is placed directly onto the completed Geo-Seal system

Vapor-Vent™
Vapor Collection System

Vapor-Vent is a low profile vapor collection system that is placed underneath a structure to passively or actively eliminate the build up of contaminant vapor. It is also an economical alternative to traditional slotted pipe systems and can be installed in a fraction of the time.

RETRO-COAT™ APPLICATION

Existing concrete slab is first cleaned and then abraded

Retro-Coat caulk and fillers are used repair concrete cracks and other imperfections

Retro-Coat PRIMER is applied to the concrete surface as final preparation

Retro-Coat is applied to a nominal thickness of 20 dry mils

Land Science Technologies

1011 Calle Sombra

San Clemente, CA 92673

landsciencetech.com

(949) 481-8118

Geo-Seal® Vapor Intrusion Barrier
02 56 19.13
Fluid-Applied Gas Barrier
Version 1.30

Note: If membrane will be subjected to hydrostatic pressure, please contact Land Science Technologies™ for proper recommendations.

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including general and supplementary conditions and Division 1 specification sections, apply to this section.

1.2 SUMMARY

A. This section includes the following:

1. Substrate preparation:
2. Vapor intrusion barrier components:
3. Seam sealer and accessories.

B. Related Sections: The following sections contain requirements that relate to this section:

1. Division 2 Section “Earthwork”, “Pipe Materials”, “Sub-drainage Systems”, “Gas Collection Systems”:
2. Division 3 Section “Cast-in-Place Concrete” for concrete placement, curing, and finishing:
3. Division 5 Section “Expansion Joint Cover Assemblies”, for expansion-joint covers assemblies and installation.

1.3 PERFORMANCE REQUIREMENTS

A. General: Provide a vapor intrusion barrier system that prevents the passage of methane gas and/or volatile organic compound vapors and complies with physical requirements as demonstrated by testing performed by an independent testing agency of manufacturer’s current vapor intrusion barrier formulations and system design.

1.4 SUBMITTALS

A. Submit product data for each type of vapor intrusion barrier, including manufacturer’s printed instructions for evaluating and preparing the substrate, technical data, and tested physical and performance properties.

B. Project Data - Submit shop drawings showing extent of vapor intrusion barrier, including details for overlaps, flashing, penetrations, and other termination conditions.

C. Samples – Submit representative samples of the following for approval:

1. Vapor intrusion barrier components.

D. Certified Installer Certificates – Submit certificates signed by manufacturer certifying that installers comply with requirements under the “Quality Assurance” article.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer who has been trained and certified in writing by the membrane manufacturer, Land Science Technologies™ for the installation of the Geo-Seal® System.

B. Manufacturer Qualification: Obtain vapor intrusion barrier materials and system components from a single manufacturer source Land Science Technologies.

C. Field Sample: Apply vapor intrusion barrier system field sample to 100 ft^2 (9.3 m^2) of field area demonstrate application, detailing, thickness, texture, and standard of workmanship.

1. Notify engineer or special inspector one week in advance of the dates and times when field sample will be prepared.

2. If engineer or special inspector determines that field sample, does not meet requirements, reapply field sample until field sample is approved.

3. Retain and maintain approved field sample during construction in an undisturbed condition as a standard for judging the completed methane and vapor intrusion barrier. An undamaged field sample may become part of the completed work.

D. Pre-installation Conference: A pre-installation conference shall be held prior to application of the vapor intrusion barrier system to assure proper site and installation conditions, to include contractor, applicator, architect/engineer, other trades influenced by vapor intrusion barrier installation and special inspector (if any).

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to project site as specified by manufacturer labeled with manufacturer's name, product brand name and type, date of manufacture, shelf life, and directions for storing and mixing with other components.

B. Store materials as specified by the manufacturer in a clean, dry, protected location and within the temperature range required by manufacturer. Protect stored materials from direct sunlight. If freezing temperatures are expected, necessary steps should be taken to prevent the freezing of the Geo-Seal CORE and Geo-Seal CORE Detail components.

C. Remove and replace material that cannot be applied within its stated shelf life.

1.7 PROJECT CONDITIONS

A. Protect all adjacent areas not to be installed on. 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 application method used.

C. Minimum clearance of 24 inches is required for application of product. For areas with less than 24-inch clearance, the membrane may be applied by hand using Geo-Seal CORE Detail.

D. Ambient temperature shall be within manufacturer's specifications. (Greater than +45ºF/+7ºC.) Consult manufacturer for the proper requirements when desiring to apply Geo-Seal CORE below 45ºF/7ºC.

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

F. Vapor intrusion barrier shall be installed before placement of fill material and reinforcing steel. When not possible, all exposed reinforcing steel shall be masked by general contractor prior to membrane application.

G. Stakes used to secure the concrete forms **shall not penetrate** the vapor intrusion barrier system after it has been installed. If stakes need to puncture the vapor intrusion barrier system after it has been installed, the necessary repairs need to be made by a certified Geo-Seal applicator. To confirm the staking procedure is in agreement with the manufactures recommendation, contact Land Science Technologies.

