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Project No. 2016-04 August 31, 2016

Mr. Tyler Wood Lennar Multifamily Communities 492 9th Street Suite 300 Oakland, California 94607

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Subject: ADDITIONAL SOIL-GAS SURVEY Parking Lot Parcels 1750 and 1810 Webster Streets and 301 19th Street APNs 008-0625-016; 008-0625-017; 008-0625-018; and 008-0625-002-1 Oakland, California

By Alameda County Environmental Health 3:29 pm, Mar 24, 2017

References:

Phase I Environmental Site Assessment at 1711, 1801, 1805, 1811, 1817 through 1839 Harrison Street; 301 19th Street; 1732 through 1736, 1750, and 1801 Webster Street in Oakland, California
By GeoSolve, Inc.
Dated November 6, 2015

 Phase II Environmental Site Assessment at 1750 Webster Street and 301 19th Street in Oakland, California By GeoSolve, Inc.

Dated November 7, 2015

- Phase II Environmental Site Assessment at 1810 Webster Street in Oakland, California
 By GeoSolve, Inc.
 Dated February 12, 2016
- Soil-Gas Survey at 1750 and 1810 Webster Street and 301 19th Street in Oakland, California
 By GeoSolve, Inc.
 Dated February 22, 2016

Dear Mr. Wood:

At your request, *GeoSolve, Inc.* had conducted an Additional Soil-Gas Survey for the above referenced properties to assess the potential seasonal variability of soil vapor concentrations. The subject property for this Soil-Gas Survey includes 1750 Webster Street, 1810 Webster Street and

1807 Santa Rita Road, Suite D-165 • Pleasanton, CA 94566 rcampbell@geosolve-inc.com • (925) 963-1198 301 19th Street in Oakland, California. The subject site consists of four parcels bounded by Webster Street to the north, 19th Street to the east and Harrison Street to the south with Assessor Parcel Numbers (APNs) 008-0625-016; 008-0625-017; 008-0625-018; and 008-0625-002-1. The subject site is vacant and used as parking lots. The site vicinity is shown on Figure 1, Site Vicinity Map.

Background

Based on review of older reports documented in our Phase I ESA (Reference 1), elevated concentrations of total petroleum hydrocarbons reported as gasoline (TPHg) and benzene were detected in groundwater up to 200,000 micrograms per liter (μ g/L) and 14,000 μ g/L on the southern portion of the property along Webster Street. Based on the findings in Reference 1, the elevated concentrations of TPHg, benzene, toluene, ethyl benzene, and total xylenes (BTEX) appear to have originated from 1721 Webster Street, which is situated approximately 300 feet northwest of the subject property and immediately up-gradient.

In November 2015, *GeoSolve, Inc.* advanced one boring on 1750 Webster Street and two borings on 301 19th Street to evaluate the concentrations of petroleum hydrocarbons in subsurface soil and groundwater in our Phase II ESA (Reference 2). Based on the laboratory analytical results of soil samples, concentrations of TPHg, BTEX, or MTBE were not detected in all vadose zone soil samples analyzed from borings B-1 through B-3 as shown on Table 1. Total xylenes were detected in soil sample B1-25 at 0.016 mg/Kg, which was collected below the water table and reflects dissolved concentrations measured in that boring.

Lead was detected at 170 mg/Kg in soil sample B1-5, which exceeded the residential ESL of 80 mg/Kg and lead was detected below the residential ESL in all other soil samples analyzed from borings B-1 through B-3.

TPHg, BTEX, MTBE and lead were not detected in groundwater samples collected from borings B-2 or B-3. MTBE was not detected in groundwater sample B-1. Lead was detected up to 0.54 micrograms per liter (μ g/L) in groundwater sample B-1. An elevated concentration of TPHg was detected at 26,000 μ g/L, which exceed the residential ESL of 500 μ g/L in groundwater sample B-1. Benzene, toluene, ethyl benzene and total xylenes exceeded residential ESLs of 27 μ g/L, 130 μ g/L and 100 μ g/L, respectively.

On February 2, 2016, an additional Phase II ESA was conducted at 1810 Webster Street in Oakland (Reference 3), which included drilling and sampling soil and groundwater from borings B-1 through B-3. TPHg was detected up to 600 mg/Kg in soil at 22.5 feet bgs, which represented capillary-fringe zone conditions, and up to 14,000 μ g/L in groundwater. Lead was detected up to 130 mg/Kg at 1 foot bgs in sample B2-1.

