

Appendix E

Soil Vapor Investigation Report



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October 3, 2017

Nicholas Taylor
City of Anaheim
200 South Anaheim Boulevard
Suite 162
Anaheim, CA 92805

Subject: Submittal – Soil Vapor Investigation Report for Former E-Z Service Station, 3175 West Ball Road, Anaheim, CA

Dear Mr. Taylor:

Attached please find the soil vapor investigation report for the Former E-Z Service Station, located at 3175 West Ball Road in Anaheim, California. The report includes the results of the soil vapor sampling conducted at the site and the human health risk assessment. A draft report was reviewed by Dr. Jill Ryer-Powder, a Board-certified toxicologist. Dr. Ryer-Powder's comments were incorporated into this final report.

If you have any questions, please feel free to contact me at 760-479-4152 or npeacock@dudek.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Nicole Peacock".

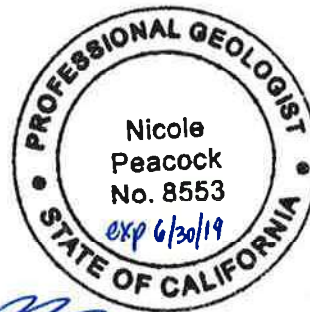
Nicole Peacock
Senior Engineer
Dudek

**Soil Vapor Investigation Report
for
Former E-Z Service Station
3175 West Ball Road
Anaheim, California
Development Case No. 2016-00074**

Prepared for: City of Anaheim
200 South Anaheim Boulevard
Anaheim, California

Prepared by:

DUDEK
605 Third Street
Encinitas, CA 92024



A handwritten signature in blue ink, appearing to read "N Peacock", written over a horizontal line.

Nicole Peacock, P.E., P.G.
Senior Environmental Engineer

October 2017

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1. Introduction

This soil vapor investigation report has been prepared by Dudek on behalf of the City of Anaheim for the property located at 3175 West Ball Road in Anaheim, California (the site; Figure 1). The site is a former E-Z Service Gas Station. A release of gasoline at the site was monitored and remediated, leading to case closure by the Regional Water Quality Control Board (RWQCB). The case closure was based on continued commercial/industrial land use.

Soil vapor sampling and a vapor human health risk assessment were proposed to satisfy the RWQCB requirements associated with the proposed land use change at the site from commercial to residential (RM4). This analysis does not contemplate the human health risk for a subgrade structure. If a subgrade structure, such as an underground parking garage, were to be proposed, the vapor human health risk assessment should be reevaluated.

Dudek prepared a soil vapor sampling work plan dated July 2017 (Dudek 2017). The work performed during this soil vapor investigation was performed in accordance with the July 2017 Soil Vapor Sampling Work Plan and the Department of Toxic Substances Control (DTSC) Soil Gas Advisory (DTSC 2015).

The purpose of the soil vapor investigation was to collect data to estimate the potential human health risk to future building occupants due to vapor intrusion of gasoline-related volatile organic compounds (VOCs) from the subsurface.

2. Site Description

2.1. Location

The site is located at 3175 West Ball Road in Anaheim, California, in a mixed commercial and multi-family residential setting (Figure 1). According to the Orange County Tax Assessor online database, the site is located within Assessor's Parcel Number 079-882-34.

2.2. Site History

The site was operated as an E-Z Serve gasoline service station from 1963 through 1988. In 1988, three 10,000-gallon capacity underground storage tanks (USTs) and one 500-gallon capacity used oil UST were removed from the site. During tank removal, tanks were found to be corroded and leaking; free product was observed in the tank excavation.

From 1988 to 2000, site characterization and remediation efforts included soil borings, hydropunch sampling, installation and sampling of groundwater monitoring wells, and a brief dual-phase vapor extraction/air sparge pilot test.

In 2000, more than 3,000 tons of petroleum-contaminated soil were removed from the site. The excavation floor was treated with oxygen-release compound (ORC) and a SoilKleen/water mixture to facilitate microbial breakdown of residual petroleum. More than 1,000 gallons of free product and nearly 60,000 gallons of impacted groundwater were removed during the excavation dewatering activities in 2000.

From 2006 through 2011, intermittent remedial efforts included oxygen injection and use of a high vacuum dual-phase extraction (HVDPE) system to extract hydrocarbon vapor and impacted groundwater from the site. Groundwater monitoring continued through 2011, with the final round of sampling occurring in November 2011. Based on the final sampling data in 2011, residual petroleum contamination is expected along the western and southern site boundaries and beneath the adjacent Western Avenue and West Ball Road right-of-ways (Figure 2).

In 2012, the groundwater monitoring wells and oxygen injection wells were decommissioned and the RWQCB issued a site closure letter based on the current land use (commercial use; RWQCB 2012).

2.3. Previous Investigations

Previous investigations conducted on the site include the following:

- Multiple investigations and remedial actions were conducted at the site from 1988 through 2011. Documentation of activities prior to 2004 was not available in the Geotracker database. Details of these investigations are summarized in the closure letter; select historical groundwater data is included in the routine groundwater monitoring reports. The reports indicate that free product gasoline was detected in several on-site wells in the past (MW-2, -3, and -4).
- Delta Environmental Consultants, Inc. Quarterly Groundwater Monitoring Report Third Quarter 2004

This is the earliest groundwater monitoring report available in the Geotracker database. Ten wells were sampled in October 2004. Depth to groundwater ranged from approximately 8.5 to 11 feet below ground surface (bgs). The maximum gasoline-range petroleum hydrocarbon concentration detected during this event was 36,000 micrograms per liter (µg/L) from MW-7. The report concluded that there were no significant changes in petroleum hydrocarbon concentrations over the past 12 months.

- GeoEnviro Services, Inc. Semi-Annual Groundwater Monitoring and Sampling, Fourth Quarter 2011

This is the most recent groundwater monitoring data available in the Geotracker database. Sixteen groundwater wells were sampled in November 2011, including onsite and off-site monitoring wells and onsite oxygen injection wells. Depths to groundwater were reported to range from approximately 6 to 8 feet bgs. Seven of the 16 wells had no detectable levels of total petroleum hydrocarbons (TPH) gasoline or related constituents. The maximum TPH gasoline concentration detected was 28,400 µg/L from well MW-7, located just outside the southwest corner of the property, on West Ball Road. The maximum benzene, toluene, ethylbenzene, and xylenes (BTEX) detections also occurred at off-site well MW-7, where benzene was detected at a concentration of 7,400 µg/L, toluene at 660 µg/L, ethylbenzene at 1,300 µg/L, and total xylenes at 2,200 µg/L. Other wells in which TPH gasoline was detected above the reporting limit include MW-3R and MW-11, located on-site, near the southern border of the site, MW-4 (off-site), and OI-4 (on-site), located near the west border of the site. Well MW-13 was not sampled and MW-8 was destroyed in 2008 after nine consecutive quarters of non-detects. The highest on-site benzene concentration reported in November 2011 was 2,300 µg/L, at MW-11. Benzene concentrations are shown on Figure 2.

- SWRCB Underground Storage Tank Cleanup Fund 5-Year Review Summary 4th Review, USTCF Claim No.: 9162. January 2011

This document provides basic information including a table of well construction dates and screen intervals. Most site-related groundwater monitoring wells were

screened from 5 to 20 feet bgs. Three oxygen injection wells were screened at 10 to 30 feet bgs, and one oxygen injection well was screened 20 to 30 feet bgs. Soil types are described as interbedded silts and sands with lesser amounts of clay.

- RWQCB Closure Summary, Former E-Z Service Station No. #100842, April 2012.

This summary provides a detailed overview of site activities beginning with release discovery in 1988 through site closure in 2012. The reported history of site characterization and remediation activities is summarized in Section 2.2 of this Work Plan. Maximum pre- and post-remediation contaminant concentrations in groundwater are discussed below.

Free product was last observed in site monitoring wells in 2005. Aside from free product observations, the maximum detections of TPH gasoline, BTEX, and selected additives are provided in the table below.

Table 1
Historical Groundwater Sampling Results (micrograms per liter, µg/L)

Chemical	Historical Maximum Detection (location, year) 1991 through 2011	Maximum Detection at Final Sampling, November 2011 (location)	Maximum On-Site Detection at Final Sampling, November 2011 (location)
TPH Gasoline	250,000 (MW-2, 1993)	28,400 (MW-7)	7,670 (OI-4)
Benzene	32,000 (MW-2, 1993)	7,400 (MW-7)	2,300 (MW-11)
Toluene	24,000 (MW-7, 1994)	660 (MW-7)	280 (OI-4)
Ethylbenzene	53,000 (MW-2, 1993)	1,300 (MW-7)	400 (OI-4)
Total Xylenes	35,600 (MW-2, 1992)	2,200 (MW-7)	520 (OI-4)
MTBE	5,400 (MW-7, 2000)	Not detected	Not detected
Tert butanol (TBA)	160 (MW-7, 2002)	Not detected	Not detected
Di-isopropyl ether (DIPE)	93 (MW-3, 2002)	Not detected	Not detected
Ethyl-tert-butyl-ether (ETBE)	89 (MW-3, 2002)	Not detected	Not detected
Tert-amyl methyl ether (TAME)	110 (MW-3, 2002)	Not detected	Not detected

3. Environmental Setting

3.1. Site Topography

The subject property is currently vacant, with no remaining pavement or structures. The site consists of approximately 0.35 acres and is relatively flat, with an average elevation of 64 feet above mean sea level (amsl).

3.2. Site Geology and Soil Type

During the 2008 installation of oxygen injection wells, subsurface soils were continuously logged; boring logs were available from the Geotracker database. Based on the soil descriptions from the 2011 RWQCB 5-Year Review documents, soils are typically interbedded layers of silt and sand. Based on the three available boring logs, soil in the upper 5 feet bgs is silty sand to sandy silt.

3.3. Site Hydrogeologic Setting

According to the 2012 closure letter, no active beneficial use groundwater wells are located down-gradient of the site within a one-mile radius.

The depth to groundwater during the November 2011 groundwater sampling event was approximately 6 to 8 feet bgs. Historical groundwater measurements range from 5.4 to 17.8 feet bgs since the site has been under investigation. The groundwater flow direction based on water levels measured in the monitoring wells is typically southwest but can vary from south to west.

4. Sampling Activities

4.1. Utility Clearance

Dudek marked each of the 16 soil vapor probe locations on-site with white flags. On July 13, 2017, a private utility locator, ULS Services Corporation, of San Diego, California, conducted a utility survey at the site. ULS Services marked the locations of public utilities and other subsurface conflicts in the vicinity of the boring locations. Dudek also contacted Underground Service Alert (USA) and notified them of pending soil boring activities. Dudek did not encounter subsurface utilities during drilling activities.

4.2. Soil Vapor Probe Installation

Sixteen temporary soil vapor probes were installed on July 18, 2017 by Millennium Environmental, Inc. (C-57 License # 876595) using a limited access direct push drill rig. The soil vapor probes were installed to a depth of 5 feet bgs and were completed with 1/4-inch nylon-based tubing. Filter pack was placed 0.5 feet above and below the probe tip, with a hydrated bentonite seal at the surface. Each probe was secured with a valve. The 16 soil vapor probes were installed under Anaheim Public Utilities Permit #UWP-0001576. The soil vapor probe locations are presented on Figure 3.

4.3. Soil Vapor Probe Sampling Activities

The soil vapor sampling was conducted on July 18, 2017 in accordance with DTSC soil vapor sampling guidance (DTSC, 2015). During the sampling event, the soil vapor probes were sampled following a minimum of 2 hours after they had been installed. The soil vapor samples were collected using a glass syringe and were analyzed onsite by Jones Environmental via mobile laboratory. The soil vapor samples were analyzed for VOCs using Environmental Protection Agency (EPA) Method 8260B within 30 minutes of collection.

Prior to sample collection, a tracer gas mixture of n-pentane, n-hexane, and n-heptane was placed at the tubing-surface interface to verify that the wells were properly sealed. Soil vapor samples were collected from each of the probes by the mobile laboratory operator using glass, gas-tight syringes with Teflon plungers. Three sample volumes were purged prior to sample collection.

Soil samples were also collected from six soil vapor sample locations (Figure 3) during boring advancement using the limited access rig. Soil samples were collected in acetate sleeves, stored in a cooler on ice, and analyzed by Jones Environmental.

The weather conditions during the sampling event were sunny and warm.

4.4. Investigation Derived Waste

No investigation derived waste was produced during the soil vapor and soil sampling event.