1.8 WARRANTY

A. General Warranty: The special warranty specified in this article shall not deprive the owner of other rights the owner may have under other provisions of the contract documents, and shall be in addition to, and run concurrent with, other warranties made by the contractor under requirements of the contract documents.

B. Special Warranty: Submit a written warranty signed by vapor intrusion barrier manufacturer agreeing to repair or replace vapor intrusion barrier that does not meet requirements or that does not remain methane gas and/or volatile organic compound vapor tight within the specified warranty period. Warranty does not include failure of vapor intrusion barrier due to failure of substrate prepared and treated according to requirements or formation of new joints and cracks in the attached to structures that exceed 1/16 inch (1.58 mm) in width.

1. Warranty Period: 1 year after date of substantial completion. Longer warranty periods are available upon request to the manufacturer.

C. Labor and material warranties are available upon request to the manufacturer.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Geo-Seal; Land Science Technologies™, San Clemente, CA. (949) 481-8118

1. Geo-Seal BASE sheet layer
2. Geo-Seal CORE spray layer and Geo-Seal CORE Detail
3. Geo-Seal BOND protection layer

2.2 VAPOR INTRUSION BARRIER SPRAY MATERIALS

A. Fluid applied vapor intrusion barrier system – Geo-Seal CORE; a single course, high build, polymer modified, asphalt emulsion. Waterborne and spray applied at ambient temperatures. A nominal thickness of 60 dry mils, unless specified otherwise. Non-toxic and odorless. Geo-Seal CORE Detail has similar properties with greater viscosity and is roller or brush applied. Manufactured by Land Science Technologies.

B. Fluid applied vapor intrusion barrier physical properties.

Geo-Seal CORE – TYPICAL CURED PROPERTIES

Properties	Test Method	Results
Tensile Strength - CORE only	ASTM 412	32 psi
Tensile Strength - Geo-Seal System	ASTM 412	662 psi
Elongation	ASTM 412	4140%
Resistance to Decay	ASTM E 154 Section 13	4% Perm Loss
Accelerated Aging	ASTM G 23	No Effect
Moisture Vapor Transmission	ASTM E 96	.026 g/ft^2/hr
Hydrostatic Water Pressure	ASTM D 751	26 psi
Perm rating	ASTM E 96 (US Perms)	0.21
Methane transmission rate	ASTM D 1434	Passed
Adhesion to Concrete & Masonry	ASTM C 836 & ASTM C 704	11 lbf./inch
Hardness	ASTM C 836	80
Crack Bridging	ASTM C 836	No Cracking
Heat Aging	ASTM D 4068	Passed
Environmental Stress Cracking	ASTM D 1693	Passed
Oil Resistance	ASTM D543	Passed
Soil Burial	ASTM D 4068	Passed
Low Temp. Flexibility	ASTM C 836-00	No Cracking at –20°C
Resistance to Acids:		
Acetic		30%
Sulfuric and Hydrochloric		13%
Temperature Effect:		
Stable		248°F
Flexible		13°F

Geo-Seal CORE Detail – TYPICAL CURED PROPERTIES

Properties	Test Method	Results
Tensile Strength	ASTM 412	32 psi
Elongation	ASTM 412	3860%
Resistance to Decay	ASTM E 154 Section 13	9% Perm Loss
Accelerated Aging	ASTM G 23	No Effect
Moisture Vapor Transmission	ASTM E 96	.026 g/ft^2/hr
Hydrostatic Water Pressure	ASTM D 751	28 psi
Perm rating (US Perms)	ASTM E 96	0.17
Methane transmission rate	ASTM D 1434	Passed
Adhesion to Concrete & Masonry	ASTM C 836	7 lbf./inch
Hardness	ASTM C 836	85
Crack Bridging	ASTM C 836	No Cracking
Low Temp. Flexibility	ASTM C 836-00	No Cracking at –20ºC
Resistance to Acids:		
Acetic		30%
Sulfuric and Hydrochloric		13%
Temperature Effect:		
Stable		248°F
Flexible		13°F

2.3 VAPOR INTRUSION BARRIER SHEET MATERIALS

A. The Geo-Seal BASE layer and Geo-Seal BOND layer are chemically resistant sheets comprised of a 5 mil high density polyethylene sheet thermally bonded to a 3 ounce non woven geotextile.

B. Sheet Course Usage

1. As foundation base layer, use Geo-Seal BASE course and/or other base sheet as required or approved by the manufacturer.