On February 3 and 4, 2016, *GeoSolve, Inc.* conducted a soil-gas survey to evaluate if elevated concentrations of TPHg, BTEX and/or volatile organic compounds (VOCs) vaporized from the groundwater and intruded into the shallow soil-gas beneath the site. The laboratory analytical results obtained from the TEG Mobile Laboratory indicated mostly no detectable concentrations of TPHg, BTEX or VOCs. However, a moderate concentration of benzene was detected at 120



micrograms per cubic meter (μ g/m³) at 5 feet below ground surface (bgs) and Tetrachloroethylene (PCE) was detected at 150 μ g/m³ in soil-gas samples SG5-5 at SG5-10.

Based on the work summarized above in References 2 through 4, groundwater and capillary-fringe zone soil (saturated soil) along the northern portions of 1750 and 1810 Webster Street were impacted by dissolved-phase gasoline hydrocarbons, which originated from the up-gradient and former leaking gasoline underground storage tanks (USTs) at 1721 Webster Street in Oakland, California. No significant impact was detected in soil and/or groundwater at 301 19th Street from the up-gradient 1721 Webster Street property was reported.

The purpose of conducting this Additional Soil-Gas Survey was to assess the potential for seasonal variability in soil vapor concentrations beneath the subject site.

ADDITIONAL SOIL-GAS SUEVEY

Prior to commencement of fieldwork, *GeoSolve, Inc.* visited the subject property, marked six locations with white paint, and contacted underground service alert (USA) 48-hours before drilling activities. In addition, a Site-Specific Health and Safety Plan was prepared for the project, and was kept on site during fieldwork activities.

Fieldwork

Once USA was notified and the underground utilities were marked, a *GeoSolve, Inc.* field geologist observed TEG of Northern California, Inc., a State-licensed drilling contractor (C57-706568) of Rancho Cordova, California, advance six borings (SG-1 through SG-6) to approximately 10 feet below ground surface (bgs) on August 10, 2016 near the same locations previously sampled in Reference 4. The locations of borings SG-1 through SG-6 are shown on Figure 2. Three nested soil-gas probes were installed by TEG of Northern California, Inc. at 5-and 10-feet bgs. The soil-gas sampling probes were installed with one-foot screened intervals from 4- to 5-feet and 9- to 10-ft bgs, respectively, as further discussed below. Soil-gas probes SG-1 through SG-6 were allowed to set for two-hours prior to sampling in accordance with the DTSC Soil-Gas Advisory (2012). No soil samples were collected from the borings to ensure soil-gas was minimally disturbed.

Installation of the temporary soil-gas probes was conducted as follows:

- Approximately 6-inches of Monterey #3 sand was placed on the bottom of each borehole at 10 feet bgs;
- A down-hole rod was used to center a permeable vapor tip connected to 0.25-inch diameter Nylaflow tubing on the top of the sand, and an additional 6 inches of Monterey #3 sand was placed over the vapor-tip.



- A 12-inch layer of dry granular bentonite was placed on top of the Monterey #3 sand, and a 3 foot layer of hydrated bentonite, followed by a 6-inch layer of Monterey #3 sand was placed at approximately 5 feet bgs. A down-hole rod was used to center a permeable vapor tip connected to 0.25-inch diameter nylon tubing on the top of the sand, and an additional 6 inches of Monterey #3 sand was placed over the vapor-tip. Another 12-inch layer of dry granular bentonite was placed on top of the Monterey #3 sand. Hydrated bentonite was placed from 4 feet bgs to ground surface. The hydrated bentonite will be carefully mixed on site using distilled water within 5 minutes of pouring down the borings.
- The Nylaflow tubing was cut at a longer and shorter length on the ground surface in each soil-gas probe location to indicate the 10-foot depth (longer tube) and 5-foot depth (shorter tube) location.

Once soil and groundwater samples were collected from each boring, the borings were backfilled with neat cement to grade.

Mobile Laboratory Methods and Analytical Results

On August 10, 2016, a TEG of Northern California, Inc. field chemist collected soil-gas samples from the probes at least two-hours after vapor-probe installations. A TEG of Northern California, Inc. Mobile Laboratory chemist purged at least 3-tube volumes from each probe and collected a soil-gas sample using a 250-millileter (ml) syringe, which was immediately injected into the intercoupled-plasma mass-spectrometer (IC-MS) and for analyses. TEG of Northern California, Inc. Mobile Laboratory is a State-certified hazardous waste sampling laboratory (Certification No. 1671) based in Rancho Cordova, California.