5. Analytical Results

The soil vapor samples collected during the sampling event were collected and analyzed by Jones Environmental using an on-site mobile laboratory. The soil vapor samples were analyzed for VOCs by EPA Method 8260B. Analytical results are summarized in Table 2. Sample locations are shown on Figure 3. The complete laboratory analytical reports are presented in Appendix A.

During the soil vapor sampling event, VOCs were detected in all 16 soil vapor probes (Table 2).

Table 2
Soil Vapor Sampling Analytical Results

VOCs by EPA Method 8260B (micrograms per cubic meter, µg/m³)									
Sample Identifier	Date Sampled	Benzene	Chloroform	Ethylbenzene	Isopropylbenzene	Styrene	Toluene	m,p-Xylene	o-Xylene
SV1-5'	07/18/17	<8	8	<8	<8	<8	40	<8	<8
SV2-5'	07/18/17	<8	<8	<8	<8	<8	83	<8	<8
SV3-5'	07/18/17	<8	<8	9	<8	<8	118	8	<8
SV4-5'	07/18/17	<8	<8	<8	<8	<8	56	<8	<8
SV5-5'	07/18/17	14	<8	14	12	<8	148	20	<8
SV6-5'	07/18/17	<8	<8	9	<8	8	80	<8	<8
SV7-5'	07/18/17	<8	<8	<8	<8	<8	26	<8	<8
SV8-5'	07/18/17	64	<8	25	12	15	196	41	14
SV8-5' REP	07/18/17	53	<8	22	<8	12	185	45	13
SV9-5'	07/18/17	35	<8	20	9	<8	194	46	13
SV10-5'	07/18/17	26	<8	11	<8	<8	100	23	<8
SV11-5'	07/18/17	<8	<8	<8	<8	<8	43	<8	<8
SV12-5'	07/18/17	35	<8	28	<8	13	196	49	15
SV13-5'	07/18/17	16	<8	15	<8	<8	129	27	<8
SV14-5'	07/18/17	18	<8	11	<8	<8	114	18	<8
SV15-5'	07/18/17	<8	<8	<8	<8	<8	54	16	<8
SV16-5'	07/18/17	23	<8	20	<8	<8	175	42	12
DTSC HERO Note 3 Screening Level - Residential		97	120*	1,100*	420,000*	940,000	310,000	100,000*	100,000*

Notes: Detections are in bold type

<8 = less than the laboratory reporting limit

VOCs not listed were not detected above laboratory reporting limits

Complete results can be found in Appendix A

DTSC HERO Note 3 Screening Levels assume a 1,000-fold attenuation factor for soil vapor to air (DTSC 2011)

* EPA Regional Screening Level, assuming a 1,000-fold attenuation factor for soil vapor to air (DTSC 2011)
µg/m³ = micrograms per cubic meter

All six soil samples were non-detect for all VOCs.

5.1. *Quality Assurance/Quality Control*

Field and laboratory quality assurance measures included leak checks, duplicate sample collection and analysis, evaluation of surrogate percent recovery, and analysis of blank samples.

Leak checks were conducted at every sample location during the soil vapor probe sampling event. The leak check compound, a gas mixture of n-pentane, n-hexane, and n-heptane, was placed at the tubing-surface interface before sampling to ensure a leak free soil vapor probe. No n-pentane, n-hexane, or n-heptane were found in any of the soil vapor samples.

A duplicate soil vapor sample was collected from SV8-5' during the sampling event. The relative percent difference (RPD) for all detections, except isopropylbenzene, between the original and the duplicate sample detections ranged between 0% and 22.2%, which is within acceptable precision. The RPD for isopropylbenzene could not be calculated as the compound was not detected in the duplicate sample.

As part of the laboratory quality assurance, the surrogates dibromofluoromethane, toluene-d₈, and 4-bromofluorobenzene were added to each sample at known concentrations. Analytical results were compared to the known concentration of each surrogate added and reported as a percent recovered. The percent recoveries for all surrogates were within the acceptable range of 60% to 140%, indicating acceptable accuracy.

The method blank samples analyzed by the laboratory for the soil vapor sampling event did not contain VOCs above the laboratory reporting limits.

This quality assurance and quality control evaluation indicates that the data were of acceptable quality.

6. Human Health Risk Assessment

A human health risk assessment was performed using the maximum detected soil vapor concentrations of all detected VOCs during the sampling event (Table 2). These data were input into the DTSC Screening-Level Risk Model (DTSC 2014). The purpose of the risk assessment is to evaluate the carcinogenic and non-carcinogenic risk to future site receptors.

This human health risk assessment considers the exposure pathways of vapor intrusion and direct contact. However, as no contaminants were detected in the soil samples collected, vapor intrusion is the only applicable exposure pathway.

Default model parameters were used in the risk calculations. These default values for the residential scenario assume exposure 24 hours a day, 350 days per year, for 26 years. Default soil properties values were used because future building construction could modify the shallow soils, rendering the existing site soils properties inapplicable. Risk model input values and calculations are provided in Appendix B.

6.1. Risk Assessment Results

The modeled excess carcinogenic risk for the site is 1×10^{-6} (Table 3). This is equal to the *de minimus* human health risk threshold of 1×10^{-6} .

Table 3
Human Health Risk Assessment

VOC	Input Value into Risk Model ($\mu\text{g}/\text{m}^3$ vapor)	Carcinogenic Risk	Non-Carcinogenic Hazard Risk
Benzene	64	9.1E-07	2.8E-02
Chloroform	8	8.4E-08	1.0E-04
Ethylbenzene	28	3.0E-08	3.2E-05
Isopropylbenzene (Cumene)	12	NA	3.3E-05
Styrene	15	NA	2.0E-05
Toluene	196	NA	8.1E-04
Xylene m,p	49	NA	5.7E-04
Xylene o	15	NA	1.7E-04
Total Risk		1E-06	0.03
Human Health De Minimus Risk Threshold		1E-06	1.0

Notes: VOC = Volatile Organic Compound

$\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

The cumulative non-carcinogenic health hazard index at the site was calculated as 0.03. This hazard index value is below the threshold value of 1.0. Therefore, the non-carcinogenic health hazard index is considered less than significant.

6.2. Risk Assessment Discussions

Uncertainties in the risk assessment can arise from only collecting one round of soil vapor data or from using the default model values. Due to uncertainties inherent in the risk calculation, it is appropriate to conservatively pad the risk calculation.

The risk assessment was conservative in that it uses the maximum concentrations for each detected contaminant at the site. This makes the conservative assumption that the maximum concentration detected at the site is present under the entire building footprint. Additionally, it makes the conservative assumption that a compound (e.g. chloroform) that was only detected in one of the 16 site samples is present under the entire building footprint. These conservative assumptions increase the calculated risk level, such that the risk level would be less than the de minimus level of one in a million if the 95% upper confidence level of the mean was used instead of maximum concentrations or if chloroform was not included as it was only detected in one of 16 samples.

As the risk level is equal to the de minimus level, mitigation is not required for residential use. However, in consideration of the uncertainties noted, mitigation of vapor intrusion into future residences could be implemented. Mitigation could include any of the following:

- Limiting vapor intrusion into future residences through use of a well-ventilated ground-level garage that is not intended for human occupation; or
- Installation of a sub-slab liner/passive ventilation to limit vapor intrusion to the future residences.

7. Conclusions

The site is a former E-Z Service Gas Station. A release of gasoline at the site was monitored and remediated, leading to case closure by the RWQCB. The case closure was based on continued commercial/industrial land use. The proposed residential use of the site requires re-evaluation of the site contamination.

Based on the presence of VOCs in groundwater at the time of case closure (2012), there was a potential for vapor intrusion of VOCs to the site building. Soil vapor sampling was conducted to determine the concentrations of VOCs in the shallow subsurface that have the potential to migrate to the future site building and impact human health.

Soil vapor sampling conducted on July 18, 2017 indicated the presence of VOCs (mainly the gasoline constituents benzene, ethylbenzene, toluene, and xylenes) in the subsurface at the site. Concentrations of chloroform, isopropylbenzene, and styrene were also detected above the laboratory reporting limits.

As a conservative estimate of human health risk, Dudek used the maximum concentrations of each detected compound in the DTSC Screening-Level Risk Model. A carcinogenic risk of 1×10^{-6} and a non-carcinogenic health hazard index of 0.03 were calculated using these values. While the hazard index is within the acceptable threshold of less than 1.0, the cancer risk is equal to the de minimus cancer risk level of one in a million (1×10^{-6}).

As the risk level is equal to the de minimus level, mitigation is not required for residential use. However, in consideration of the uncertainties noted, mitigation of vapor intrusion into future residences could be implemented. Mitigation could include either or both of the following:

- Limiting vapor intrusion into future residences through use of a well-ventilated ground-level garage that is not intended for human occupation; or
- Installation of a sub-slab liner/passive ventilation to limit vapor intrusion to the future residences.

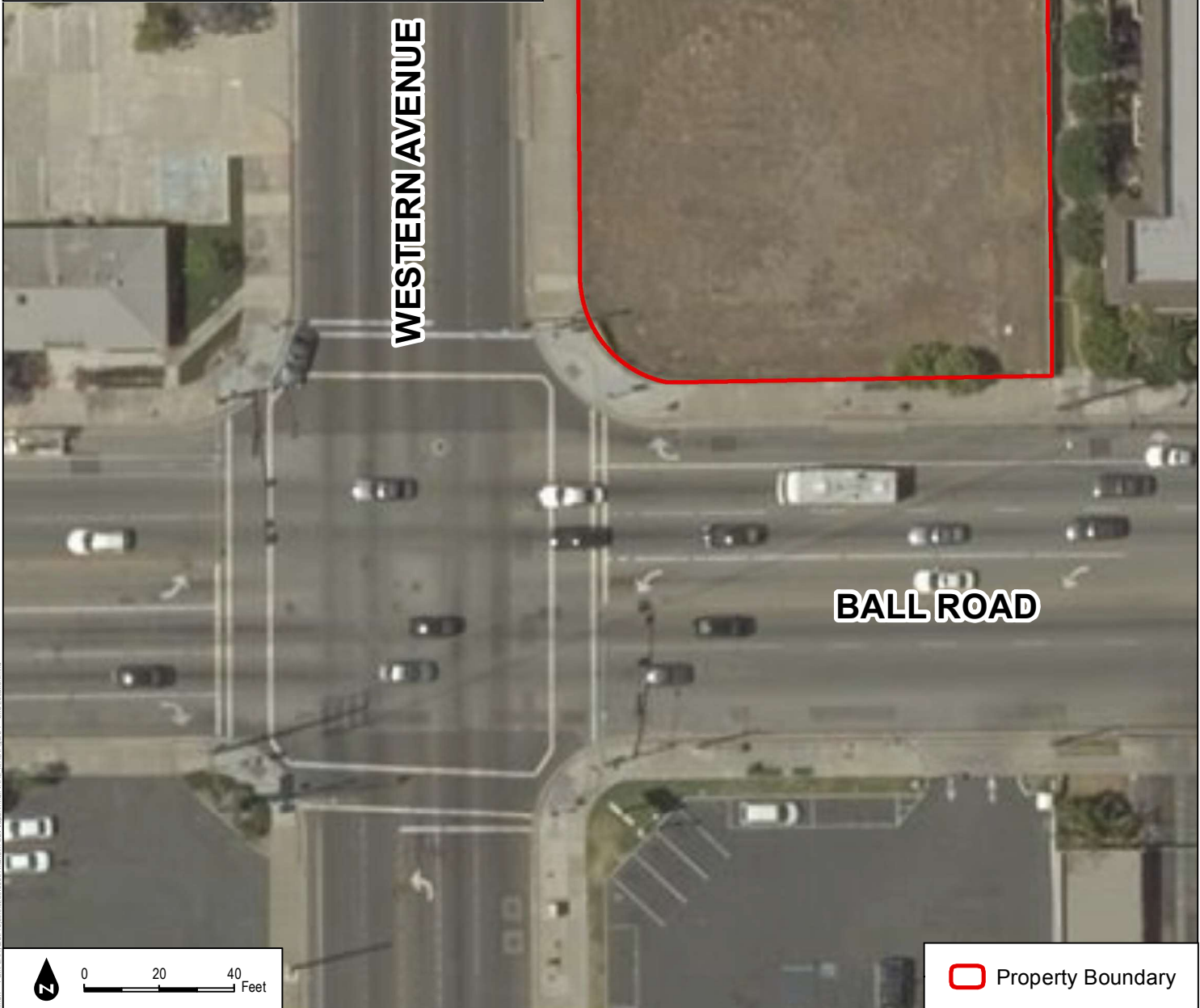
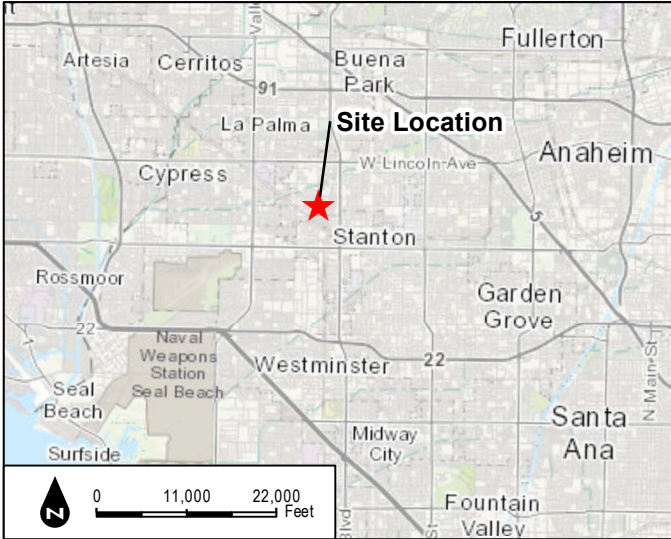
In addition to the recommended mitigation for future development, Dudek recommends the following mitigation during construction activities:

- Protection of worker health and safety through implementation of a health and safety plan.
- Based on the soil sampling conducted at the site and based on the site remediation, impacted soils are not anticipated to be encountered during construction activities. However, depending on the depth of excavation required for the construction work, impacted groundwater may be encountered. Any extracted groundwater should be managed in

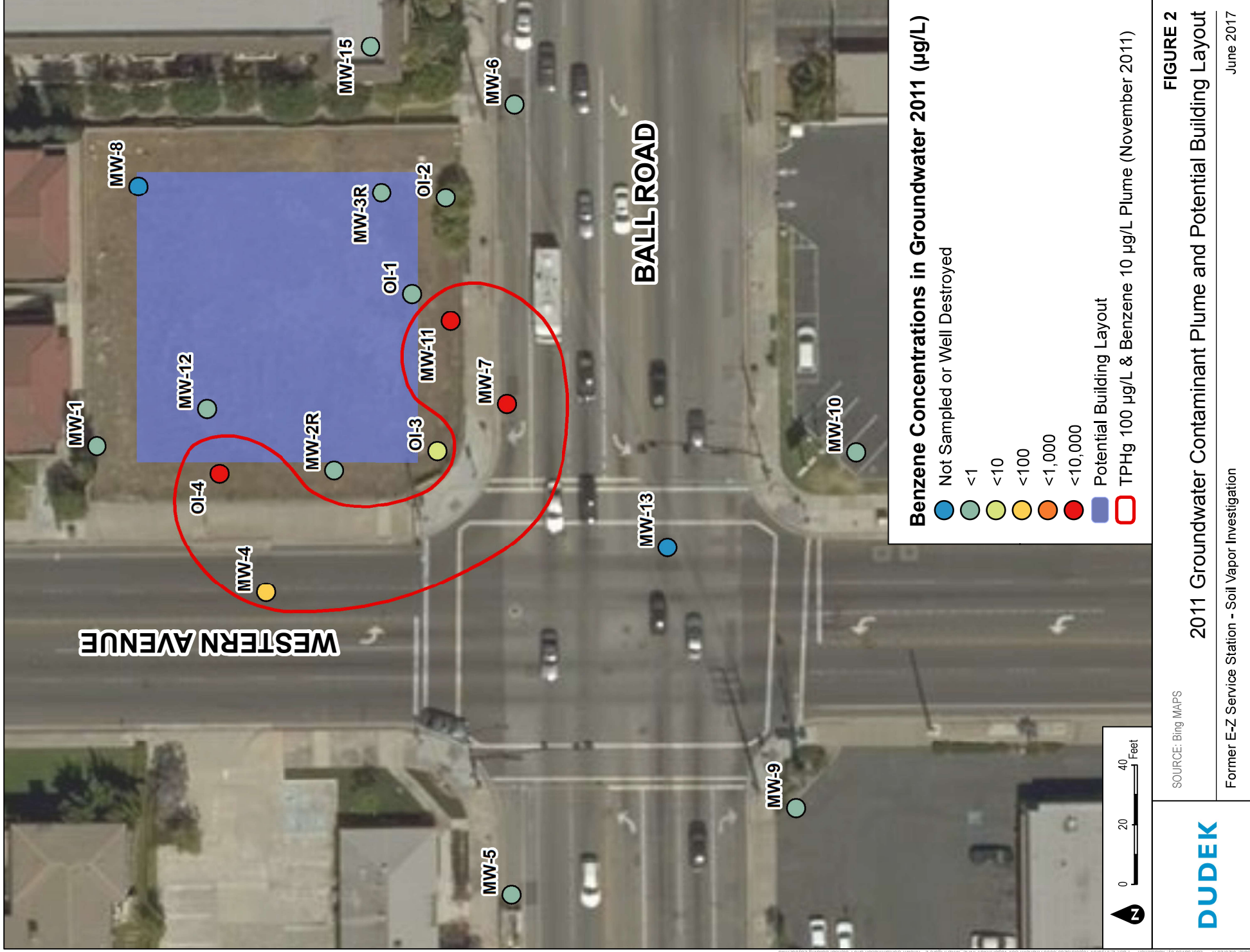
accordance with the National Pollutant Discharge Elimination System (NPDES) permit for construction dewatering.

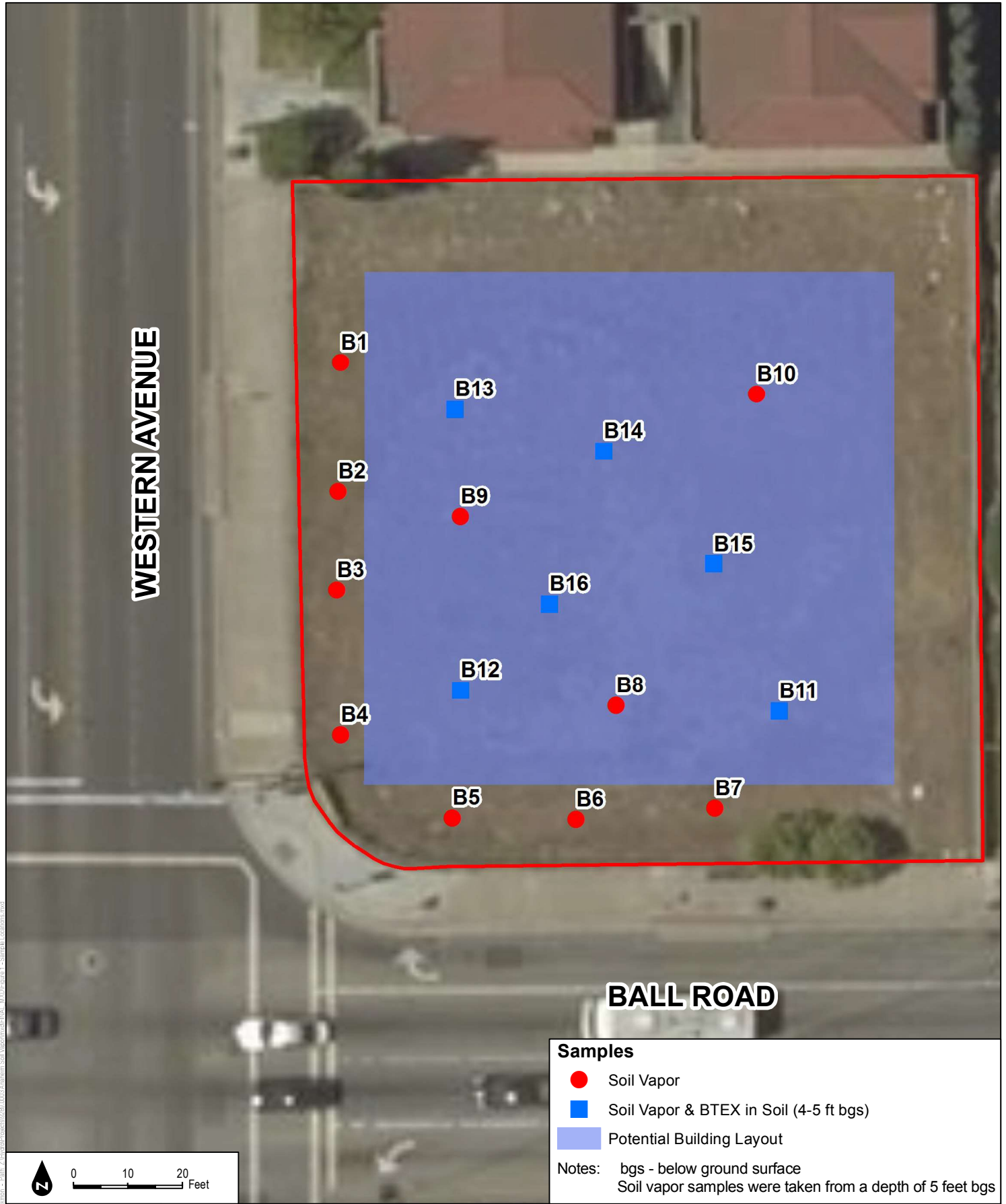
8. References

- DTSC, 2011. Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). October.
- DTSC, 2014. Screening-Level Model for Soil Gas Contamination. Updated December.
- DTSC, 2015. Advisory Active Soil Gas Investigations. California Environmental Protection Agency, Department of Toxic Substances Control, Los Angeles Regional Water Quality Control Board, San Francisco Water Quality Control Board.
- Dudek, 2017. Soil Vapor Sampling Work Plan for Former E-Z Service Station 3175 West Ball Road, Anaheim, California. July.
- RWQCB, 2012. Letter RE: Case Closure and Well Destruction Approval, Former E-Z Service #100842, 3175 W. Ball Road, Anaheim, California. April 9.



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SOURCE: Bing MAPS

Former E-Z Service Station - Soil Vapor Investigation Report

FIGURE 3
Sample Locations

July 2017

APPENDIX A

Laboratory Reports



714-449-9937
562-646-1611
805-399-0060

11007 FOREST PLACE
SANTA FE SPRINGS, CA 90670
WWW.JONESENV.COM

**JONES ENVIRONMENTAL
LABORATORY RESULTS**

Client: Dudek
Client Address: 605 3rd Street
Encinitas, CA 92024

Report date: 7/18/2017
JEL Ref. No.: F-0030
Client Ref. No.: 9289.003

Attn: Nicole Peacock

Date Sampled: 7/18/2017
Date Received: 7/18/2017
Date Analyzed: 7/18/2017
Physical State: Soil Gas

Project Address: 3175 West Ball Rd
Anaheim, CA

ANALYSES REQUESTED

1. EPA 8260B – Volatile Organics by GC/MS + Oxygenates

Sampling – Soil Gas samples were collected in glass gas-tight syringes equipped with Teflon plungers.

A tracer gas mixture of n-pentane, n-hexane, and n-heptane was placed at the tubing-surface interface before sampling. These compounds were analyzed during the 8260B analytical run to determine if there were surface leaks into the subsurface due to improper installation of the probe. No n-pentane, n-hexane, or n-heptane was found in any of the samples reported herein.

The sampling rate was approximately 200 cc/min, except when noted differently on the chain of custody record, using a glass gas-tight syringe. Purging was completed using a pump set at approximately 200 cc/min, except when noted differently on the chain of custody record. A default of 3 purge volumes was used as recommended by July 2015 DTSC/RWQCB guidance documents.

Prior to purging and sampling of soil gas at each point, a shut-in test was conducted to check for leaks in the above ground fittings. The shut-in test was performed on the above ground apparatus by evacuating the line to a vacuum of 100 inches of water, sealing the entire system and watching the vacuum for at least one minute. A vacuum gauge attached in parallel to the apparatus measured the vacuum. If there was any observable loss of vacuum, the fittings were adjusted as needed until the vacuum did not change noticeably. The soil gas sample was then taken.

No flow conditions occur when a sampling rate greater than 10 mL/min cannot be maintained without applying a vacuum greater than 100 inches of water to the sampling train. The sampling train is left at a vacuum for no less than three minutes. If the vacuum does not subside appreciably after three minutes, the sample location is determined to be a no flow sample.

Analytical – Soil Gas samples were analyzed using EPA Method 8260 that includes extra compounds required by DTSC/RWQCB (such as Freon 113). Instrument Continuing Calibration Verification, QC Reference Standards, Instrument Blanks and Sampling Blanks were analyzed every 12 hours as prescribed by the method. In addition, a Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicate (LCSD) were analyzed with each batch of Soil Gas samples. A duplicate/replicate sample was analyzed each day of the sampling activity. All samples were injected into the GC/MS system within 30 minutes of sampling.

Approval:

Colby Wakeman
QA/QC Manager



714-449-9937
562-646-1611
805-399-0060

11007 FOREST PLACE
SANTA FE SPRINGS, CA 90670
WWW.JONESENV.COM

JONES ENVIRONMENTAL LABORATORY RESULTS

Client: Dudek
Client Address: 605 3rd Street
Encinitas, CA 92024

Report date: 7/18/2017
JEL Ref. No.: F-0030
Client Ref. No.: 9289.003

Attn: Nicole Peacock

Date Sampled: 7/18/2017
Date Received: 7/18/2017
Date Analyzed: 7/18/2017

Project Address: 3175 West Ball Rd
Anaheim, CA

Physical State: Soil Gas

EPA 8260B – Volatile Organics by GC/MS + Oxygenates

<u>Sample ID:</u>	SV1-5'	SV2-5'	SV3-5'	SV4-5'	SV5-5'		
<u>JEL ID:</u>	F-0030-01	F-0030-02	F-0030-03	F-0030-04	F-0030-05	<u>Practical Quantitation Limit</u>	<u>Units</u>
Analytes:							
Benzene	ND	ND	ND	ND	14	8	µg/m3
Bromobenzene	ND	ND	ND	ND	ND	8	µg/m3
Bromodichloromethane	ND	ND	ND	ND	ND	8	µg/m3
Bromoform	ND	ND	ND	ND	ND	8	µg/m3
n-Butylbenzene	ND	ND	ND	ND	ND	8	µg/m3
sec-Butylbenzene	ND	ND	ND	ND	ND	8	µg/m3
tert-Butylbenzene	ND	ND	ND	ND	ND	8	µg/m3
Carbon tetrachloride	ND	ND	ND	ND	ND	8	µg/m3
Chlorobenzene	ND	ND	ND	ND	ND	8	µg/m3
Chloroform	8	ND	ND	ND	ND	8	µg/m3
2-Chlorotoluene	ND	ND	ND	ND	ND	8	µg/m3
4-Chlorotoluene	ND	ND	ND	ND	ND	8	µg/m3
Dibromochloromethane	ND	ND	ND	ND	ND	8	µg/m3
1,2-Dibromo-3-chloropropane	ND	ND	ND	ND	ND	8	µg/m3
1,2-Dibromoethane (EDB)	ND	ND	ND	ND	ND	8	µg/m3
Dibromomethane	ND	ND	ND	ND	ND	8	µg/m3
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	8	µg/m3
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	8	µg/m3
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	8	µg/m3
Dichlorodifluoromethane	ND	ND	ND	ND	ND	8	µg/m3
1,1-Dichloroethane	ND	ND	ND	ND	ND	8	µg/m3
1,2-Dichloroethane	ND	ND	ND	ND	ND	8	µg/m3
1,1-Dichloroethene	ND	ND	ND	ND	ND	8	µg/m3
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	8	µg/m3
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	8	µg/m3
1,2-Dichloropropane	ND	ND	ND	ND	ND	8	µg/m3
1,3-Dichloropropane	ND	ND	ND	ND	ND	8	µg/m3
2,2-Dichloropropane	ND	ND	ND	ND	ND	8	µg/m3
1,1-Dichloropropene	ND	ND	ND	ND	ND	8	µg/m3

JONES ENVIRONMENTAL LABORATORY RESULTS

EPA 8260B – Volatile Organics by GC/MS + Oxygenates

<u>Sample ID:</u>	SV1-5'	SV2-5'	SV3-5'	SV4-5'	SV5-5'		
<u>JEL ID:</u>	F-0030-01	F-0030-02	F-0030-03	F-0030-04	F-0030-05	<u>Practical Quantitation</u>	<u>Units</u>
Analytes:						<u>Limit</u>	
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	8	µg/m3
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	8	µg/m3
Ethylbenzene	ND	ND	9	ND	14	8	µg/m3
Freon 113	ND	ND	ND	ND	ND	40	µg/m3
Hexachlorobutadiene	ND	ND	ND	ND	ND	8	µg/m3
Isopropylbenzene	ND	ND	ND	ND	12	8	µg/m3
4-Isopropyltoluene	ND	ND	ND	ND	ND	8	µg/m3
Methylene chloride	ND	ND	ND	ND	ND	8	µg/m3
Naphthalene	ND	ND	ND	ND	ND	40	µg/m3
n-Propylbenzene	ND	ND	ND	ND	ND	8	µg/m3
Styrene	ND	ND	ND	ND	ND	8	µg/m3
1,1,1,2-Tetrachloroethane	ND	ND	ND	ND	ND	8	µg/m3
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	8	µg/m3
Tetrachloroethylene	ND	ND	ND	ND	ND	8	µg/m3
Toluene	40	83	118	56	148	8	µg/m3
1,2,3-Trichlorobenzene	ND	ND	ND	ND	ND	40	µg/m3
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	8	µg/m3
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	8	µg/m3
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	8	µg/m3
Trichloroethylene	ND	ND	ND	ND	ND	8	µg/m3
Trichlorofluoromethane	ND	ND	ND	ND	ND	8	µg/m3
1,2,3-Trichloropropane	ND	ND	ND	ND	ND	8	µg/m3
1,2,4-Trimethylbenzene	ND	ND	ND	ND	ND	8	µg/m3
1,3,5-Trimethylbenzene	ND	ND	ND	ND	ND	8	µg/m3
Vinyl chloride	ND	ND	ND	ND	ND	8	µg/m3
m,p-Xylene	ND	ND	8	ND	20	8	µg/m3
o-Xylene	ND	ND	ND	ND	ND	8	µg/m3
MTBE	ND	ND	ND	ND	ND	40	µg/m3
Ethyl-tert-butylether	ND	ND	ND	ND	ND	40	µg/m3
Di-isopropylether	ND	ND	ND	ND	ND	40	µg/m3
tert-amylmethylether	ND	ND	ND	ND	ND	40	µg/m3
tert-Butylalcohol	ND	ND	ND	ND	ND	400	µg/m3
TIC:							
n-pentane	ND	ND	ND	ND	ND	400	µg/m3
n-hexane	ND	ND	ND	ND	ND	400	µg/m3
n-heptane	ND	ND	ND	ND	ND	400	µg/m3
Dilution Factor	1	1	1	1	1		
Surrogate Recoveries:						QC Limits	
Dibromofluoromethane	102%	99%	104%	102%	104%	60 - 140	
Toluene-d ₈	100%	104%	103%	104%	102%	60 - 140	
4-Bromofluorobenzene	92%	97%	95%	98%	101%	60 - 140	

F-071817-F- F-071817-F- F-071817-F- F-071817-F- F-071817-F-
0030 0030 0030 0030 0030

ND= Not Detected



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JONES ENVIRONMENTAL LABORATORY RESULTS

Client: Dudek
Client Address: 605 3rd Street
Encinitas, CA 92024

Attn: Nicole Peacock

Project Address: 3175 West Ball Rd
Anaheim, CA

Report date: 7/18/2017
JEL Ref. No.: F-0030
Client Ref. No.: 9289.003

Date Sampled: 7/18/2017
Date Received: 7/18/2017
Date Analyzed: 7/18/2017
Physical State: Soil Gas

EPA 8260B – Volatile Organics by GC/MS + Oxygenates

Sample ID:	SV6-5'	SV7-5'	SV8-5'	SV8-5' REP	SV9-5'		
JEL ID:	F-0030-06	F-0030-07	F-0030-08	F-0030-09	F-0030-10	Practical Quantitation Limit	Units
Analytes:							
Benzene	ND	ND	64	53	35	8	µg/m3
Bromobenzene	ND	ND	ND	ND	ND	8	µg/m3
Bromodichloromethane	ND	ND	ND	ND	ND	8	µg/m3
Bromoform	ND	ND	ND	ND	ND	8	µg/m3
n-Butylbenzene	ND	ND	ND	ND	ND	8	µg/m3
sec-Butylbenzene	ND	ND	ND	ND	ND	8	µg/m3
tert-Butylbenzene	ND	ND	ND	ND	ND	8	µg/m3
Carbon tetrachloride	ND	ND	ND	ND	ND	8	µg/m3
Chlorobenzene	ND	ND	ND	ND	ND	8	µg/m3
Chloroform	ND	ND	ND	ND	ND	8	µg/m3
2-Chlorotoluene	ND	ND	ND	ND	ND	8	µg/m3
4-Chlorotoluene	ND	ND	ND	ND	ND	8	µg/m3
Dibromochloromethane	ND	ND	ND	ND	ND	8	µg/m3
1,2-Dibromo-3-chloropropane	ND	ND	ND	ND	ND	8	µg/m3
1,2-Dibromoethane (EDB)	ND	ND	ND	ND	ND	8	µg/m3
Dibromomethane	ND	ND	ND	ND	ND	8	µg/m3
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	8	µg/m3
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	8	µg/m3
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	8	µg/m3
Dichlorodifluoromethane	ND	ND	ND	ND	ND	8	µg/m3
1,1-Dichloroethane	ND	ND	ND	ND	ND	8	µg/m3
1,2-Dichloroethane	ND	ND	ND	ND	ND	8	µg/m3
1,1-Dichloroethene	ND	ND	ND	ND	ND	8	µg/m3
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	8	µg/m3
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	8	µg/m3
1,2-Dichloropropane	ND	ND	ND	ND	ND	8	µg/m3
1,3-Dichloropropane	ND	ND	ND	ND	ND	8	µg/m3
2,2-Dichloropropane	ND	ND	ND	ND	ND	8	µg/m3
1,1-Dichloropropene	ND	ND	ND	ND	ND	8	µg/m3

JONES ENVIRONMENTAL LABORATORY RESULTS

EPA 8260B – Volatile Organics by GC/MS + Oxygenates

Sample ID:	SV6-5'	SV7-5'	SV8-5'	SV8-5' REP	SV9-5'		
JEL ID:	F-0030-06	F-0030-07	F-0030-08	F-0030-09	F-0030-10	<u>Practical</u> <u>Quantitation</u>	<u>Units</u>
Analytes:						<u>Limit</u>	
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	8	µg/m3
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	8	µg/m3
Ethylbenzene	9	ND	25	22	20	8	µg/m3
Freon 113	ND	ND	ND	ND	ND	40	µg/m3
Hexachlorobutadiene	ND	ND	ND	ND	ND	8	µg/m3
Isopropylbenzene	ND	ND	12	ND	ND	8	µg/m3
4-Isopropyltoluene	ND	ND	ND	ND	ND	8	µg/m3
Methylene chloride	ND	ND	ND	ND	ND	8	µg/m3
Naphthalene	ND	ND	ND	ND	ND	40	µg/m3
n-Propylbenzene	ND	ND	ND	ND	ND	8	µg/m3
Styrene	8	ND	15	12	9	8	µg/m3
1,1,1,2-Tetrachloroethane	ND	ND	ND	ND	ND	8	µg/m3
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	8	µg/m3
Tetrachloroethylene	ND	ND	ND	ND	ND	8	µg/m3
Toluene	80	26	196	185	194	8	µg/m3
1,2,3-Trichlorobenzene	ND	ND	ND	ND	ND	40	µg/m3
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	8	µg/m3
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	8	µg/m3
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	8	µg/m3
Trichloroethylene	ND	ND	ND	ND	ND	8	µg/m3
Trichlorofluoromethane	ND	ND	ND	ND	ND	8	µg/m3
1,2,3-Trichloropropane	ND	ND	ND	ND	ND	8	µg/m3
1,2,4-Trimethylbenzene	ND	ND	ND	ND	ND	8	µg/m3
1,3,5-Trimethylbenzene	ND	ND	ND	ND	ND	8	µg/m3
Vinyl chloride	ND	ND	ND	ND	ND	8	µg/m3
m,p-Xylene	ND	ND	41	45	46	8	µg/m3
o-Xylene	ND	ND	14	13	13	8	µg/m3
MTBE	ND	ND	ND	ND	ND	40	µg/m3
Ethyl-tert-butylether	ND	ND	ND	ND	ND	40	µg/m3
Di-isopropylether	ND	ND	ND	ND	ND	40	µg/m3
tert-amylmethylether	ND	ND	ND	ND	ND	40	µg/m3
tert-Butylalcohol	ND	ND	ND	ND	ND	400	µg/m3
TIC:							
n-pentane	ND	ND	ND	ND	ND	400	µg/m3
n-hexane	ND	ND	ND	ND	ND	400	µg/m3
n-heptane	ND	ND	ND	ND	ND	400	µg/m3
Dilution Factor	1	1	1	1	1		
Surrogate Recoveries:						<u>QC Limits</u>	
Dibromofluoromethane	102%	103%	99%	103%	105%	60 - 140	
Toluene-d8	103%	104%	103%	104%	106%	60 - 140	
4-Bromofluorobenzene	96%	96%	99%	98%	99%	60 - 140	

F-071817-F- 0030 F-071817-F- 0030 F-071817-F- 0030 F-071817-F- 0030 F-071817-F- 0030

ND= Not Detected



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JONES ENVIRONMENTAL LABORATORY RESULTS

Client: Dudek
Client Address: 605 3rd Street
Encinitas, CA 92024

Attn: Nicole Peacock

Project Address: 3175 West Ball Rd
Anaheim, CA

Report date: 7/18/2017
JEL Ref. No.: F-0030
Client Ref. No.: 9289.003

Date Sampled: 7/18/2017
Date Received: 7/18/2017
Date Analyzed: 7/18/2017
Physical State: Soil Gas

EPA 8260B – Volatile Organics by GC/MS + Oxygenates

<u>Sample ID:</u>	SV10-5'	SV11-5'	SV12-5'	SV13-5'	SV14-5'		
<u>JEL ID:</u>	F-0030-11	F-0030-12	F-0030-13	F-0030-14	F-0030-15	<u>Practical Quantitation Limit</u>	<u>Units</u>
Analytes:							
Benzene	26	ND	35	16	18	8	µg/m3
Bromobenzene	ND	ND	ND	ND	ND	8	µg/m3
Bromodichloromethane	ND	ND	ND	ND	ND	8	µg/m3
Bromoform	ND	ND	ND	ND	ND	8	µg/m3
n-Butylbenzene	ND	ND	ND	ND	ND	8	µg/m3
sec-Butylbenzene	ND	ND	ND	ND	ND	8	µg/m3
tert-Butylbenzene	ND	ND	ND	ND	ND	8	µg/m3
Carbon tetrachloride	ND	ND	ND	ND	ND	8	µg/m3
Chlorobenzene	ND	ND	ND	ND	ND	8	µg/m3
Chloroform	ND	ND	ND	ND	ND	8	µg/m3
2-Chlorotoluene	ND	ND	ND	ND	ND	8	µg/m3
4-Chlorotoluene	ND	ND	ND	ND	ND	8	µg/m3
Dibromochloromethane	ND	ND	ND	ND	ND	8	µg/m3
1,2-Dibromo-3-chloropropane	ND	ND	ND	ND	ND	8	µg/m3
1,2-Dibromoethane (EDB)	ND	ND	ND	ND	ND	8	µg/m3
Dibromomethane	ND	ND	ND	ND	ND	8	µg/m3
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	8	µg/m3
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	8	µg/m3
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	8	µg/m3
Dichlorodifluoromethane	ND	ND	ND	ND	ND	8	µg/m3
1,1-Dichloroethane	ND	ND	ND	ND	ND	8	µg/m3
1,2-Dichloroethane	ND	ND	ND	ND	ND	8	µg/m3
1,1-Dichloroethene	ND	ND	ND	ND	ND	8	µg/m3
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	8	µg/m3
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	8	µg/m3
1,2-Dichloropropane	ND	ND	ND	ND	ND	8	µg/m3
1,3-Dichloropropane	ND	ND	ND	ND	ND	8	µg/m3
2,2-Dichloropropane	ND	ND	ND	ND	ND	8	µg/m3
1,1-Dichloropropene	ND	ND	ND	ND	ND	8	µg/m3

JONES ENVIRONMENTAL LABORATORY RESULTS

EPA 8260B – Volatile Organics by GC/MS + Oxygenates

<u>Sample ID:</u>	SV10-5'	SV11-5'	SV12-5'	SV13-5'	SV14-5'		
<u>JEL ID:</u>	F-0030-11	F-0030-12	F-0030-13	F-0030-14	F-0030-15	<u>Practical Quantitation</u>	<u>Units</u>
Analytes:						<u>Limit</u>	
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	8	µg/m3
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	8	µg/m3
Ethylbenzene	11	ND	28	15	11	8	µg/m3
Freon 113	ND	ND	ND	ND	ND	40	µg/m3
Hexachlorobutadiene	ND	ND	ND	ND	ND	8	µg/m3
Isopropylbenzene	ND	ND	ND	ND	ND	8	µg/m3
4-Isopropyltoluene	ND	ND	ND	ND	ND	8	µg/m3
Methylene chloride	ND	ND	ND	ND	ND	8	µg/m3
Naphthalene	ND	ND	ND	ND	ND	40	µg/m3
n-Propylbenzene	ND	ND	ND	ND	ND	8	µg/m3
Styrene	ND	ND	13	ND	ND	8	µg/m3
1,1,1,2-Tetrachloroethane	ND	ND	ND	ND	ND	8	µg/m3
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	8	µg/m3
Tetrachloroethylene	ND	ND	ND	ND	ND	8	µg/m3
Toluene	100	43	196	129	114	8	µg/m3
1,2,3-Trichlorobenzene	ND	ND	ND	ND	ND	40	µg/m3
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	8	µg/m3
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	8	µg/m3
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	8	µg/m3
Trichloroethylene	ND	ND	ND	ND	ND	8	µg/m3
Trichlorofluoromethane	ND	ND	ND	ND	ND	8	µg/m3
1,2,3-Trichloropropane	ND	ND	ND	ND	ND	8	µg/m3
1,2,4-Trimethylbenzene	ND	ND	ND	ND	ND	8	µg/m3
1,3,5-Trimethylbenzene	ND	ND	ND	ND	ND	8	µg/m3
Vinyl chloride	ND	ND	ND	ND	ND	8	µg/m3
m,p-Xylene	23	ND	49	27	18	8	µg/m3
o-Xylene	ND	ND	15	ND	ND	8	µg/m3
MTBE	ND	ND	ND	ND	ND	40	µg/m3
Ethyl-tert-butylether	ND	ND	ND	ND	ND	40	µg/m3
Di-isopropylether	ND	ND	ND	ND	ND	40	µg/m3
tert-amylmethylether	ND	ND	ND	ND	ND	40	µg/m3
tert-Butylalcohol	ND	ND	ND	ND	ND	400	µg/m3
TIC:							
n-pentane	ND	ND	ND	ND	ND	400	µg/m3
n-hexane	ND	ND	ND	ND	ND	400	µg/m3
n-heptane	ND	ND	ND	ND	ND	400	µg/m3
Dilution Factor	1	1	1	1	1		
Surrogate Recoveries:						QC Limits	
Dibromofluoromethane	103%	101%	103%	102%	103%	60 - 140	
Toluene-d ₈	101%	99%	101%	102%	103%	60 - 140	
4-Bromofluorobenzene	94%	94%	97%	94%	94%	60 - 140	

F-071817-F- 0030 F-071817-F- 0030 F-071817-F- 0030 F-071817-F- 0030 F-071817-F- 0030

ND= Not Detected



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JONES ENVIRONMENTAL LABORATORY RESULTS

Client: Dudek
Client Address: 605 3rd Street
Encinitas, CA 92024

Attn: Nicole Peacock

Project Address: 3175 West Ball Rd
Anaheim, CA

Report date: 7/18/2017
JEL Ref. No.: F-0030
Client Ref. No.: 9289.003

Date Sampled: 7/18/2017
Date Received: 7/18/2017
Date Analyzed: 7/18/2017
Physical State: Soil Gas

EPA 8260B – Volatile Organics by GC/MS + Oxygenates

Sample ID: SV15-5' SV16-5'

JEL ID: F-0030-16 F-0030-17

Analytes:

			<u>Practical</u> <u>Quantitation</u> <u>Limit</u>	<u>Units</u>
Benzene	ND	23	8	µg/m3
Bromobenzene	ND	ND	8	µg/m3
Bromodichloromethane	ND	ND	8	µg/m3
Bromoform	ND	ND	8	µg/m3
n-Butylbenzene	ND	ND	8	µg/m3
sec-Butylbenzene	ND	ND	8	µg/m3
tert-Butylbenzene	ND	ND	8	µg/m3
Carbon tetrachloride	ND	ND	8	µg/m3
Chlorobenzene	ND	ND	8	µg/m3
Chloroform	ND	ND	8	µg/m3
2-Chlorotoluene	ND	ND	8	µg/m3
4-Chlorotoluene	ND	ND	8	µg/m3
Dibromochloromethane	ND	ND	8	µg/m3
1,2-Dibromo-3-chloropropane	ND	ND	8	µg/m3
1,2-Dibromoethane (EDB)	ND	ND	8	µg/m3
Dibromomethane	ND	ND	8	µg/m3
1,2-Dichlorobenzene	ND	ND	8	µg/m3
1,3-Dichlorobenzene	ND	ND	8	µg/m3
1,4-Dichlorobenzene	ND	ND	8	µg/m3
Dichlorodifluoromethane	ND	ND	8	µg/m3
1,1-Dichloroethane	ND	ND	8	µg/m3
1,2-Dichloroethane	ND	ND	8	µg/m3
1,1-Dichloroethene	ND	ND	8	µg/m3
cis-1,2-Dichloroethene	ND	ND	8	µg/m3
trans-1,2-Dichloroethene	ND	ND	8	µg/m3
1,2-Dichloropropane	ND	ND	8	µg/m3
1,3-Dichloropropane	ND	ND	8	µg/m3
2,2-Dichloropropane	ND	ND	8	µg/m3
1,1-Dichloropropene	ND	ND	8	µg/m3

JONES ENVIRONMENTAL LABORATORY RESULTS

EPA 8260B – Volatile Organics by GC/MS + Oxygenates

Sample ID:	SV15-5'	SV16-5'		
JEL ID:	F-0030-16	F-0030-17	Practical Quantitation Limit	Units
Analytes:				
cis-1,3-Dichloropropene	ND	ND	8	µg/m3
trans-1,3-Dichloropropene	ND	ND	8	µg/m3
Ethylbenzene	ND	20	8	µg/m3
Freon 113	ND	ND	40	µg/m3
Hexachlorobutadiene	ND	ND	8	µg/m3
Isopropylbenzene	ND	ND	8	µg/m3
4-Isopropyltoluene	ND	ND	8	µg/m3
Methylene chloride	ND	ND	8	µg/m3
Naphthalene	ND	ND	40	µg/m3
n-Propylbenzene	ND	ND	8	µg/m3
Styrene	ND	ND	8	µg/m3
1,1,1,2-Tetrachloroethane	ND	ND	8	µg/m3
1,1,2,2-Tetrachloroethane	ND	ND	8	µg/m3
Tetrachloroethylene	ND	ND	8	µg/m3
Toluene	54	175	8	µg/m3
1,2,3-Trichlorobenzene	ND	ND	40	µg/m3
1,2,4-Trichlorobenzene	ND	ND	8	µg/m3
1,1,1-Trichloroethane	ND	ND	8	µg/m3
1,1,2-Trichloroethane	ND	ND	8	µg/m3
Trichloroethylene	ND	ND	8	µg/m3
Trichlorofluoromethane	ND	ND	8	µg/m3
1,2,3-Trichloropropane	ND	ND	8	µg/m3
1,2,4-Trimethylbenzene	ND	ND	8	µg/m3
1,3,5-Trimethylbenzene	ND	ND	8	µg/m3
Vinyl chloride	ND	ND	8	µg/m3
m,p-Xylene	16	42	8	µg/m3
o-Xylene	ND	12	8	µg/m3
MTBE	ND	ND	40	µg/m3
Ethyl-tert-butylether	ND	ND	40	µg/m3
Di-isopropylether	ND	ND	40	µg/m3
tert-amylmethylether	ND	ND	40	µg/m3
tert-Butylalcohol	ND	ND	400	µg/m3
TIC:				
n-pentane	ND	ND	400	µg/m3
n-hexane	ND	ND	400	µg/m3
n-heptane	ND	ND	400	µg/m3
Dilution Factor	1	1		
Surrogate Recoveries:			QC Limits	
Dibromofluoromethane	109%	102%	60 - 140	
Toluene-d8	102%	102%	60 - 140	
4-Bromofluorobenzene	95%	97%	60 - 140	

F-071817-F- F-071817-F-
0030 0030

ND= Not Detected



714-449-9937
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805-399-0060

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JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Client:	Dudek	Report date:	7/18/2017
Client Address:	605 3rd Street Encinitas, CA 92024	JEL Ref. No.:	F-0030
		Client Ref. No.:	9289.003
Attn:	Nicole Peacock	Date Sampled:	7/18/2017
		Date Received:	7/18/2017
		Date Analyzed:	7/18/2017
Project Address:	3175 West Ball Rd Anaheim, CA	Physical State:	Soil Gas

EPA 8260B – Volatile Organics by GC/MS + Oxygenates

<u>Sample ID:</u>	METHOD BLANK	SAMPLING BLANK		
<u>JEL ID:</u>	071817- F1MB1	071817- F1SB1	<u>Practical Quantitation Limit</u>	<u>Units</u>
Analytes:				
Benzene	ND	ND	8	µg/m3
Bromobenzene	ND	ND	8	µg/m3
Bromodichloromethane	ND	ND	8	µg/m3
Bromoform	ND	ND	8	µg/m3
n-Butylbenzene	ND	ND	8	µg/m3
sec-Butylbenzene	ND	ND	8	µg/m3
tert-Butylbenzene	ND	ND	8	µg/m3
Carbon tetrachloride	ND	ND	8	µg/m3
Chlorobenzene	ND	ND	8	µg/m3
Chloroform	ND	ND	8	µg/m3
2-Chlorotoluene	ND	ND	8	µg/m3
4-Chlorotoluene	ND	ND	8	µg/m3
Dibromochloromethane	ND	ND	8	µg/m3
1,2-Dibromo-3-chloropropane	ND	ND	8	µg/m3
1,2-Dibromoethane (EDB)	ND	ND	8	µg/m3
Dibromomethane	ND	ND	8	µg/m3
1,2-Dichlorobenzene	ND	ND	8	µg/m3
1,3-Dichlorobenzene	ND	ND	8	µg/m3
1,4-Dichlorobenzene	ND	ND	8	µg/m3
Dichlorodifluoromethane	ND	ND	8	µg/m3
1,1-Dichloroethane	ND	ND	8	µg/m3
1,2-Dichloroethane	ND	ND	8	µg/m3
1,1-Dichloroethene	ND	ND	8	µg/m3
cis-1,2-Dichloroethene	ND	ND	8	µg/m3
trans-1,2-Dichloroethene	ND	ND	8	µg/m3
1,2-Dichloropropane	ND	ND	8	µg/m3
1,3-Dichloropropane	ND	ND	8	µg/m3
2,2-Dichloropropane	ND	ND	8	µg/m3
1,1-Dichloropropene	ND	ND	8	µg/m3

JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

EPA 8260B – Volatile Organics by GC/MS + Oxygenates

Sample ID:

METHOD **SAMPLING**
BLANK **BLANK**

JEL ID:

**071817-
F1MB1**

**071817-
F1SB1**

**Practical
Quantitation**

Units

Analytes:

Limit

cis-1,3-Dichloropropene	ND	ND	8	µg/m3
trans-1,3-Dichloropropene	ND	ND	8	µg/m3
Ethylbenzene	ND	ND	8	µg/m3
Freon 113	ND	ND	40	µg/m3
Hexachlorobutadiene	ND	ND	8	µg/m3
Isopropylbenzene	ND	ND	8	µg/m3
4-Isopropyltoluene	ND	ND	8	µg/m3
Methylene chloride	ND	ND	8	µg/m3
Naphthalene	ND	ND	40	µg/m3
n-Propylbenzene	ND	ND	8	µg/m3
Styrene	ND	ND	8	µg/m3
1,1,1,2-Tetrachloroethane	ND	ND	8	µg/m3
1,1,2,2-Tetrachloroethane	ND	ND	8	µg/m3
Tetrachloroethylene	ND	ND	8	µg/m3
Toluene	ND	ND	8	µg/m3
1,2,3-Trichlorobenzene	ND	ND	40	µg/m3
1,2,4-Trichlorobenzene	ND	ND	8	µg/m3
1,1,1-Trichloroethane	ND	ND	8	µg/m3
1,1,2-Trichloroethane	ND	ND	8	µg/m3
Trichloroethylene	ND	ND	8	µg/m3
Trichlorofluoromethane	ND	ND	8	µg/m3
1,2,3-Trichloropropane	ND	ND	8	µg/m3
1,2,4-Trimethylbenzene	ND	ND	8	µg/m3
1,3,5-Trimethylbenzene	ND	ND	8	µg/m3
Vinyl chloride	ND	ND	8	µg/m3
m,p-Xylene	ND	ND	8	µg/m3
o-Xylene	ND	ND	8	µg/m3
MTBE	ND	ND	40	µg/m3
Ethyl-tert-butylether	ND	ND	40	µg/m3
Di-isopropylether	ND	ND	40	µg/m3
tert-amylmethylether	ND	ND	40	µg/m3
tert-Butylalcohol	ND	ND	400	µg/m3

TIC:

n-pentane	ND	ND	400	µg/m3
n-hexane	ND	ND	400	µg/m3
n-heptane	ND	ND	400	µg/m3

Dilution Factor

1

1

Surrogate Recoveries:

QC Limits

Dibromofluoromethane	106%	107%	60 - 140
Toluene-d ₈	100%	102%	60 - 140
4-Bromofluorobenzene	91%	192%	60 - 140

F-071817-F- F-071817-F-
0030 0030

ND= Not Detected



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JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Client: Dudek
Client Address: 605 3rd Street
Encinitas, CA 92024

Report date: 7/18/2017
JEL Ref. No.: F-0030
Client Ref. No.: 9289.003

Attn: Nicole Peacock

Date Sampled: 7/18/2017
Date Received: 7/18/2017
Date Analyzed: 7/18/2017

Project Address: 3175 West Ball Rd
Anaheim, CA

Physical State: Soil Gas

EPA 8260B – Volatile Organics by GC/MS + Oxygenates

Batch ID: F-071817-F-0030

JEL ID: 071817-F1LCS1 071817-F1LCSD1 071817-F1CCV1

Parameter	LCS Recovery (%)	LCSD Recovery (%)	RPD	Acceptability Range (%)	CCV	Acceptability Range (%)
Vinyl Chloride	230%	216%	6.3%	70 - 130	157%	80 - 120
1,1-Dichloroethylene	116%	107%	7.9%	70 - 130	104%	80 - 120
Cis-1,2-Dichloroethene	106%	100%	5.3%	70 - 130	107%	80 - 120
1,1,1-Trichloroethane	107%	99%	7.9%	70 - 130	97%	80 - 120
Benzene	120%	111%	7.5%	70 - 130	109%	80 - 120
Trichloroethylene	106%	98%	8.5%	70 - 130	95%	80 - 120
Toluene	118%	112%	5.3%	70 - 130	110%	80 - 120
Tetrachloroethene	88%	84%	4.1%	70 - 130	83%	80 - 120
Chlorobenzene	112%	103%	8.7%	70 - 130	106%	80 - 120
Ethylbenzene	114%	108%	5.4%	70 - 130	110%	80 - 120
1,2,4 Trimethylbenzene	88%	84%	5.2%	70 - 130	85%	80 - 120

Surrogate Recovery:

Dibromofluoromethane	99%	100%		60 - 140	94%	60 - 140
Toluene-d ₈	106%	105%		60 - 140	106%	60 - 140
4-Bromofluorobenzene	101%	104%		60 - 140	103%	60 - 140

LCS = Laboratory Control Sample

LCSD = Laboratory Control Sample Duplicate

CCV = Continuing Calibration Verification

RPD = Relative Percent Difference; Acceptability range for RPD is $\leq 15\%$



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**JONES ENVIRONMENTAL
LABORATORY RESULTS**

Client: Dudek & Associates, Inc.
Client Address: 605 Third Street
Encinitas, CA 92024

Report date: 7/18/2017
JEL Ref. No.: ST-10924
Client Ref. No: 9289.0003

Attn: Nicole Peacock

Date Sampled: 7/18/2017

Project: Former E-Z
Project Address: 3175 West Ball Road
Anaheim, CA

Date Received: 7/18/2017

Date Analyzed: 7/18/2017

Physical State: Soil

ANALYSES REQUESTED

1. EPA 8260B by 5035 – BTEX by GC/MS

Approval:

Carolyn Carroll
Stationary Lab Manager



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JONES ENVIRONMENTAL LABORATORY RESULTS

Client: Dudek & Associates, Inc.
Client Address: 605 Third Street
 Encinitas, CA 92024

Report date: 7/18/2017
JEL Ref. No.: ST-10924
Client Ref. No.: 9289.0003

Attn: Nicole Peacock

Date Sampled: 7/18/2017

Date Received: 7/18/2017

Project: Former E-Z
Project Address: 3175 West Ball Road
 Anaheim, CA

Date Analyzed: 7/18/2017

Physical State: Soil

EPA 8260B by 5035 – BTEX by GC/MS

<u>Sample ID:</u>	B11	B12	B13	B14	B15		
<u>JEL ID:</u>	ST-10924-01	ST-10924-02	ST-10924-03	ST-10924-04	ST-10924-05	<u>Practical Quantitation</u>	<u>Units</u>
<u>Analytes:</u>						<u>Limit</u>	
Benzene	ND	ND	ND	ND	ND	1.0	µg/kg
Bromobenzene	ND	ND	ND	ND	ND	1.0	µg/kg
Bromodichloromethane	ND	ND	ND	ND	ND	1.0	µg/kg
Bromoform	ND	ND	ND	ND	ND	1.0	µg/kg
n-Butylbenzene	ND	ND	ND	ND	ND	1.0	µg/kg
sec-Butylbenzene	ND	ND	ND	ND	ND	1.0	µg/kg
tert-Butylbenzene	ND	ND	ND	ND	ND	1.0	µg/kg
Carbon tetrachloride	ND	ND	ND	ND	ND	1.0	µg/kg
Chlorobenzene	ND	ND	ND	ND	ND	1.0	µg/kg
Chloroform	ND	ND	ND	ND	ND	1.0	µg/kg
2-Chlorotoluene	ND	ND	ND	ND	ND	1.0	µg/kg
4-Chlorotoluene	ND	ND	ND	ND	ND	1.0	µg/kg
Dibromochloromethane	ND	ND	ND	ND	ND	1.0	µg/kg
1,2-Dibromo-3-chloropropane	ND	ND	ND	ND	ND	1.0	µg/kg
1,2-Dibromoethane (EDB)	ND	ND	ND	ND	ND	1.0	µg/kg
Dibromomethane	ND	ND	ND	ND	ND	1.0	µg/kg
1,2- Dichlorobenzene	ND	ND	ND	ND	ND	1.0	µg/kg
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	1.0	µg/kg
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	1.0	µg/kg
Dichlorodifluoromethane	ND	ND	ND	ND	ND	5.0	µg/kg
1,1-Dichloroethane	ND	ND	ND	ND	ND	1.0	µg/kg
1,2-Dichloroethane	ND	ND	ND	ND	ND	1.0	µg/kg
1,1-Dichloroethene	ND	ND	ND	ND	ND	1.0	µg/kg
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	1.0	µg/kg
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	1.0	µg/kg
1,2-Dichloropropane	ND	ND	ND	ND	ND	1.0	µg/kg
1,3-Dichloropropane	ND	ND	ND	ND	ND	1.0	µg/kg
2,2-Dichloropropane	ND	ND	ND	ND	ND	1.0	µg/kg
1,1-Dichloropropene	ND	ND	ND	ND	ND	1.0	µg/kg

JONES ENVIRONMENTAL LABORATORY RESULTS

EPA 8260B by 5035 – BTEX by GC/MS

<u>Sample ID:</u>	B11	B12	B13	B14	B15		
<u>JEL ID:</u>	ST-10924-01	ST-10924-02	ST-10924-03	ST-10924-04	ST-10924-05	<u>Practical Quantitation</u>	<u>Units</u>
<u>Analytes:</u>						<u>Limit</u>	
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	1.0	µg/kg
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	1.0	µg/kg
Ethylbenzene	ND	ND	ND	ND	ND	1.0	µg/kg
Freon 113	ND	ND	ND	ND	ND	5.0	µg/kg
Hexachlorobutadiene	ND	ND	ND	ND	ND	1.0	µg/kg
Isopropylbenzene	ND	ND	ND	ND	ND	1.0	µg/kg
4-Isopropyltoluene	ND	ND	ND	ND	ND	1.0	µg/kg
Methylene chloride	ND	ND	ND	ND	ND	1.0	µg/kg
Naphthalene	ND	ND	ND	ND	ND	1.0	µg/kg
n-Propylbenzene	ND	ND	ND	ND	ND	1.0	µg/kg
Styrene	ND	ND	ND	ND	ND	1.0	µg/kg
1,1,1,2-Tetrachloroethane	ND	ND	ND	ND	ND	1.0	µg/kg
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	1.0	µg/kg
Tetrachloroethylene	ND	ND	ND	ND	ND	1.0	µg/kg
Toluene	ND	ND	ND	ND	ND	1.0	µg/kg
1,2,3-Trichlorobenzene	ND	ND	ND	ND	ND	1.0	µg/kg
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	1.0	µg/kg
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	1.0	µg/kg
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	1.0	µg/kg
Trichloroethylene	ND	ND	ND	ND	ND	1.0	µg/kg
Trichlorofluoromethane	ND	ND	ND	ND	ND	5.0	µg/kg
1,2,3-Trichloropropane	ND	ND	ND	ND	ND	1.0	µg/kg
1,2,4-Trimethylbenzene	ND	ND	ND	ND	ND	1.0	µg/kg
1,3,5-Trimethylbenzene	ND	ND	ND	ND	ND	1.0	µg/kg
Vinyl chloride	ND	ND	ND	ND	ND	1.0	µg/kg
m,p-Xylene	ND	ND	ND	ND	ND	1.0	µg/kg
o-Xylene	ND	ND	ND	ND	ND	1.0	µg/kg
MTBE	ND	ND	ND	ND	ND	5.0	µg/kg
Ethyl-tert-butylether	ND	ND	ND	ND	ND	5.0	µg/kg
Di-isopropylether	ND	ND	ND	ND	ND	5.0	µg/kg
tert-amylmethylether	ND	ND	ND	ND	ND	5.0	µg/kg
tert-Butylalcohol	ND	ND	ND	ND	ND	50.0	µg/kg
<u>Dilution Factor</u>	1	1	1	1	1		
<u>Surrogate Recoveries:</u>						<u>QC Limits</u>	
Dibromofluoromethane	108%	112%	103%	109%	111%	60 - 140	
Toluene-d ₈	101%	105%	100%	103%	103%	60 - 140	
4-Bromofluorobenzene	109%	114%	112%	111%	113%	60 - 140	

VOC3-071817-
CHECKS_1 VOC3-071817-
CHECKS_1 VOC3-071817-
CHECKS_1 VOC3-071817-
CHECKS_1 VOC3-071817-
CHECKS_1

ND= Not Detected



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JONES ENVIRONMENTAL LABORATORY RESULTS

Client: Dudek & Associates, Inc.
Client Address: 605 Third Street
Encinitas, CA 92024

Report date: 7/18/2017
JEL Ref. No.: ST-10924
Client Ref. No.: 9289.0003

Attn: Nicole Peacock

Date Sampled: 7/18/2017

Date Received: 7/18/2017

Project: Former E-Z
Project Address: 3175 West Ball Road
Anaheim, CA

Date Analyzed: 7/18/2017

Physical State: Soil

EPA 8260B by 5035 – BTEX by GC/MS

Sample ID: B16

JEL ID: ST-10924-06

Analytes:

		<u>Practical Quantitation</u>	<u>Units</u>
		<u>Limit</u>	
Benzene	ND	1.0	µg/kg
Bromobenzene	ND	1.0	µg/kg
Bromodichloromethane	ND	1.0	µg/kg
Bromoform	ND	1.0	µg/kg
n-Butylbenzene	ND	1.0	µg/kg
sec-Butylbenzene	ND	1.0	µg/kg
tert-Butylbenzene	ND	1.0	µg/kg
Carbon tetrachloride	ND	1.0	µg/kg
Chlorobenzene	ND	1.0	µg/kg
Chloroform	ND	1.0	µg/kg
2-Chlorotoluene	ND	1.0	µg/kg
4-Chlorotoluene	ND	1.0	µg/kg
Dibromochloromethane	ND	1.0	µg/kg
1,2-Dibromo-3-chloropropane	ND	1.0	µg/kg
1,2-Dibromoethane (EDB)	ND	1.0	µg/kg
Dibromomethane	ND	1.0	µg/kg
1,2- Dichlorobenzene	ND	1.0	µg/kg
1,3-Dichlorobenzene	ND	1.0	µg/kg
1,4-Dichlorobenzene	ND	1.0	µg/kg
Dichlorodifluoromethane	ND	5.0	µg/kg
1,1-Dichloroethane	ND	1.0	µg/kg
1,2-Dichloroethane	ND	1.0	µg/kg
1,1-Dichloroethene	ND	1.0	µg/kg
cis-1,2-Dichloroethene	ND	1.0	µg/kg
trans-1,2-Dichloroethene	ND	1.0	µg/kg
1,2-Dichloropropane	ND	1.0	µg/kg
1,3-Dichloropropane	ND	1.0	µg/kg
2,2-Dichloropropane	ND	1.0	µg/kg
1,1-Dichloropropene	ND	1.0	µg/kg

JONES ENVIRONMENTAL LABORATORY RESULTS

EPA 8260B by 5035 – BTEX by GC/MS

Sample ID: B16

JEL ID: ST-10924-06

Analytes:

		<u>Practical Quantitation Limit</u>	<u>Units</u>
cis-1,3-Dichloropropene	ND	1.0	µg/kg
trans-1,3-Dichloropropene	ND	1.0	µg/kg
Ethylbenzene	ND	1.0	µg/kg
Freon 113	ND	5.0	µg/kg
Hexachlorobutadiene	ND	1.0	µg/kg
Isopropylbenzene	ND	1.0	µg/kg
4-Isopropyltoluene	ND	1.0	µg/kg
Methylene chloride	ND	1.0	µg/kg
Naphthalene	ND	1.0	µg/kg
n-Propylbenzene	ND	1.0	µg/kg
Styrene	ND	1.0	µg/kg
1,1,1,2-Tetrachloroethane	ND	1.0	µg/kg
1,1,2,2-Tetrachloroethane	ND	1.0	µg/kg
Tetrachloroethylene	ND	1.0	µg/kg
Toluene	ND	1.0	µg/kg
1,2,3-Trichlorobenzene	ND	1.0	µg/kg
1,2,4-Trichlorobenzene	ND	1.0	µg/kg
1,1,1-Trichloroethane	ND	1.0	µg/kg
1,1,2-Trichloroethane	ND	1.0	µg/kg
Trichloroethylene	ND	1.0	µg/kg
Trichlorofluoromethane	ND	5.0	µg/kg
1,2,3-Trichloropropane	ND	1.0	µg/kg
1,2,4-Trimethylbenzene	ND	1.0	µg/kg
1,3,5-Trimethylbenzene	ND	1.0	µg/kg
Vinyl chloride	ND	1.0	µg/kg
m,p-Xylene	ND	1.0	µg/kg
o-Xylene	ND	1.0	µg/kg
MTBE	ND	5.0	µg/kg
Ethyl-tert-butylether	ND	5.0	µg/kg
Di-isopropylether	ND	5.0	µg/kg
tert-amylmethylether	ND	5.0	µg/kg
tert-Butylalcohol	ND	50.0	µg/kg

Dilution Factor 1

Surrogate Recoveries:

		<u>QC Limits</u>
Dibromofluoromethane	107%	60 - 140
Toluene-d ₈	101%	60 - 140
4-Bromofluorobenzene	107%	60 - 140

VOC3-071817-
CHECKS_1

ND= Not Detected



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JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Client: Dudek & Associates, Inc.
Client Address: 605 Third Street
Encinitas, CA 92024

Report date: 7/18/2017
JEL Ref. No.: ST-10924
Client Ref. No.: 9289.0003

Attn: Nicole Peacock

Date Sampled: 7/18/2017

Date Received: 7/18/2017

Project: Former E-Z
Project Address: 3175 West Ball Road
Anaheim, CA

Date Analyzed: 7/18/2017

Physical State: Soil

EPA 8260B by 5035 – BTEX by GC/MS

<u>Sample ID:</u>	METHOD	Practical	Units
	BLANK	Quantitation	
JEL ID:	071817-	Limit	
	V3MB1		
Analytes:			
Benzene	ND	1.0	µg/kg
Bromobenzene	ND	1.0	µg/kg
Bromodichloromethane	ND	1.0	µg/kg
Bromoform	ND	1.0	µg/kg
n-Butylbenzene	ND	1.0	µg/kg
sec-Butylbenzene	ND	1.0	µg/kg
tert-Butylbenzene	ND	1.0	µg/kg
Carbon tetrachloride	ND	1.0	µg/kg
Chlorobenzene	ND	1.0	µg/kg
Chloroform	ND	1.0	µg/kg
2-Chlorotoluene	ND	1.0	µg/kg
4-Chlorotoluene	ND	1.0	µg/kg
Dibromochloromethane	ND	1.0	µg/kg
1,2-Dibromo-3-chloropropane	ND	1.0	µg/kg
1,2-Dibromoethane (EDB)	ND	1.0	µg/kg
Dibromomethane	ND	1.0	µg/kg
1,2- Dichlorobenzene	ND	1.0	µg/kg
1,3-Dichlorobenzene	ND	1.0	µg/kg
1,4-Dichlorobenzene	ND	1.0	µg/kg
Dichlorodifluoromethane	ND	5.0	µg/kg
1,1-Dichloroethane	ND	1.0	µg/kg
1,2-Dichloroethane	ND	1.0	µg/kg
1,1-Dichloroethene	ND	1.0	µg/kg
cis-1,2-Dichloroethene	ND	1.0	µg/kg
trans-1,2-Dichloroethene	ND	1.0	µg/kg
1,2-Dichloropropane	ND	1.0	µg/kg
1,3-Dichloropropane	ND	1.0	µg/kg
2,2-Dichloropropane	ND	1.0	µg/kg
1,1-Dichloropropene	ND	1.0	µg/kg

JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

EPA 8260B by 5035 – BTEX by GC/MS

<u>Sample ID:</u>	METHOD		
	BLANK		
JEL ID:	071817-	<u>Practical</u>	
	V3MB1	<u>Quantitation</u>	<u>Units</u>
Analytes:		<u>Limit</u>	
cis-1,3-Dichloropropene	ND	1.0	µg/kg
trans-1,3-Dichloropropene	ND	1.0	µg/kg
Ethylbenzene	ND	1.0	µg/kg
Freon 113	ND	5.0	µg/kg
Hexachlorobutadiene	ND	1.0	µg/kg
Isopropylbenzene	ND	1.0	µg/kg
4-Isopropyltoluene	ND	1.0	µg/kg
Methylene chloride	ND	1.0	µg/kg
Naphthalene	ND	1.0	µg/kg
n-Propylbenzene	ND	1.0	µg/kg
Styrene	ND	1.0	µg/kg
1,1,1,2-Tetrachloroethane	ND	1.0	µg/kg
1,1,2,2-Tetrachloroethane	ND	1.0	µg/kg
Tetrachloroethylene	ND	1.0	µg/kg
Toluene	ND	1.0	µg/kg
1,2,3-Trichlorobenzene	ND	1.0	µg/kg
1,2,4-Trichlorobenzene	ND	1.0	µg/kg
1,1,1-Trichloroethane	ND	1.0	µg/kg
1,1,2-Trichloroethane	ND	1.0	µg/kg
Trichloroethylene	ND	1.0	µg/kg
Trichlorofluoromethane	ND	5.0	µg/kg
1,2,3-Trichloropropane	ND	1.0	µg/kg
1,2,4-Trimethylbenzene	ND	1.0	µg/kg
1,3,5-Trimethylbenzene	ND	1.0	µg/kg
Vinyl chloride	ND	1.0	µg/kg
m,p-Xylene	ND	1.0	µg/kg
o-Xylene	ND	1.0	µg/kg
MTBE	ND	5.0	µg/kg
Ethyl-tert-butylether	ND	5.0	µg/kg
Di-isopropylether	ND	5.0	µg/kg
tert-amylmethylether	ND	5.0	µg/kg
tert-Butylalcohol	ND	50.0	µg/kg
<u>Dilution Factor</u>	1		
<u>Surrogate Recoveries:</u>		<u>QC Limits</u>	
Dibromofluoromethane	115%	60 - 140	
Toluene-d ₈	101%	60 - 140	
4-Bromofluorobenzene	107%	60 - 140	

VOC3-071817-
CHECKS_1

ND= Not Detected



714-449-9937 | 11007 FOREST PLACE
 562-646-1611 | SANTA FE SPRINGS, CA 90670
 805-399-0060 | WWW.JONESENV.COM

JONES ENVIRONMENTAL QUALITY CONTROL INFORMATION

Client:	Dudek & Associates, Inc.	Report date:	7/18/2017
Client Address:	605 Third Street Encinitas, CA 92024	JEL Ref. No.:	ST-10924
		Client Ref. No.:	9289.0003
Attn:	Nicole Peacock	Date Sampled:	7/18/2017
		Date Received:	7/18/2017
Project:	Former E-Z	Date Analyzed:	7/18/2017
Project Address:	3175 West Ball Road Anaheim, CA	Physical State:	Soil

EPA 8260B by 5035 – BTEX by GC/MS

Sample Spiked:		CLEAN SOIL		GC#: VOC3-071817-CHECKS_1		
JEL ID:	071817-V3MS1	071817-V3MSD1		071817-V3LCS1		
Parameter	MS Recovery (%)	MSD Recovery (%)	RPD	Acceptability Range (%)	LCS	Acceptability Range (%)
Vinyl Chloride	116%	113%	2.0%	60 - 140	119%	70 - 130
1,1-Dichloroethylene	94%	92%	1.9%	60 - 140	96%	70 - 130
Cis-1,2-Dichloroethene	114%	111%	2.4%	70 - 130	112%	70 - 130
1,1,1-Trichloroethane	110%	105%	4.4%	70 - 130	108%	70 - 130
Benzene	110%	109%	1.5%	70 - 130	109%	70 - 130
Trichloroethylene	106%	101%	4.7%	70 - 130	107%	70 - 130
Toluene	115%	114%	1.0%	70 - 130	113%	70 - 130
Tetrachloroethene	117%	119%	1.6%	70 - 130	117%	70 - 130
Chlorobenzene	106%	106%	0.2%	70 - 130	106%	70 - 130
Ethylbenzene	110%	111%	1.4%	70 - 130	111%	70 - 130
1,2,4 Trimethylbenzene	114%	114%	0.2%	70 - 130	114%	70 - 130
Surrogate Recovery:						
Dibromofluoromethane	107%	106%		60 - 140	105%	60 - 140
Toluene-d ₈	107%	106%		60 - 140	106%	60 - 140
4-Bromofluorobenzene	108%	109%		60 - 140	108%	60 - 140

MS = Matrix Spike

MSD = Matrix Spike Duplicate

RPD = Relative Percent Difference; Acceptability range for RPD is ≤ 15%

Page 1 of 1

Laboratory: <i>Jones Environmental</i>	Lab Job #:
Lab Contact:	Shipping Method:
Project Manager: <i>Nicole Peacock</i>	PM Email: <i>npeacock@dudek.com</i>

Rg v 11/15



714-449-9937
562-646-1611
805-399-0060

11007 FOREST PLACE
SANTA FE SPRINGS, CA 90670
WWW.JONESENV.COM

SAMPLE RECEIPT FORM

Jones ID: ST 10924

CLIENT: Dudek

DATE/TIME: 7-18-17 / 1545

PROJECT: Former E-2

RECEIVED BY: JC

Delivered by: ☐ Client ☒ Jones Courier ☐ UPS / FedEx / USPS ☐ Other

TEMPERATURE: Temp Criteria = $6^{\circ}\text{C} > \text{Temp} > 0^{\circ}\text{C}$ (NO frozen containers)

Temperature Cooler #1 7.6 $^{\circ}\text{C} \pm 0.1^{\circ}\text{C}$ Blank Sample

Temperature Cooler #2 _____ $^{\circ}\text{C} \pm 0.1^{\circ}\text{C}$ Blank Sample

☒ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ Sample(s) outside temperature criteria. *

☐ Samples not received on ice.*

Ambient Temperature: 31.2 $^{\circ}\text{C}$

Checked by: JC

SAMPLE CONDITION:

	YES	NO*	N/A
Chain of Custody (COC) document(s) received complete with samples-----	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Collection date, collection time, matrix, and/or # of containers logged in based on sample labels missing. (circle)			
<input type="checkbox"/> No analysis requested. <input type="checkbox"/> Not relinquished. <input type="checkbox"/> No date/time relinquished.			
Sample container label(s) consistent with COC-----	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total number of containers received match COC-----	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container(s) intact and in good condition-----	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proper containers and sufficient volume for analyses requested-----	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Volatile analysis container(s) free of headspace-----	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Proper preservation for analyses requested-----	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Custody Seals Intact on Cooler/Sample-----	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

CONTAINER TYPE:

Solid: VOAs / Acetate sleeve Aqueous: _____

*Complete Non-Conformance if checked

Checked by: JC

Comments:

SAMPLE NON-CONFORMANCE

Jones ID: _____

CLIENT: Dudek
PROJECT: Former E-2DATE/TIME: 7-18-17 / 1545
REPORTED BY: JC

Non-Conformance ID: _____

- 1) Coolers
 - a) Not received (received COC only)
 - b) Leaking/Damaged
 - c) Other:
- 2) Custody Seals
 - a) None
 - b) Not intact
- 3) Temperature (Temp criteria = $6^{\circ}\text{C} > \text{Temp} > 0^{\circ}\text{C}$)
 - a) Sample Temp(s)
 - b) Cooler Temp(s)
 - c) Temperature Blank(s)
- 4) Chain of Custody (COC)
 - a) Not relinquished by client
 - b) No date/time relinquished
 - c) Incomplete information provided
 - d) COC not received – notify PM
- 5) Containers
 - a) Leaking
 - b) Broken
 - c) Extra
 - d) Missing
- 6) Labels
 - a) Not the same sample ID / info as on the COC
 - b) Incomplete information
 - c) Markings / Info illegible
- 7) Samples
 - a) Incorrect sample ID
 - b) Incorrect sampling Date/Time
 - c) Samples not received but listed on COC
 - d) Samples received but not listed on COC
 - e) Logged based on Label Information and not COC
 - f) Logged according to Work Plan and not COC
 - g) Logged in, on hold until further notice
 - h) Insufficient quantities for analysis
 - i) Improper container used
 - j) Mislabelled as to tests, preservatives, etc.
 - k) Holding time expired – list sample ID and test
 - l) Not preserved/Improper preservative used
 - m) Without labels, no information on containers
 - n) Other (see comments)

Checked by: JC

Comments:

Preservatives not mentioned on COC

APPENDIX B

DTSC Risk Model Inputs and Outputs

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

Scenario: Residential
Chemical: Benzene

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
6.40E+01	1.4E-03	8.8E-02	9.1E-07	2.8E-02

Reset to
Defaults

Soil Gas Concentration Data			
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432	6.40E+01		Benzene

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	24	S	

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
S	1.66	0.375	0.054	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour^{-1})
70	26	26	350	24	0.5

NEW=> Residential

END

(NEW) (NEW)

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

Scenario: Residential
Chemical: Chloroform

Reset to
Defaults

Soil Gas Concentration Data			
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)
67663	8.00E+00		Chloroform

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
8.00E+00	1.3E-03	1.0E-02	8.4E-08	1.0E-04

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	24	S		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
S	1.66	0.375	0.054	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour^{-1})
70	26	26	350	24	0.5

NEW=> Residential

END

(NEW) (NEW)

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

Scenario: Residential
Chemical: Ethylbenzene

Reset to
Defaults

Soil Gas Concentration Data				
ENTER	ENTER	OR	ENTER	
Chemical CAS No. (numbers only, no dashes)	Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)		Soil gas conc., C_g (ppmv)	Chemical
100414	2.80E+01			Ethylbenzene

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
2.80E+01	1.2E-03	3.4E-02	3.0E-08	3.2E-05

MORE
↓

ENTER	ENTER	ENTER	ENTER	OR	ENTER
Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	Soil gas sampling depth below grade, L_s (cm)	Average soil temperature, T_s (°C)	Vadose zone SCS soil type (used to estimate soil vapor permeability)		User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	24	S		

MORE
↓

ENTER	ENTER	ENTER	ENTER	ENTER
Vadose zone SCS soil type Lookup Soil Parameters	Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	Vadose zone soil total porosity, n^V (unitless)	Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
S	1.66	0.375	0.054	5

MORE
↓

Lookup Receptor
Parameters

ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Averaging time for carcinogens, AT_C (yrs)	Averaging time for noncarcinogens, AT_{NC} (yrs)	Exposure duration, ED (yrs)	Exposure frequency, EF (days/yr)	Exposure Time ET (hrs/day)	Air Exchange Rate ACH (hour^{-1})
70	26	26	350	24	0.5
				(NEW)	(NEW)

NEW=> Residential

END

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

Scenario: Residential
Chemical: Cumene

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
1.20E+01	1.1E-03	1.4E-02	NA	3.3E-05

Reset to
Defaults

Soil Gas Concentration Data			
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	ENTER Soil gas conc., C_g (ppmv)	Chemical
98828	1.20E+01		Cumene

MESSAGE: See VLOOKUP table comments on chemical properties
and/or toxicity criteria for this chemical.

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	24	S	

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
S	1.66	0.375	0.054	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour^{-1})
70	26	26	350	24	0.5

NEW=> Residential

END

(NEW) (NEW)

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

Scenario: Residential
Chemical: m-Xylene

Reset to
Defaults

Soil Gas Concentration Data			
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)
108383	4.90E+01		m-Xylene

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
4.90E+01	1.2E-03	5.9E-02	NA	5.7E-04

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	24	S		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
S	1.66	0.375	0.054	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour^{-1})
70	26	26	350	24	0.5

NEW=> Residential

END

(NEW) (NEW)

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

Scenario: Residential
Chemical: o-Xylene

Reset to
Defaults

Soil Gas Concentration Data				
ENTER	ENTER	OR	ENTER	
Chemical CAS No. (numbers only, no dashes)	Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)		Soil gas conc., C_g (ppmv)	Chemical
95476	1.50E+01			o-Xylene

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
1.50E+01	1.2E-03	1.8E-02	NA	1.7E-04

MORE
↓

ENTER	ENTER	ENTER	ENTER	OR	ENTER
Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	Soil gas sampling depth below grade, L_s (cm)	Average soil temperature, T_s (°C)	Vadose zone SCS soil type (used to estimate soil vapor permeability)		User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	24	S		

MORE
↓

ENTER	ENTER	ENTER	ENTER	ENTER
Vadose zone SCS soil type Lookup Soil Parameters	Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	Vadose zone soil total porosity, n^V (unitless)	Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
S	1.66	0.375	0.054	5

MORE
↓

Lookup Receptor
Parameters

ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Averaging time for carcinogens, AT_C (yrs)	Averaging time for noncarcinogens, AT_{NC} (yrs)	Exposure duration, ED (yrs)	Exposure frequency, EF (days/yr)	Exposure Time ET (hrs/day)	Air Exchange Rate ACH (hour^{-1})
70	26	26	350	24	0.5
				(NEW)	(NEW)

NEW=> Residential

END

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

Scenario: Residential
Chemical: Styrene

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
1.50E+01	1.2E-03	1.9E-02	NA	2.0E-05

Reset to
Defaults

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	ENTER Chemical
100425	1.50E+01			Styrene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	24	S		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
S	1.66	0.375	0.054	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour^{-1})
70	26	26	350	24	0.5
				(NEW)	(NEW)

NEW=> Residential

END

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

Scenario: Residential
Chemical: Toluene

Reset to
Defaults

Soil Gas Concentration Data				
ENTER	ENTER	OR	ENTER	
Chemical CAS No. (numbers only, no dashes)	Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)		Soil gas conc., C_g (ppmv)	Chemical
108883	1.96E+02			Toluene

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
1.96E+02	1.3E-03	2.5E-01	NA	8.1E-04

MORE
↓

ENTER	ENTER	ENTER	ENTER	OR	ENTER
Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	Soil gas sampling depth below grade, L_s (cm)	Average soil temperature, T_s (°C)	Vadose zone SCS soil type (used to estimate soil vapor permeability)		User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	24	S		

MORE
↓

ENTER	ENTER	ENTER	ENTER	ENTER
Vadose zone SCS soil type Lookup Soil Parameters	Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	Vadose zone soil total porosity, n^V (unitless)	Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
S	1.66	0.375	0.054	5

MORE
↓

Lookup Receptor
Parameters

ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Averaging time for carcinogens, AT_C (yrs)	Averaging time for noncarcinogens, AT_{NC} (yrs)	Exposure duration, ED (yrs)	Exposure frequency, EF (days/yr)	Exposure Time ET (hrs/day)	Air Exchange Rate ACH (hour^{-1})
70	26	26	350	24 (NEW)	0.5 (NEW)

NEW=> Residential

END