2. As top protective layer, use Geo-Seal BOND layer and/or other protection as required or approved by the manufacturer.

C. Geo-Seal BOND and Geo-Seal BASE physical properties.

Properties	Test Method	Results
Film Thickness		5 mil
Composite Thickness		18 mil
Water Vapor Permeability	ASTM E 96	0.214
Adhesion to Concrete	ASTM D 1970	9.2 lbs/inch^2
Dart Impact	ASTM D 1790	>1070 gms, method A
		594 gms, method B
Puncture Properties Tear	ASTM B 2582 MD	11,290 gms
	ASTM B 2582 TD	13,150 gms

2.4 AXILLARY MATERIALS

A. Sheet Flashing: 60-mil reinforced modified asphalt sheet good with double-sided adhesive.

B. Reinforcing Strip: Manufacturer's recommended polypropylene and polyester fabric.

C. Gas Venting Materials: Geo-Seal Vapor-Vent HD or Geo-Seal Vapor-Vent Poly, and associated fittings.

D. Seam Detailing Sealant Mastic: Geo-Seal CORE Detail, a high or medium viscosity polymer modified water based asphalt material.

1. Back Rod: Closed-cell polyethylene foam.

PART 3 – EXECUTION

3.1 AUXILIARY MATERIALS

A. Examine substrates, areas, and conditions under which vapor intrusion barrier will be applied, with installer present, for compliance with requirements. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 SUBGRADE SURFACE PREPARATION

A. Verify substrate is prepared according to manufacturer's recommendations. On a horizontal surface, the substrate should be free from material that can potentially puncture the vapor intrusion barrier. Additional protection or cushion layers might be required if the earth or gravel substrate contains too many jagged points and edges that could puncture one or more of the system components. Contact manufacturer to confirm substrate is within manufactures recommendations.

B. Geo-Seal can accommodate a wide range of substrates, including but not limited to compacted earth, sand, aggregate, and mudslabs.

1. Compacted Earth: Remove pieces of debris, gravel and/or any other material that can potentially puncture the Geo-Seal BASE. Remove any debris from substrate that can potentially puncture the Geo-Seal system prior to application.

2. Sand: A sand subgrade requires no additional preparation, provided any material that can potentially puncture the Geo-Seal BASE layer is not present.

3. Aggregate: Contact the manufacturer to ensure the aggregate layer will not be detrimental to the membrane. **The gravel layer must be compacted and rolled flat.** Ideally a ¾" minus gravel layer with rounded edges should be specified; however the Geo-Seal system can accommodate a wide variety of different substrates. Contact Land Science Technologies if there are questions regarding the compatibility of Geo-Seal and the utilized substrate. Exercise caution when specifying pea gravel under the membrane, if not compacted properly, pea gravel can become an unstable substrate.

4. Mudslabs: The use of a mubslab under the Geo-Seal system is acceptable, contact Land Science Technologies for job specific requirements.

C. Mask off adjoining surface not receiving the vapor intrusion barrier system to prevent the spillage or over spray affecting other construction.

D. Earth, sand or gravel subgrades should be prepared and compacted to local building code requirements.

3.3 CONCRETE SURFACE PREPARATION

A. Clean and prepare concrete surface to manufacturer's recommendations. In general, only apply the Geo-Seal CORE material to dry, clean and uniform substrates. Concrete surfaces must be a light trowel, light broom or equivalent finish. Remove fins, ridges and other projections and fill honeycomb, aggregate pockets, grout joints and tie holes, and other voids with hydraulic

cement or rapid-set grout. It is the applicator's responsibility to point out unacceptable substrate conditions to the general contractor and ensure the proper repairs are made.

B. When applying the Geo-Seal CORE or Geo-Seal CORE Detail material to concrete it is important to not apply the product over standing water. Applying over standing water will result in the membrane not setting up properly on the substrate

C. Surfaces may need to be wiped down or cleaned prior to application. This includes, but is not limited to, the removal of forming oils, concrete curing agents, dirt accumulation, and other debris. Contact form release agent manufacturer or concrete curing agent manufacturer for VOC content and proper methods for removing the respective agent.

D. Applying the Geo-Seal CORE to "green" concrete is acceptable and can be advantageous in creating a superior bond to the concrete surface. To help reduce blistering, apply a primer coat of only the asphalt component of the Geo-Seal CORE system. Some blistering of the membrane will occur and may be more severe on walls exposed to direct sunlight. Blistering is normal and will subside over time. Using a needle nose depth gauge confirm that the specified mil thickness has been applied.

3.4 PREPARATIONS AND TREATMENT OF TERMINATIONS

A. Prepare the substrate surface in accordance with Section 3.3 of this document. Concrete surfaces that are not a light trowel, light broom or equivalent finish, will need to be repaired.

B. Terminations on horizontal and vertical surfaces should extend 6" onto the termination surface. Job specific conditions may prevent a 6" termination. In these conditions, contact manufacturer for recommendations.

C. Apply 30 mils of Geo-Seal CORE to the terminating surface and then embed the Geo-Seal BASE layer by pressing it firmly into the Geo-Seal CORE layer. Next, apply 60 mils of Geo-Seal CORE to the BASE layer. When complete, apply the Geo-Seal BOND layer. After the placement of the Geo-Seal BOND layer is complete, apply a final 30 mil seal of the Geo-Seal CORE layer over the edge of the termination. For further clarification, refer to the termination detail provided by manufacturer.

D. The stated termination process is appropriate for terminating the membrane onto exterior footings, pile caps, interior footings and grade beams. When terminating the membrane to stem walls or vertical surfaces the same process should be used.