Soil-gas samples SG1-5, SG1-10, SG2-5, SG2-10, SG3-5, SG3-10, SG4-5, SG4-10, SG5-5, SG5-10, SG6-5, and SG6-10 were immediately analyzed on site within the TEG of Northern California, Inc. Mobile Laboratory for VOCs using Environmental Protection Agency (EPA) Method SW8260B. Duplicate soil-gas sample SG1-10 was also analyzed for VOCs for quality assurance/quality control (QA/QC) purposes.

A summary of laboratory analyses are shown on Table 1, Laboratory Analytical Results of Soil-Gas Samples and a copy of the TEG of Northern California, Inc. Laboratory Analytical Report and Chain-of-Custody Documents are attached to Appendix A.



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TABLE 1 LABORATORY ANALYTICAL RESULTS OF SOIL-GAS SAMPLES 1750 and 1810 Webster Streets and 301 19th Street **Oakland**, California August 10, 2016

Sample ID	Sample Depth (feet)	Benzene (µg/m ³)	Toluene (µg/m ³)	Ethyl Benzene (μg/m ³)	Total Xylenes (µg/m ³)	PCE (µg/m ³)	TCE (µg/m ³)
SG1-5	5	<80	<200	<100	<200	<100	<100
SG1-10	10	<80	<200	<100	<200	<100	<100
SG1-10D	15	<80	<200	<100	<200	<100	<100
SG2-5	5	<80	<200	<100	<200	<100	<100
SG2-10	10	<80	<200	<100	<200	<100	<100
SG3-5	5	<80	<200	<100	<200	<100	<100
SG3-10	10	<80	<200	<100	<200	<100	<100
SG4-5	5	<80	<200	<100	<200	<100	<100
SG4-10	10	<80	<200	<100	<200	<100	<100
SG5-5	5	160	<200	<100	<200	<100	<100
SG5-10	10	88	<200	<100	<200	<100	<100
SG6-5	5	<80	<200	<100	<200	<100	<100
SG6-10	10	<80	<200	<100	<200	120	<100
ESL (res)*		97	310,000	1,100	100,000	480	480
ESL(com)*		840	2,600,000	9,800	880,000	4,200	6,000
<i>ESL(com)</i> * μg/m ³			<i>2,600,000</i> per cubic mete		880,000	4,200	

Tetrachloroethylene. -

PCE TCE

Trichloroethylene. =

Environmental Screening Levels - Residential (RWQCB, December 2013 - Table E). **ESLs** =

Duplicate soil-gas sample. SG1-10D=

*Soil Vapor ESLs

The SFRWQCB Tier 1 soil vapor ESLs are calculated by dividing the indoor air screening level by the DTSC default attenuation factors of 0.002 and 0.001 for existing residential and commercial building type, respectively (SFRWQCB, 2016; DTSC, 2011). Since, this project involves new commercial/retail on-grade buildings, the DTSC default attenuation factors of 0.001 for future residential building type and 0.0005 for future commercial building type are more appropriate (DTSC, 2011). The SFRWQCB soil vapor ESLs were estimated by dividing the indoor air ESL for residential and commercial land use by the DTSC default attenuation factors of 0.001 and 0.0005, respectively.

Discussion

Based on the laboratory analytical results of the soil-gas samples collected from vapor-probes SG-1 through SG-6, no detectable concentrations of VOCs were reported in most soil-gas samples collected from the vadose zone. A low concentration of PCE was detected in soil-gas sample SG6-10 at 120 µg/m³. Low concentrations of benzene were also detected in soil-gas samples SG5-5 at 160 µg/m³ and in SG5-10 at 88 µg/m³. PCE detected in soil-gas sample SG6-10 was detected below the adjusted California Regional Water Quality Control Board's (RWQCB) Environmental Screening Level (ESL) of 480 µg/m³ for residential development in soil-gas (see above). Benzene was detected slightly above the screening level of 97µg/m³, but well below the commercial screening level of 840 µg/m³ in soil-gas sample SG5-5. The concentrations measured do not indicate a significant source for either of these constituents. Although TPHg was not analyzed



during this Additional Soil-Gas Survey, TEG or Northern California, Inc. stated their results support no TPHg concentrations greater than $10,000 \ \mu g/m^3$ were indicated in all soil-gas samples analyzed, exactly like in the initial soil-gas survey (Reference 4).

PCE and benzene detected in soil-gas were detected below the adjusted commercial ESLs of 840 μ g/m³ for benzene and 4,200 μ g/m³ for PCE. As underground parking and/or first-level residential occupation are not planned for the development at the site, commercial ESLs are the recommended screening criteria for the site. Therefore, the low concentrations of benzene and PCE detected in soil-gas samples SG5-5, SG5-10, and SG6-10 are not a concern for the subject development at the site.

Conclusions

Based on the field and laboratory analytical results discussed in this Additional Soil-Gas Survey Letter Report, *GeoSolve, Inc.* concludes the following:

- No detectable concentrations of TPHg, MTBE, toluene, ethyl benzene, total xylenes or TCE in all soil-gas samples collected from beneath the site.
- PCE was only detected in soil-gas sample SG6-10, which was detected below the adjusted ESL for residential development of 480 μg/m³ and 2,100 μg/m³ for commercial development. Benzene was detected in soil-gas samples SG5-5 and SG5-10 at 160 μg/m³ and 88 μg/m³, which slightly exceeded the adjusted ESL for residential development of 97 μg/m³; however, was detected below the commercial ESL of 840 μg/m³.
- Soil-gas vapor intrusion from the groundwater to the shallow vadose zone does not appear to be an exposure pathway at the subject site.

Recommendations

Based on the consistency of soil vapor measurements and the conclusions presented in this Additional Soil-Gas Letter Report, *GeoSolve, Inc.* does not recommend further environmental sampling for soil-gas at the subject site.



If you have any questions or need further information regarding this Additional Soil-Gas Survey Letter Report, please call us at (925) 963-1198.

Sincerely, FESSIONAL GeoSolve, Inc. GE ROBERT D CAMPBELL P.G., C.E.G. No. 2089 CERTIFIED ENGINEERING GEOLOG OF CALI

Robert D. Campbell, M.S., P.G., C.E.G., Q.S.D. Principal Engineering Geologist

Attachments: Figure 1, Site Vicinity Map Figure 2, Site Plan Appendix A – TEG of Northern California, Inc. Laboratory Analytical Report and Chain-of-Custody Documents



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APPENDIX A

TEG OF NORTHERN CALIFORNIA, INC. LABORATORY ANALYTICAL RESULTS AND CHAIN-OF-CUSTODY DOCUMENTS





22 August 2016

Mr. Robert Campbell GeoSolve, Inc. 1807 Santa Rita Road, Suite D-165 Pleasanton, CA 94566

SUBJECT: DATA REPORT - GeoSolve, Inc. Project #2016-04 Lennar Webster / 1750 Webster Street, Oakland, California

TEG Project # 60810F

Mr. Campbell:

Please find enclosed a data report for the samples analyzed from the above referenced project for GeoSolve, Inc. The samples were analyzed on site in TEG's mobile laboratory. TEG conducted a total of 13 analyses on 13 soil vapor samples.

-- 13 analyses on soil vapors for volatile organic hydrocarbons by EPA method 8260B.

The results of the analyses are summarized in the enclosed tables. Applicable detection limits and calibration data are included in the tables.

TEG appreciates the opportunity to have provided analytical services to GeoSolve, Inc. on this project. If you have any further questions relating to these data or report, please do not hesitate to contact us.

Sincerely,

Mark Jerpbak Director, TEG-Northern California



GeoSolve, Inc Project # 2016-04 Lennar Webster 1750 Webster Street Oakland, California

TEG Project #60810F

EPA Method 8260B VOC Analyses of SOIL VAPOR in micrograms per cubic meter of Vapor

SAMPLE NUMBER	÷	Probe	SG1-5	SG1-10	SG1-10	SG2-5	SG2-10	SG3-5
SAMPLE DEPTH (feet)		Blank	5.0	40.0	dup 10.0		(0.0	
PURGE VOLUME		5.0 3	10.0	10.0	5.0	10.0	5.0	
COLLECTION DATE	8/10/16	3 8/10/16	3	3 8/10/16	1	1	3	
COLLECTION TIME	9:21	11:02	8/10/16 11:24	11:24	8/10/16 12:07	8/10/16 12:28	8/10/16	
DILUTION FACTOR		5.2 T 1	1	1	11.24	12.07	12:28	12:49 1
	RL	, 		, 	,		1	
Dichlorodifluoromethane	100	nd	nd	nd	nd	nd	nd	nd
Vinyl Chloride	100	nd	nd	nd	nd	nd	nd	nd
Chloroethane	100	nd	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	100	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	100	nd	nd	nd	nd	nd	nd	nd
1,1,2-Trichloro-trifluoroethane	100	nd	nd	nd	nd	nd	nd	nd
Methylene Chloride	100	nd	nd	nd	nd	nd	nd	nd
rans-1,2-Dichloroethene	100	nd	nd	nd	nd	nd	nd	nd
,1-Dichloroethane	100	nd	nd	nd	nd	nd	nd	nd
sis-1,2-Dichloroethene	100	nd	nd	nd	nd	nd	nd	nd
Chloroform	100	nd	nd	nd	nd	nd	nd	nd
l,1,1-Trichloroethane	100	nd	nd	nd	nd	nd	nd	nd
Carbon Tetrachloride	100	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	100	nd	nd	nd	nd	nd	nd	nd
Benzene	80	nd	nd	nd	nd	nd	nd	nd
Trichloroethene	100	nd	nd	nd	nd	nd	nd	nd
Foluene	200	nd	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	100	nd	nd	nd	nd	nd	nd	nd
Tetrachloroethene	100	nd	nd	nd	nd	nd	nd	nd
Ethylbenzene	100	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	100	nd	nd	nd	nd	nd	nd	nd
n,p-Xylene	200	nd	nd	nd	nd	nd	nd	nd
o-Xylene	100	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	100	nd	nd	nd	nd	nd	nd	nd
1,1 Difluoroethane (leak check)	10000	nd	nd	nd	nd	nd	nd	nd
Surrogate Recovery (DBFM) Surrogate Recovery (1,2-DCA-d4)		81% 80%	81% 81%	86% 90%	85% 83%	85% 81%	84% 80%	83% 81%
Surrogate Recovery (Toluene-d8)		91%	91%	90%	85%	92%	94%	93%