3.5 PREPARATIONS AND TREATMENT OF PENETRATIONS

A. All pipe penetrations should be securely in place prior to the installation of the Geo-Seal system. Any loose penetrations should be secured prior to Geo-Seal application, as loose penetrations could potentially exert pressure on the membrane and damage the membrane after installation.

B. To properly seal around penetrations, cut a piece of the Geo-Seal BASE layer that will extend 6" beyond the outside perimeter of the penetration. Cut a hole in the Geo-Seal BASE layer just big enough to slide over the penetration, ensuring the Geo-Seal BASE layer fits snug against the penetration, this can be done by cutting an "X" no larger than the inside diameter of the penetration. There should not be a gap larger than a 1/8" between the Geo-Seal BASE layer and the penetration. Other methods can also be utilized, provided, there is not a gap larger than 1/8" between the Geo-Seal BASE layer and the penetration.

C. Seal the Geo-Seal BASE layer using Geo-Seal CORE or Geo-Seal CORE Detail to the underlying Geo-Seal BASE layer.

D. Apply one coat of Geo-Seal CORE Detail or Geo-Seal CORE spray to the Geo-Seal BASE layer and around the penetration at a thickness of 30 mils. Penetrations should be treated in a 6-inch radius around penetration and 3 inches onto penetrating object.

E. Embed a fabric reinforcing strip after the first application of the Geo-Seal CORE spray or Geo-Seal CORE Detail material and then apply a second 30 mil coat over the embedded joint reinforcing strip ensuring its complete saturation of the embedded strip and tight seal around the penetration.

F. After the placement of the Geo-Seal BOND layer, a cable tie should then be placed around the finished penetration. The cable tie should be snug, but not overly tight so as to slice into the finished seal.

OPTION: A final application of Geo-Seal CORE may be used to provide a finishing seal after the Geo-Seal BOND layer has been installed.

NOTE: Metal or other slick penetration surfaces may require treatment in order to achieve proper adhesion. For plastic pipes, sand paper may be used to achieve a profile, an emery cloth is more appropriate for metal surfaces. An emery cloth should also be used to remove any rust on metal surfaces.

3.6 GEO-SEAL BASE LAYER INSTALLATION

A. Install the Geo-Seal BASE layer over substrate material in one direction with six-inch overlaps and the geotextile (fabric side) facing down.

B. Secure the Geo-Seal BASE seams by applying 60 mils of Geo-Seal CORE between the 6" overlapped sheets with the geotextile side down.

C. Visually verify there are no gaps/fish-mouths in seams.

D. For best results, install an equal amount of Geo-Seal BASE and Geo-Seal CORE in one day. Leaving unsprayed Geo-Seal BASE overnight might allow excess moisture to collect on the Geo-Seal BASE. If excess moisture collects, it needs to be removed.

NOTE: In windy conditions it might be necessary to encapsulate the seam by spraying the Geo-Seal CORE layer over the completed Geo-Seal BASE seam.

3.7 GEO-SEAL CORE APPLICATION

A. Set up spray equipment according to manufacturer's instructions.

B. Mix and prepare materials according to manufacturer's instructions.

C. The two catalyst nozzles (8001) should be adjusted to cross at about 18" from the end of the wand. This apex of catalyst and emulsion spray should then be less than 24" but greater than 12" from the desired surface when spraying. When properly sprayed the fan pattern of the catalyst should range between 65° and 80°.

D. Adjust the amount of catalyst used based on the ambient air temperature and surface temperature of the substrate receiving the membrane. In hot weather use less catalyst as hot conditions will quickly "break" the emulsion and facilitate the curing of the membrane. In cold conditions and on vertical surfaces use more catalyst to "break" the emulsion quicker to expedite curing and set up time in cold conditions.

E. To spray the Geo-Seal CORE layer, pull the trigger on the gun. A 42° fan pattern should form when properly sprayed. Apply one spray coat of Geo-Seal CORE to obtain a seamless membrane free from pinholes or shadows, with an average dry film thickness of 60 mils (1.52 mm).

F. Apply the Geo-Seal CORE layer in a spray pattern that is perpendicular to the application surface. The concern when spraying at an angle is that an area might be missed. Using a perpendicular spray pattern will limit voids and thin spots, and will also create a uniform and consistent membrane.

G. Verify film thickness of vapor intrusion barrier every 500 ft^2. (46.45 m^2), for information regarding Geo-Seal quality control measures, refer to the quality control procedures in Section 3.9 of this specification.

H. The membrane will generally cure in 24 to 48 hours. As a rule, when temperature decreases or humidity increases, the curing of the membrane will be prolonged. The membrane does not need to be fully cured prior the placement of the Geo-Seal BOND layer, provided mil thickness has been verified and a smoke test will be conducted.

I. **Do not penetrate** membrane after it has been installed. If membrane is penetrated after the membrane is installed, it is the responsibility of the general contractor to notify the certified installer to make repairs.

J. If applying to a vertical concrete wall, apply Geo-Seal CORE directly to concrete surface and use manufacturer's recommended protection material based on site specific conditions. If applying Geo-Seal against shoring, contact manufacturer for site specific installation instructions.

NOTE: Care should be taken to not trap moisture between the layers of the membrane. Trapping moisture may occur from applying a second coat prior to the membrane curing. Repairs and detailing may be done over the Geo-Seal CORE layer when not fully cured.

3.8 GEO-SEAL BOND PROTECTION COURSE INSTALLATION

A. Install Geo-Seal BOND protection course perpendicular to the direction of the Geo-Seal BASE course with overlapped seams over nominally cured membrane no later than recommended by manufacturer and before starting subsequent construction operations.

B. Sweep off any water that has collected on the surface of the Geo-Seal CORE layer, prior to the placement of the Geo-Seal BOND layer.

C. Overlap and seam the Geo-Seal BOND layer in the same manner as the Geo-Seal BASE layer.

D. To expedite the construction process, the Geo-Seal BOND layer can be placed over the Geo-Seal CORE immediately after the spray application is complete, provided the Geo-Seal CORE mil thickness has been verified.

3.9 QUALITY ASSURANCE

A. The Geo-Seal system must be installed by a trained and certified installer approved by Land Science Technologies.

B. For projects that will require a material or labor material warranty, Land Science Technologies will require a manufacturer's representative or certified 3rd party inspector to inspect and verify that the membrane has been installed per the manufacturer's recommendations.

The certified installer is responsible for contacting the inspector for inspection. Prior to application of the membrane, a notice period for inspection should be agreed upon between the applicator and inspector.

C. The measurement tools listed below will help verity the thickness of the Geo-Seal CORE layer. As measurement verification experience is gained, these tools will help confirm thickness measurements that can be obtained by pressing one's fingers into the Geo-Seal CORE membrane.

To verify the mil thickness of the Geo-Seal CORE, the following measurement devices are required.

1. Mil reading caliper: Calipers are used to measure the thickness of coupon samples. To measure coupon samples correctly, the thickness of the Geo-Seal sheet layers (18 mils each) must be taken into account. Mark sample area for repair.

2. Wet mil thickness gauge: A wet mil thickness gauge may be used to quickly measure the mil thickness of the Geo-Seal CORE layer. The thickness of the Geo-Seal sheet layers do not factor into the mil thickness reading.

   NOTE: When first using a wet mil thickness gauge on a project, collect coupon samples to verify the wet mil gauge thickness readings.

3. Needle nose digital depth gauge: A needle nose depth gauge should be used when measuring the Geo-Seal CORE thickness on vertical walls or in field measurements. Mark measurement area for repair.

To obtain a proper wet mil thickness reading, take into account the 5 to 10 percent shrinkage that will occur as the membrane fully cures. Not taking into account the thickness of the sheet layers, a freshly sprayed membrane should have a minimum wet thickness of 63 (5%) to 66 (10%) mils.

Methods on how to properly conduct Geo-Seal CORE thickness sampling can be obtained by reviewing literature prepared by Land Science Technologies.

D. It should be noted that taking too many destructive samples can be detrimental to the membrane. Areas where coupon samples have been removed need to be marked for repair.

E. Smoke Testing is highly recommended and is the ideal way to test the seal created around penetrations and terminations. Smoke Testing is conducted by pumping non-toxic smoke underneath the Geo-Seal vapor intrusion barrier and then repairing the areas where smoke appears. Refer to smoke testing protocol provided by Land Science Technologies. For projects that will require a material or labor material warranty, Land Science Technologies will require a smoke test.

F. Visual inspections prior to placement of concrete, but after the installation of concrete reinforcing, is recommended to identify any punctures that may have occurred during the installation of rebar, post tension cables, etc. Punctures in the Geo-Seal system should be easy to indentify due to the color contrasting layers of the system.

Land Science™ Technologies
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Product Data Sheet

Vapor-Vent™

Vapor-Vent™ is a low profile, trenchless, flexible, sub slab vapor collection system used in lieu of perforated piping. Installation of Vapor-Vent increases construction productivity as it eliminates time consuming trench digging and costly gravel importation. Vapor-Vent is offered with two different core materials, Vapor-Vent POLY is recommended for sites with inert methane gas and Vapor-Vent is recommended for sites with aggressive chlorinated volatile organic or petroleum vapors.