'RL' Indicates reporting limit at a dilution factor of 1 'nd' Indicates not detected at listed reporting limits

Analyses performed in TEG-Northern California's lab Analyses performed by: Ms. Lorena Williams

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GeoSolve, Inc Project # 2016-04 Lennar Webster 1750 Webster Street Oakland, California

TEG Project #60810F

EPA Method 8260B VOC Analyses of SOIL VAPOR in micrograms per cubic meter of Vapor

SAMPLE NUMBER:		SG3-10	SG4-5	SG4-10	SG5-5	SG5-10	SG6-5	SG6-10
SAMPLE DEPTH (feet):		10.0	5.0	10.0	5.0	10.0	5.0	10.0
PURGE VOLUME:		1	1	1	1	1	1	3
COLLECTION DATE:		8/10/16	8/10/16	8/10/16	8/10/16	8/10/16	8/10/16	8/10/16
COLLECTION TIME:		12:51	13:31	13:33	14:12	14:14	14:57	14:59
DILUTION FACTOR:	RL	1	1	1	1	1	1	1
Dichlorodifluoromethane	100	nd						
Vinyl Chloride	100	nd						
Chloroethane	100	nd						
Trichlorofluoromethane	100	nd						
1,1-Dichloroethene	100	nd						
1,1,2-Trichloro-trifluoroethane	100	nd						
Methylene Chloride	100	nd						
trans-1,2-Dichloroethene	100	nd						
1,1-Dichloroethane	100	nd						
cis-1,2-Dichloroethene	100	nd						
Chloroform	100	nd						
1,1,1-Trichloroethane	100	nd						
Carbon Tetrachloride	100	nd						
1,2-Dichloroethane	100	nd						
Benzene	80	nd	nd	nd	160	88	nd	nd
Trichloroethene	100	nd						
Toluene	200	nd						
1,1,2-Trichloroethane	100	nd						
Tetrachloroethene	100	nd	nd	nd	nd	nd	nd	120
Ethylbenzene	100	nd						
1,1,1,2-Tetrachloroethane	100	nd						
m,p-Xylene	200	nd						
o-Xylene	100	nd						
1,1,2,2-Tetrachloroethane	100	nd						
1,1 Difluoroethane (leak check)	10000	nd						
Surrogate Recovery (DBFM) Surrogate Recovery (1,2-DCA-d4) Surrogate Recovery (Toluene-d8)		81% 79% 90%	82% 76% 94%	82% 79% 84%	80% 84% 92%	83% 82% 83%	80% 80% 88%	87% 82% 93%

'RL' Indicates reporting limit at a dilution factor of 1 'nd' Indicates not detected at listed reporting limits

Analyses performed in TEG-Northern California's lab Analyses performed by: Ms. Lorena Williams

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GeoSolve, Inc Project # 2016-04 Lennar Webster 1750 Webster Street Oakland, California

TEG Project #60810F

CALIBRATION DATA - Calibration Check Compounds

	Vinyl Chloride	1,1 DCE	Chloroform	1,2 DCP	Toluene	Ethylbenzene
Midpoint	10.0	10.0	10.0	10.0	10.0	10.0
Continuing Calib	oration - Midpoint	*****				
8/10/16	8.4	8.6	9.4	9.3	9.1	9.1
	84%	86%	94%	93%	91%	91%