VENT PROPERTIES	**TEST METHOD**	**Vapor-Vent POLY**	**Vapor-Vent**
Material		Polystyrene	HDPE
Comprehensive Strength	ASTM D-1621	9,500 lbs / ft^2	11,400 psf
Flow Rate (Hydraulic gradient = .1)	ASTM D-4716	30 gpm/ft width	30 gpm/ft width
Chemical Resistance		N/A	Excellent
FABRIC PROPERTIES	**TEST METHOD**	**Vapor-Vent POLY**	**Vapor-Vent**
Grab Tensile Strength	ASTM D-4632	100 lbs.	110 lbs.
Puncture Strength	ASTM D-4833	65 lbs.	30 lbs.
Mullen Burst Strength	ASTM D-3786	N/A	90 PSI
AOS	ASTM D-4751	70 U.S. Sieve	50 U.S. Sieve
Flow Rate	ASTM D-4491	140 gpm / ft2	95 gpm / ft2
UV Stability (500 hours)	ASTM D-4355	N/A	70% Retained
DIMENSIONAL DATA		**Vapor-Vent POLY**	**Vapor-Vent**
Thickness		1”	1”
Standard Widths		12”	12”
Roll Length		165 ft	165 ft
Roll Weight		65 lbs	68 lbs

Land Science Technologies, Inc. / 1011 Calle Sombra / Suite 110 / San Clemente / CA / 92673
Ph. 949-481-8118 / F. 949- 366-8090

Vapor-Vent™
SOIL GAS COLLECTION SYSTEM
Version 1.5

SECTION 02 56 19 – GAS CONTROL

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Substrate preparation.
2. Vapor-Vent™ installation.
3. Vapor-Vent accessories.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 2 Section “Earthwork”, “Pipe Materials”, “Sub-drainage systems”, ”Gas Control System”, “Fluid-Applied gas barrier”.
2. Division 3 Section “Cast-in-Place Concrete” for concrete placement, curing, and finishing.
3. Division 5 Section “Expansion Joint Cover Assemblies”, for expansion-joint covers assemblies and installation.

1.3 PERFORMANCE REQUIREMENTS

A. General: Provide a gas venting material that collects gas vapors and directs them to discharge or to collection points as specified in the gas vapor collection system drawings and complies with the physical requirements set forth by the manufacturer.

1.4 SUBMITTALS

A. Submit Product Data for each type of gas venting system specified, including manufacturer’s specifications.

B. Sample – Submit representative samples of the following for approval:

1. Gas venting, Vapor-Vent.
2. Vapor-Vent accessories.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who is certified in writing and approved by vapor intrusion barrier manufacturer Land Science Technologies for the installation of the Geo-Seal® vapor intrusion barrier system.

B. Manufacturer Qualification: Obtain gas venting, vapor intrusion barrier and system components from a single manufacturer Land Science Technologies

C. Pre-installation Conference: A pre-installation conference shall be held prior to installation of the venting system, vapor intrusion barrier and waterproofing system to assure proper site and installation conditions, to include contractor, applicator, architect/engineer and special inspector (if any).

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to project site as specified by manufacturer labeled with manufacturer’s name, product brand name and type, date of manufacture, shelf life, and directions for handling.

B. Store materials as specified by the manufacturer in a clean, dry, protected location and within the temperature range required by manufacturer. Protect stored materials from direct sunlight.

C. Remove and replace material that is damaged.

PART 2 – PRODUCTS

2.1 MANUFACTURER

A. Land Science Technologies, San Clemente, CA. (949) 481-8118

1. Vapor-Vent™

2.2 GAS VENT MATERIALS

A. Vapor-Vent – Vapor-Vent is a low profile, trenchless, flexible, sub slab vapor collection system used in lieu or in conjunction with perforated piping. Vapor-Vent is offered with two different core materials, Vapor-Vent POLY is recommended for sites with inert methane gas and Vapor-Vent is recommended for sites with aggressive chlorinated volatile organic or petroleum vapors. Manufactured by Land Science Technologies

B. Vapor-Vent physical properties

VENT PROPERTIES	**TEST METHOD**	**VAPOR-VENT POLY**	**VAPOR-VENT**
Material		Polystyrene	HDPE
Comprehensive Strength	ASTM D-1621	9,000 lbs / ft^2	11,400 lbs / ft^2
In-plane flow (Hydraulic gradient-0.1)	ASTM D-4716	30 gpm / ft of width	30 gpm / ft of width
Chemical Resistance		N/A	Excellent
FABRIC PROPERTIES	**TEST METHOD**	**VAPOR-VENT POLY**	**VAPOR-VENT**
Grab Tensile Strength	ASTM D-4632	100 lbs.	110 lbs.
Puncture Strength	ASTM D-4833	65 lbs.	30 lbs.
Mullen Burst Strength	ASTM D-3786	N/A	90 PSI
AOS	ASTM D-4751	70 U.S. Sieve	50 U.S. Sieve
Flow Rate	ASTM D-4491	140 gpm / ft^2	95 gpm / ft^2
UV Stability (500 hours)	ASTM D-4355	N/A	70% Retained
DIMENSIONAL DATA			
Thickness		1”	1”
Standard Widths		12”	12”
Roll Length		165 ft	165 ft
Roll Weight		65 lbs	68 lbs

2.3 AUXILIARY MATERIALS

A. Vapor-Vent End Out

B. Reinforced Tape.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions under which gas vent system will be installed, with installer present, for compliance with requirements. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 SUBSTRATE PREPARATION

A. Verify substrate is prepared according to project requirements.

3.3 PREPARATION FOR STRIP COMPOSITE

A. Mark the layout of strip geocomposite per layout design developed by engineer.

3.4 STRIP GEOCOMPOSITE INSTALLATION

A. Install Vapor-Vent over substrate material where designated on drawings with the flat base of the core placed down and shall be overlapped in accordance with manufacturer's recommendations.

B. At areas where Vapor-Vent strips intersect cut and fold back fabric to expose the dimpled core. Arrange the strips so that the top strip interconnects into the bottom strip. Unfold fabric to cover the core and use reinforcing tape, as approved by the manufacturer, to seal the connection to prevent sand or gravel from entering the core.

C. When crossing Vapor-Vent over footings or grade beams, **consult with the specifying environmental engineer and structural engineer for appropriate use and placement of solid pipe materials**. Place solid pipe over or through concrete surface and attach a Vapor-Vent End Out at both ends of the pipe before connecting the Vapor-Vent to the pipe reducer. Seal the Vapor-Vent to the Vapor-Vent End Out using fabric reinforcement tape. Refer to Vapor-Vent detail provided by Land Science Technologies.

D. Place vent risers per specifying engineer's project specifications. Connect Vapor-Vent to Vapor-Vent End Out and seal with fabric reinforced tape. Use Vapor-Vent End Out with the specified diameter piping as shown on system drawings.

3.5 PLACEMENT OF OVERLYING AND ADJACENT MATERIALS

A. All overlying and adjacent material shall be placed or installed using approved procedures and guidelines to prevent damage to the strip geocomposite.

B. Equipment shall not be directly driven over and stakes or any other materials may not be driven through the strip geocomposite.

APPENDIX C

SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT DISCLOSURE

C. RENTAL AGREEMENT/LEASE AGREEMENT PERTAINING TO BENZENE AND TETRACHLOROETHYLENE

(set forth) IN ACCORDANCE WITH PROPOSITION 65, CALIFORNIA HEALTH AND SAFETY CODE 25249.5 ET.SEQ.

WARNING

This building exists atop known benzene and tetrachloroethylene contamination. Indoor air may be exposed to benzene and tetrachloroethylene vapors, chemicals known to the state of California to cause cancer. This building utilizes engineering controls to minimize potential exposure to these substances. These engineered controls consist of a low permeability vapor barrier across the ground floor and a vapor mitigation system which vents vapors from the subsurface to the roof. These two systems an all their individual components are collectively referred to as the Engineered Mitigation System. Damages to flooring or the Engineered Mitigation System may increase the potential exposure to these substances.

I. Neither Tenant or Tenant's guests, invitees, Occupants employees and contractors shall take or permit any action which in any way damages or disturbs the floor or the Engineered Mitigation System in the Premises or any part thereof, including without limitation: (i) piercing the surface of the ground floor or engineered control systems by drilling or any other method: (ii) abrasing the surface of the ground floor or engineered control systems (iii) permitting organic solvents, including, but not limited to acetone, paint thinner, and rubbing alcohol, to come in contact with the ground floor or the Engineered Mitigation System; (iv) painting, cleaning, or undertaking any repairs of any portion of the ground floor or the Engineered Mitigation System; (v) undertaking any activity which results in building vibration which may cause damage to the ground floor or the Engineered Mitigation System.

II. Tenant shall notify Landlord and agents immediately in writing (i) if there is any damage to or deterioration of the ground floor or the Engineered Mitigation System in the Premises or any portion thereof, including without limitation flaking, loose, cracking, peeling, staining, or discoloration, or (ii) upon the occurrence of any of the events described in paragraph 24 paragraph B.I. above.

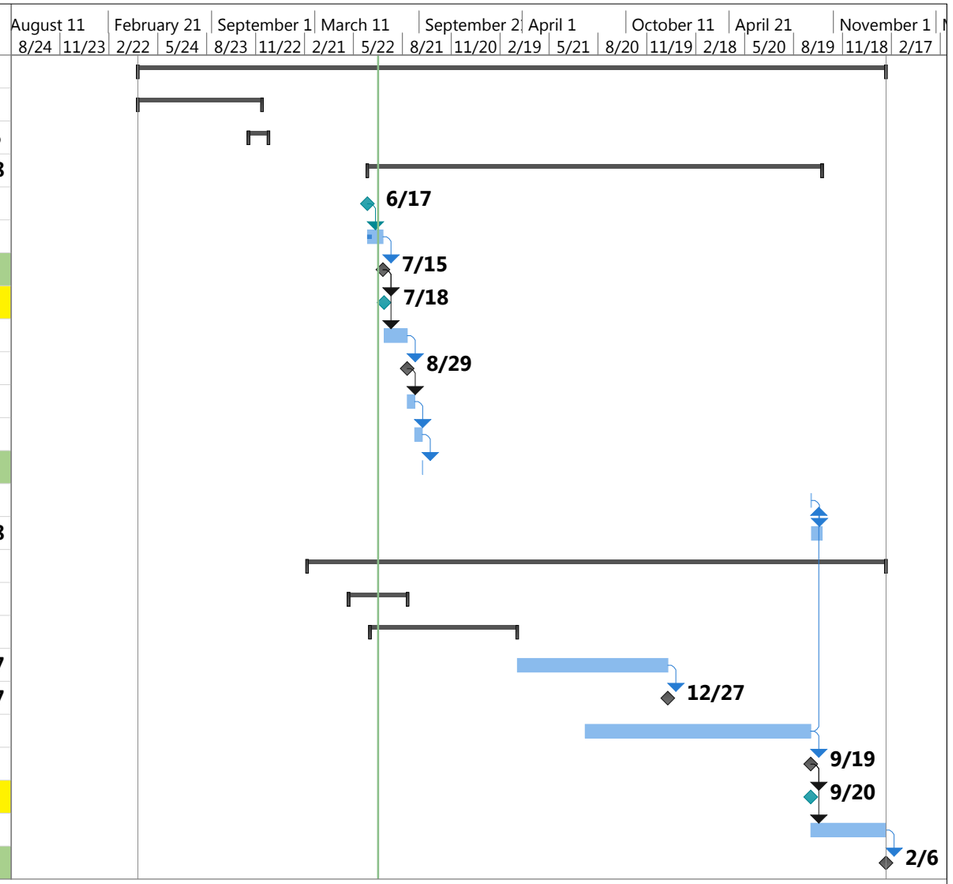
III. Tenant or their guests shall not use or keep in the Premises or cause to enter or remain in the Premises, any dangerous substances, including without limitation, materials identified as hazardous or toxic under any federal, state or local laws or regulations and any other poisons, explosives, corrosive or radioactive materials.

TENANT'S INITIALS _____ ACKNOWLEDGE SECTION 24 PARAGRAPH C

APPENDIX D

SCHEDULE

ID		Task Mode	Task Name	Duration	Start	Finish
1			**Project Approval**	**995 days**	**Fri 4/17/15**	**Wed 2/6/19**
2	✓		Due Diligence	165 days	Fri 4/17/15	Thu 12/3/15
14	✓		Preliminary Planning Set Development and Submittal	27 days	Mon 11/9/15	Wed 12/16/15
20			**Enviromental Review/Cordination**	**605 days**	**Fri 6/17/16**	**Wed 10/10/18**
21	✓		Meeting @ County to Discuss Proposed Environmental Mitigation Approach	0 days	Fri 6/17/16	Fri 6/17/16
22			Review of Proposed Environmental Mitigation Approach (County)	21 days	Fri 6/17/16	Fri 7/15/16
23			**Approval of Environmental Mitigation Approach (County)**	**0 days**	**Fri 7/15/16**	**Fri 7/15/16**
24			**Comfort Letter (Environmental)**	**0 days**	**Mon 7/18/16**	**Mon 7/18/16**
25			**Prepare VIMS Design and O&M (Sponsor)**	**31 days**	**Mon 7/18/16**	**Mon 8/29/16**
26			**City of Oakland & County Environmental Design Cordination Meeting**	**0 days**	**Mon 8/29/16**	**Mon 8/29/16**
27			**VIMS Design Revisions (Sponsor)**	**2 wks**	**Tue 8/30/16**	**Mon 9/12/16**
28			**Review of Vapor Intrusion Mitigation System (VIMS) Design and O&M Plan**	**2 wks**	**Tue 9/13/16**	**Mon 9/26/16**
29			**Approval of VIMS Design (County)**	**1 day**	**Tue 9/27/16**	**Tue 9/27/16**
30			**Prepare Final VIMS Installation Report (Sponsor-After Construction)**	**1 day**	**Thu 9/20/18**	**Thu 9/20/18**
31			**Review of Final VIMS Installation Report (County-Prior to Occupancy)**	**14 days**	**Fri 9/21/18**	**Wed 10/10/18**
32			Project Development	770 days	Fri 2/26/16	Wed 2/6/19
66			Planning ReSubmittal	78 days	Fri 5/13/16	Wed 8/31/16
89			**Building Permit**	**197 days**	**Wed 6/22/16**	**Wed 3/22/17**
106			**Construction Phase I (Buildings 6, 7)**	**200 days**	**Thu 3/23/17**	**Wed 12/27/17**
107			**CO for Phase I**	**0 days**	**Wed 12/27/17**	**Wed 12/27/17**
108			**Construction Phase II (Buildings 1-5)**	**300 days**	**Thu 7/27/17**	**Wed 9/19/18**
109			**CO for Phase II**	**0 days**	**Wed 9/19/18**	**Wed 9/19/18**
110			**Completion/Compliance Letter (Environmental)**	**0 days**	**Thu 9/20/18**	**Thu 9/20/18**
111			Lease Up	100 days	Thu 9/20/18	Wed 2/6/19
112			Property is fully leased	0 days	Wed 2/6/19	Wed 2/6/19



Project: 2744 East 11th Street P
Date: Thu 7/7/16

Task	Project Summary	Manual Task	Start-only	Deadline
Split	Inactive Task	Duration-only	Finish-only	Progress
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone	