



A Lennar Company

August 4, 2017

Ms. Karel Detterman
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

RECEIVED

By Alameda County Environmental Health 2:19 pm, Aug 07, 2017

SUBJECT: ADDITIONAL SOIL-GAS SURVEY CERTIFICATION
County File # RO 3229
Lennar Multifamily Communities
1750 Webster Street, Oakland, CA

Dear Ms. Detterman:

You will find enclosed one copy of the following document prepared by GeoSolve, Inc. for the subject site:

- Additional Soil-Gas Survey dated May 31, 2017.

I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the SWRCB's GeoTracker website.

Should you have any questions, please do not hesitate to contact me at (415) 975-4991.

Sincerely:

Lennar Multifamily Communities
Tyler Wood
Development Director

0769.L1

MAKE IT YOURS



Project No. 2016-04
May 31, 2017

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

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
VRAP Case No. RO0003229
SCP No. RO0002672

Reference: 1) Summary of Environmental Activities Report for 301 19th Street; and
1750 and 1810 Webster Street in Oakland, California
By GeoSolve, Inc.
Dated June 19, 2017

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 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.

Background

Based on review of our Summary of Environmental Activities Report (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 ($\mu\text{g/L}$) and 14,000 $\mu\text{g/L}$ 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 ($\mu\text{g/L}$) in groundwater sample B-1. An elevated concentration of TPHg was detected at 26,000 $\mu\text{g/L}$, which exceed the residential ESL of 500 $\mu\text{g/L}$ in groundwater sample B-1. Benzene, toluene, ethyl benzene and total xylenes exceeded residential ESLs of 27 $\mu\text{g/L}$, 130 $\mu\text{g/L}$ and 100 $\mu\text{g/L}$, 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 $\mu\text{g/L}$ 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 ($\mu\text{g/m}^3$) at 5 feet below ground surface (bgs) and Tetrachloroethylene (PCE) was detected at 150 $\mu\text{g/m}^3$ 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.

At the request of the Alameda County Health Care Services Agency (ACHCSA), the purpose of conducting this Additional Soil-Gas Survey was to evaluate vinyl chloride at the bottom of the proposed elevator shafts and determine the oxygen, methane and carbon dioxide concentrations



along Webster Street and on the western portion of the site associated with the groundwater petroleum-hydrocarbon and chlorinated-hydrocarbon plumes.

ADDITIONAL SOIL-GAS SURVEY

Prior to commencement of fieldwork, *GeoSolve, Inc.* visited the subject property, marked four 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 Penecore Drilling, Inc., a State-licensed drilling contractor (C57-706568) of Woodland, California, advance four borings (SG-7 through SG-10) to approximately 5 feet below ground surface (bgs) on May 13, 2017, while boring SG-10 was advanced to 6 feet bgs within the proposed elevator shaft maximum depth. The locations of the temporary soil-gas probes are shown on Figure 1. Soil-gas probes SG-7 through SG-10 were allowed to set for two-days 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 5 feet bgs in SG-7 through SG-9 and 6 feet bgs in SG-10;
- 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 was placed within SG-7 through SG-9, while a 4-foot layer of hydrated bentonite was placed in SG-10.

Once soil-gas samples were collected, the Nyflow tubing was removed and the borings backfilled with bentonite to approximately 1-foot bgs, followed by one foot of neat cement to grade.

Laboratory Methods and Analytical Results

On May 15, 2017, two days after installation of the temporary vapor-probes on May 13, 2017, a *GeoSolve, Inc.* field geologist using McCampbell Analytical, Inc. supplied negative (-) 30 inches



of mercury vacuum 4-liter purge Summa canisters, purged three tube volumes in soil-gas probes SG-7 through SG-10 and using McCampbell Analytical, Inc. supplied 1-liter Summa -30 inches of mercury vacuum canisters, soil-gas was collected until the pressure gauges indicated -5 inches of mercury vacuum. Prior to collection of the samples, a shut-in test was conducted and alcohol wipes were used under a cover to check for leaks within in sampling manifolds. Soil-gas samples SG-7 through SG-10 were immediately submitted to McCampbell Analytical, Inc., a State-certified hazardous waste sampling laboratory (Certification No. 1644) in Pittsburg, California, for analysis.

Soil-gas samples SG-7, SG-8, SG-9, and SG-10 analyzed for total oxygen, total methane and total carbon dioxide in percent (%) using analytical Method ASTM D 1946-90 and for volatile organic compounds (VOCs) using Environmental Protection Agency (EPA) Methods TO-15.

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

TABLE 1
LABORATORY ANALYTICAL RESULTS OF ADDITIONAL SOIL-GAS SAMPLES
1750 Webster Streets and 301 19th Street
Oakland, California
May 15, 2017

Sample ID	Sample Depth (feet)	IPA ($\mu\text{g}/\text{m}^3$)	Oxygen (%)	Methane (%)	Carbon Dioxide (%)	Vinyl Chloride ($\mu\text{g}/\text{m}^3$)
SG-7	5	<50	17	<0.00020	0.036	<1.3
SG-8	5	<50	17	<0.00020	0.039	<1.3
SG-9	5	<50	16	<0.00020	0.037	<1.3
SG-10	6	<50	16	<0.00020	0.038	<1.3

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

IPA = isopropyl alcohol.

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 vinyl chloride was not detected and other VOCs were not detected or detected below Environmental Screening Levels in soil-gas samples SG-7 through SG-10 collected from the northern, western and southern portions of the property.



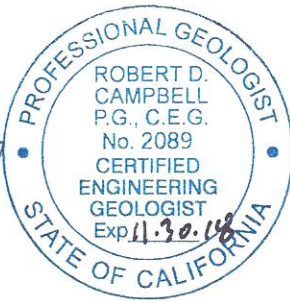
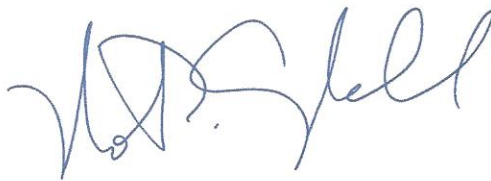
- Methane was not detected in any soil-gas sample collected and carbon dioxide levels ranged from 0.036% to 0.039% while oxygen concentrations ranged from 16% to 17% in all soil-gas samples analyzed from SG-7 through SG-10.
- Based on these results, no adverse effects from the groundwater petroleum-hydrocarbon or chlorinated-hydrocarbon plumes beneath the site has impacted the shallow soil-gas.

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,
GeoSolve, Inc.



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 – McCampbell Analytical, Inc. Laboratory Analytical Report and Chain-of-Custody Document





Source: LPAS Site Plan Ground Level A1.001, 10/06/16

PROPOSED DEVELOPMENT FOOTPRINT LENNAR MULTIFAMILY COMMUNITIES SUMMARY OF ENVIRONMENTAL ACTIVITIES 1750 and 1810 WEBSTER STREET and 301 19th STREET OAKLAND, CALIFORNIA		Project No.	2015-29
		Drawn by:	GC
		Date:	06/2017
		Scale:	AS SHOWN

Figure No. **1**



GeoSolve, Inc.
Geoscience solutions rather than Status-Quo
 Address: 1807 Santa Rita Rd, Suite D-165
 Pleasanton, California 94566

Visit us at www.geosolve-inc.com

APPENDIX A

**McCAMPBELL ANALYTICAL INC. LABORATORY ANALYTICAL RESULTS
AND CHAIN-OF-CUSTODY DOCUMENTS**





McC Campbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1705682

Report Created for: Geosolve, Inc.

1807 Santa Rita Road, Suite D-165
Pleasanton, CA 94566

Project Contact: Rob Campbell

Project P.O.: 2015-29

Project Name: 2015-29; 19th and Harrison

Project Received: 05/15/2017

Analytical Report reviewed & approved for release on 05/18/2017 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.





Glossary of Terms & Qualifier Definitions

Client: Geosolve, Inc.
Project: 2015-29; 19th and Harrison
WorkOrder: 1705682

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

Quality Control Qualifiers

F2 LCS/LCSD recovery and/or RPD is out of acceptance criteria.



Case Narrative

Client: Geosolve, Inc.
Project: 2015-29; 19th and Harrison

Work Order: 1705682
May 17, 2017

TO-15 ANALYSIS

All summa canisters are EVACUATED 5 days after the reporting of the results. Please call or email if a longer retention time is required.

In an effort to attain the lowest reporting limits possible for the majority of the TO-15 target list, high level compounds may be analyzed using EPA Method 8260B.

Polymer (Tedlar) bags are not recommended for TO15 samples. The disadvantages are listed in Appendix B of the DTSC Active Soil Gas Advisory of July 2015.



Analytical Report

Client: Geosolve, Inc.
Date Received: 5/15/17 17:00
Date Prepared: 5/16/17
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
Extraction Method: ASTM D 1946-90
Analytical Method: ASTM D 1946-90
Unit: %

Atmospheric Gases

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SG-7	1705682-001A	SoilGas	05/15/2017 13:40	GC26	139075

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
14.66	29.33	AK

Analytes	Result	RL	DF	Date Analyzed
Oxygen	17	0.40	1	05/16/2017 15:33

SG-8	1705682-002A	SoilGas	05/15/2017 13:50	GC26	139075
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Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
14.08	28.13	AK

Analytes	Result	RL	DF	Date Analyzed
Oxygen	17	0.40	1	05/16/2017 15:54

SG-9	1705682-003A	SoilGas	05/15/2017 14:00	GC26	139075
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Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
14.73	29.36	AK

Analytes	Result	RL	DF	Date Analyzed
Oxygen	16	0.40	1	05/16/2017 16:15

(Cont.)

 Angela Rydelius, Lab Manager



Analytical Report

Client: Geosolve, Inc.
Date Received: 5/15/17 17:00
Date Prepared: 5/16/17
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
Extraction Method: ASTM D 1946-90
Analytical Method: ASTM D 1946-90
Unit: %

Atmospheric Gases

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SG-10	1705682-004A	SoilGas	05/15/2017 14:20	GC26	139075

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
12.59	25.10	AK

Analytes	Result	RL	DF	Date Analyzed
Oxygen	16	0.40	1	05/16/2017 16:36

 Angela Rydelius, Lab Manager



Analytical Report

Client: Geosolve, Inc.
Date Received: 5/15/17 17:00
Date Prepared: 5/16/17
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
Extraction Method: ASTM D 1946-90
Analytical Method: ASTM D 1946-90
Unit: %

Light Gases

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SG-7	1705682-001A	SoilGas	05/15/2017 13:40	GC26	139074

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
14.66	29.33	AK

Analytes	Result	RL	DF	Date Analyzed
Carbon Dioxide	0.036	0.0040	1	05/16/2017 11:25
Methane	ND	0.00020	1	05/16/2017 11:25

SG-8	1705682-002A	SoilGas	05/15/2017 13:50	GC26	139074
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Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
14.08	28.13	AK

Analytes	Result	RL	DF	Date Analyzed
Carbon Dioxide	0.039	0.0040	1	05/16/2017 11:46
Methane	ND	0.00020	1	05/16/2017 11:46

SG-9	1705682-003A	SoilGas	05/15/2017 14:00	GC26	139074
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Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
14.73	29.36	AK

Analytes	Result	RL	DF	Date Analyzed
Carbon Dioxide	0.037	0.0040	1	05/16/2017 12:07
Methane	ND	0.00020	1	05/16/2017 12:07

(Cont.)

 Angela Rydelius, Lab Manager



Analytical Report

Client: Geosolve, Inc.
Date Received: 5/15/17 17:00
Date Prepared: 5/16/17
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
Extraction Method: ASTM D 1946-90
Analytical Method: ASTM D 1946-90
Unit: %

Light Gases

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SG-10	1705682-004A	SoilGas	05/15/2017 14:20	GC26	139074

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
12.59	25.10	AK

Analytes	Result	RL	DF	Date Analyzed
Carbon Dioxide	0.038	0.0040	1	05/16/2017 12:29
Methane	ND	0.00020	1	05/16/2017 12:29

 Angela Rydelius, Lab Manager



Analytical Report

Client: Geosolve, Inc.
Date Received: 5/15/17 17:00
Date Prepared: 5/17/17
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³

Leak Check Compound

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SG-7	1705682-001A	SoilGas	05/15/2017 13:40	GC43	139079

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
14.66	29.33	AK

Analytes	Result	RL	DF	Date Analyzed
Isopropyl Alcohol	ND	50	1	05/17/2017 09:34
Surrogates	REC (%)	Limits		
1,2-DCA-d4	97	70-130		05/17/2017 09:34

SG-8	1705682-002A	SoilGas	05/15/2017 13:50	GC43	139079
------	--------------	---------	------------------	------	--------

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
14.08	28.13	AK

Analytes	Result	RL	DF	Date Analyzed
Isopropyl Alcohol	ND	50	1	05/17/2017 10:17
Surrogates	REC (%)	Limits		
1,2-DCA-d4	96	70-130		05/17/2017 10:17

SG-9	1705682-003A	SoilGas	05/15/2017 14:00	GC43	139079
------	--------------	---------	------------------	------	--------

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
14.73	29.36	AK

Analytes	Result	RL	DF	Date Analyzed
Isopropyl Alcohol	ND	50	1	05/17/2017 22:24
Surrogates	REC (%)	Limits		
1,2-DCA-d4	96	70-130		05/17/2017 22:24

(Cont.)

 Angela Rydelius, Lab Manager



Analytical Report

Client: Geosolve, Inc.
Date Received: 5/15/17 17:00
Date Prepared: 5/17/17
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³

Leak Check Compound

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SG-10	1705682-004A	SoilGas	05/15/2017 14:20	GC43	139079

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
12.59	25.10	AK

Analytes	Result	RL	DF	Date Analyzed
Isopropyl Alcohol	ND	50	1	05/17/2017 08:51

Surrogates	REC (%)	Limits	Date Analyzed
1,2-DCA-d4	97	70-130	05/17/2017 08:51

 Angela Rydelius, Lab Manager



Analytical Report

Client: Geosolve, Inc.
Date Received: 5/15/17 17:00
Date Prepared: 5/17/17
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³

Volatile Organic Compounds

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SG-7	1705682-001A	SoilGas	05/15/2017 13:40	GC43	139079

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
14.66	29.33	AK

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	60	1	05/17/2017 09:34
Acrolein	ND	5.8	1	05/17/2017 09:34
Acrylonitrile	ND	1.1	1	05/17/2017 09:34
tert-Amyl methyl ether (TAME)	ND	2.1	1	05/17/2017 09:34
Benzene	ND	1.6	1	05/17/2017 09:34
Benzyl chloride	ND	2.6	1	05/17/2017 09:34
Bromodichloromethane	ND	3.5	1	05/17/2017 09:34
Bromoform	ND	5.2	1	05/17/2017 09:34
Bromomethane	ND	2.0	1	05/17/2017 09:34
1,3-Butadiene	ND	1.1	1	05/17/2017 09:34
2-Butanone (MEK)	ND	75	1	05/17/2017 09:34
t-Butyl alcohol (TBA)	ND	31	1	05/17/2017 09:34
Carbon Disulfide	ND	1.6	1	05/17/2017 09:34
Carbon Tetrachloride	ND	3.2	1	05/17/2017 09:34
Chlorobenzene	ND	2.4	1	05/17/2017 09:34
Chloroethane	ND	1.3	1	05/17/2017 09:34
Chloroform	ND	2.4	1	05/17/2017 09:34
Chloromethane	ND	1.0	1	05/17/2017 09:34
Cyclohexane	ND	18	1	05/17/2017 09:34
Dibromochloromethane	ND	4.4	1	05/17/2017 09:34
1,2-Dibromo-3-chloropropane	ND	0.12	1	05/17/2017 09:34
1,2-Dibromoethane (EDB)	ND	3.9	1	05/17/2017 09:34
1,2-Dichlorobenzene	ND	3.0	1	05/17/2017 09:34
1,3-Dichlorobenzene	ND	3.0	1	05/17/2017 09:34
1,4-Dichlorobenzene	ND	3.0	1	05/17/2017 09:34
Dichlorodifluoromethane	2.6	2.5	1	05/17/2017 09:34
1,1-Dichloroethane	ND	2.0	1	05/17/2017 09:34
1,2-Dichloroethane (1,2-DCA)	ND	2.0	1	05/17/2017 09:34
1,1-Dichloroethene	ND	2.0	1	05/17/2017 09:34
cis-1,2-Dichloroethene	ND	2.0	1	05/17/2017 09:34
trans-1,2-Dichloroethene	ND	2.0	1	05/17/2017 09:34
1,2-Dichloropropane	ND	2.4	1	05/17/2017 09:34
cis-1,3-Dichloropropene	ND	2.3	1	05/17/2017 09:34

(Cont.)

 Angela Rydelius, Lab Manager



Analytical Report

Client: Geosolve, Inc.
Date Received: 5/15/17 17:00
Date Prepared: 5/17/17
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³

Volatile Organic Compounds

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SG-7	1705682-001A	SoilGas	05/15/2017 13:40	GC43	139079

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
14.66	29.33	AK

Analytes	Result	RL	DF	Date Analyzed
trans-1,3-Dichloropropene	ND	2.3	1	05/17/2017 09:34
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	3.6	1	05/17/2017 09:34
Diisopropyl ether (DIPE)	ND	2.1	1	05/17/2017 09:34
1,4-Dioxane	ND	1.8	1	05/17/2017 09:34
Ethanol	ND	96	1	05/17/2017 09:34
Ethyl acetate	ND	1.8	1	05/17/2017 09:34
Ethyl tert-butyl ether (ETBE)	ND	2.1	1	05/17/2017 09:34
Ethylbenzene	ND	2.2	1	05/17/2017 09:34
4-Ethyltoluene	ND	2.5	1	05/17/2017 09:34
Freon 113	ND	3.9	1	05/17/2017 09:34
Heptane	ND	21	1	05/17/2017 09:34
Hexachlorobutadiene	ND	5.4	1	05/17/2017 09:34
Hexane	ND	18	1	05/17/2017 09:34
2-Hexanone	ND	2.1	1	05/17/2017 09:34
4-Methyl-2-pentanone (MIBK)	ND	2.1	1	05/17/2017 09:34
Methyl-t-butyl ether (MTBE)	ND	1.8	1	05/17/2017 09:34
Methylene chloride	ND	8.8	1	05/17/2017 09:34
Methyl methacrylate	ND	2.1	1	05/17/2017 09:34
Naphthalene	ND	5.3	1	05/17/2017 09:34
Propene	ND	88	1	05/17/2017 09:34
Styrene	ND	2.2	1	05/17/2017 09:34
1,1,1,2-Tetrachloroethane	ND	3.5	1	05/17/2017 09:34
1,1,2,2-Tetrachloroethane	ND	3.5	1	05/17/2017 09:34
Tetrachloroethene	ND	3.4	1	05/17/2017 09:34
Tetrahydrofuran	ND	3.0	1	05/17/2017 09:34
Toluene	ND	1.9	1	05/17/2017 09:34
1,2,4-Trichlorobenzene	ND	3.8	1	05/17/2017 09:34
1,1,1-Trichloroethane	ND	2.8	1	05/17/2017 09:34
1,1,2-Trichloroethane	ND	2.8	1	05/17/2017 09:34
Trichloroethene	ND	2.8	1	05/17/2017 09:34
Trichlorofluoromethane	ND	2.8	1	05/17/2017 09:34
1,2,4-Trimethylbenzene	ND	2.5	1	05/17/2017 09:34
1,3,5-Trimethylbenzene	ND	2.5	1	05/17/2017 09:34

(Cont.)

 Angela Rydelius, Lab Manager



Analytical Report

Client: Geosolve, Inc.
Date Received: 5/15/17 17:00
Date Prepared: 5/17/17
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³

Volatile Organic Compounds

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SG-7	1705682-001A	SoilGas	05/15/2017 13:40	GC43	139079

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
14.66	29.33	AK

Analytes	Result	RL	DF	Date Analyzed
Vinyl Acetate	ND	18	1	05/17/2017 09:34
Vinyl Chloride	ND	1.3	1	05/17/2017 09:34
Xylenes, Total	ND	6.6	1	05/17/2017 09:34
Surrogates	REC (%)	Limits		
1,2-DCA-d4	97	70-130		05/17/2017 09:34
Toluene-d8	97	70-130		05/17/2017 09:34
4-BFB	103	70-130		05/17/2017 09:34



Analytical Report

Client: Geosolve, Inc.
Date Received: 5/15/17 17:00
Date Prepared: 5/17/17
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³

Volatile Organic Compounds

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SG-8	1705682-002A	SoilGas	05/15/2017 13:50	GC43	139079

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
14.08	28.13	AK

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	60	1	05/17/2017 10:17
Acrolein	ND	5.8	1	05/17/2017 10:17
Acrylonitrile	ND	1.1	1	05/17/2017 10:17
tert-Amyl methyl ether (TAME)	ND	2.1	1	05/17/2017 10:17
Benzene	ND	1.6	1	05/17/2017 10:17
Benzyl chloride	ND	2.6	1	05/17/2017 10:17
Bromodichloromethane	ND	3.5	1	05/17/2017 10:17
Bromoform	ND	5.2	1	05/17/2017 10:17
Bromomethane	ND	2.0	1	05/17/2017 10:17
1,3-Butadiene	ND	1.1	1	05/17/2017 10:17
2-Butanone (MEK)	ND	75	1	05/17/2017 10:17
t-Butyl alcohol (TBA)	ND	31	1	05/17/2017 10:17
Carbon Disulfide	ND	1.6	1	05/17/2017 10:17
Carbon Tetrachloride	ND	3.2	1	05/17/2017 10:17
Chlorobenzene	ND	2.4	1	05/17/2017 10:17
Chloroethane	ND	1.3	1	05/17/2017 10:17
Chloroform	ND	2.4	1	05/17/2017 10:17
Chloromethane	ND	1.0	1	05/17/2017 10:17
Cyclohexane	ND	18	1	05/17/2017 10:17
Dibromochloromethane	ND	4.4	1	05/17/2017 10:17
1,2-Dibromo-3-chloropropane	ND	0.12	1	05/17/2017 10:17
1,2-Dibromoethane (EDB)	ND	3.9	1	05/17/2017 10:17
1,2-Dichlorobenzene	ND	3.0	1	05/17/2017 10:17
1,3-Dichlorobenzene	5.9	3.0	1	05/17/2017 10:17
1,4-Dichlorobenzene	5.4	3.0	1	05/17/2017 10:17
Dichlorodifluoromethane	2.6	2.5	1	05/17/2017 10:17
1,1-Dichloroethane	ND	2.0	1	05/17/2017 10:17
1,2-Dichloroethane (1,2-DCA)	ND	2.0	1	05/17/2017 10:17
1,1-Dichloroethene	ND	2.0	1	05/17/2017 10:17
cis-1,2-Dichloroethene	ND	2.0	1	05/17/2017 10:17
trans-1,2-Dichloroethene	ND	2.0	1	05/17/2017 10:17
1,2-Dichloropropane	ND	2.4	1	05/17/2017 10:17
cis-1,3-Dichloropropene	ND	2.3	1	05/17/2017 10:17

(Cont.)

 Angela Rydelius, Lab Manager



Analytical Report

Client: Geosolve, Inc.
Date Received: 5/15/17 17:00
Date Prepared: 5/17/17
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³

Volatile Organic Compounds

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SG-8	1705682-002A	SoilGas	05/15/2017 13:50	GC43	139079

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
14.08	28.13	AK

Analytes	Result	RL	DF	Date Analyzed
trans-1,3-Dichloropropene	ND	2.3	1	05/17/2017 10:17
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	3.6	1	05/17/2017 10:17
Diisopropyl ether (DIPE)	ND	2.1	1	05/17/2017 10:17
1,4-Dioxane	ND	1.8	1	05/17/2017 10:17
Ethanol	ND	96	1	05/17/2017 10:17
Ethyl acetate	ND	1.8	1	05/17/2017 10:17
Ethyl tert-butyl ether (ETBE)	ND	2.1	1	05/17/2017 10:17
Ethylbenzene	37	2.2	1	05/17/2017 10:17
4-Ethyltoluene	ND	2.5	1	05/17/2017 10:17
Freon 113	ND	3.9	1	05/17/2017 10:17
Heptane	ND	21	1	05/17/2017 10:17
Hexachlorobutadiene	ND	5.4	1	05/17/2017 10:17
Hexane	ND	18	1	05/17/2017 10:17
2-Hexanone	ND	2.1	1	05/17/2017 10:17
4-Methyl-2-pentanone (MIBK)	ND	2.1	1	05/17/2017 10:17
Methyl-t-butyl ether (MTBE)	ND	1.8	1	05/17/2017 10:17
Methylene chloride	ND	8.8	1	05/17/2017 10:17
Methyl methacrylate	ND	2.1	1	05/17/2017 10:17
Naphthalene	ND	5.3	1	05/17/2017 10:17
Propene	ND	88	1	05/17/2017 10:17
Styrene	ND	2.2	1	05/17/2017 10:17
1,1,1,2-Tetrachloroethane	ND	3.5	1	05/17/2017 10:17
1,1,2,2-Tetrachloroethane	ND	3.5	1	05/17/2017 10:17
Tetrachloroethene	ND	3.4	1	05/17/2017 10:17
Tetrahydrofuran	ND	3.0	1	05/17/2017 10:17
Toluene	ND	1.9	1	05/17/2017 10:17
1,2,4-Trichlorobenzene	ND	3.8	1	05/17/2017 10:17
1,1,1-Trichloroethane	ND	2.8	1	05/17/2017 10:17
1,1,2-Trichloroethane	ND	2.8	1	05/17/2017 10:17
Trichloroethene	ND	2.8	1	05/17/2017 10:17
Trichlorofluoromethane	ND	2.8	1	05/17/2017 10:17
1,2,4-Trimethylbenzene	ND	2.5	1	05/17/2017 10:17
1,3,5-Trimethylbenzene	ND	2.5	1	05/17/2017 10:17

(Cont.)

 Angela Rydelius, Lab Manager



Analytical Report

Client: Geosolve, Inc.
Date Received: 5/15/17 17:00
Date Prepared: 5/17/17
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³

Volatile Organic Compounds

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SG-8	1705682-002A	SoilGas	05/15/2017 13:50	GC43	139079

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
14.08	28.13	AK

Analytes	Result	RL	DF	Date Analyzed
Vinyl Acetate	ND	18	1	05/17/2017 10:17
Vinyl Chloride	ND	1.3	1	05/17/2017 10:17
Xylenes, Total	160	6.6	1	05/17/2017 10:17

Surrogates	REC (%)	Limits	Date Analyzed
1,2-DCA-d4	96	70-130	05/17/2017 10:17
Toluene-d8	97	70-130	05/17/2017 10:17
4-BFB	105	70-130	05/17/2017 10:17



Analytical Report

Client: Geosolve, Inc.
Date Received: 5/15/17 17:00
Date Prepared: 5/17/17
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³

Volatile Organic Compounds

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SG-9	1705682-003A	SoilGas	05/15/2017 14:00	GC43	139079

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
14.73	29.36	AK

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	60	1	05/17/2017 22:24
Acrolein	ND	5.8	1	05/17/2017 22:24
Acrylonitrile	ND	1.1	1	05/17/2017 22:24
tert-Amyl methyl ether (TAME)	ND	2.1	1	05/17/2017 22:24
Benzene	ND	1.6	1	05/17/2017 22:24
Benzyl chloride	ND	2.6	1	05/17/2017 22:24
Bromodichloromethane	ND	3.5	1	05/17/2017 22:24
Bromoform	ND	5.2	1	05/17/2017 22:24
Bromomethane	ND	2.0	1	05/17/2017 22:24
1,3-Butadiene	ND	1.1	1	05/17/2017 22:24
2-Butanone (MEK)	ND	75	1	05/17/2017 22:24
t-Butyl alcohol (TBA)	ND	31	1	05/17/2017 22:24
Carbon Disulfide	ND	1.6	1	05/17/2017 22:24
Carbon Tetrachloride	ND	3.2	1	05/17/2017 22:24
Chlorobenzene	ND	2.4	1	05/17/2017 22:24
Chloroethane	ND	1.3	1	05/17/2017 22:24
Chloroform	ND	2.4	1	05/17/2017 22:24
Chloromethane	1.2	1.0	1	05/17/2017 22:24
Cyclohexane	ND	18	1	05/17/2017 22:24
Dibromochloromethane	ND	4.4	1	05/17/2017 22:24
1,2-Dibromo-3-chloropropane	ND	0.12	1	05/17/2017 22:24
1,2-Dibromoethane (EDB)	ND	3.9	1	05/17/2017 22:24
1,2-Dichlorobenzene	ND	3.0	1	05/17/2017 22:24
1,3-Dichlorobenzene	ND	3.0	1	05/17/2017 22:24
1,4-Dichlorobenzene	ND	3.0	1	05/17/2017 22:24
Dichlorodifluoromethane	ND	2.5	1	05/17/2017 22:24
1,1-Dichloroethane	ND	2.0	1	05/17/2017 22:24
1,2-Dichloroethane (1,2-DCA)	ND	2.0	1	05/17/2017 22:24
1,1-Dichloroethene	ND	2.0	1	05/17/2017 22:24
cis-1,2-Dichloroethene	ND	2.0	1	05/17/2017 22:24
trans-1,2-Dichloroethene	ND	2.0	1	05/17/2017 22:24
1,2-Dichloropropane	ND	2.4	1	05/17/2017 22:24
cis-1,3-Dichloropropene	ND	2.3	1	05/17/2017 22:24

(Cont.)

 Angela Rydelius, Lab Manager



Analytical Report

Client: Geosolve, Inc.
Date Received: 5/15/17 17:00
Date Prepared: 5/17/17
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³

Volatile Organic Compounds

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SG-9	1705682-003A	SoilGas	05/15/2017 14:00	GC43	139079

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
14.73	29.36	AK

Analytes	Result	RL	DF	Date Analyzed
trans-1,3-Dichloropropene	ND	2.3	1	05/17/2017 22:24
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	3.6	1	05/17/2017 22:24
Diisopropyl ether (DIPE)	ND	2.1	1	05/17/2017 22:24
1,4-Dioxane	ND	1.8	1	05/17/2017 22:24
Ethanol	ND	96	1	05/17/2017 22:24
Ethyl acetate	ND	1.8	1	05/17/2017 22:24
Ethyl tert-butyl ether (ETBE)	ND	2.1	1	05/17/2017 22:24
Ethylbenzene	ND	2.2	1	05/17/2017 22:24
4-Ethyltoluene	ND	2.5	1	05/17/2017 22:24
Freon 113	ND	3.9	1	05/17/2017 22:24
Heptane	ND	21	1	05/17/2017 22:24
Hexachlorobutadiene	ND	5.4	1	05/17/2017 22:24
Hexane	ND	18	1	05/17/2017 22:24
2-Hexanone	ND	2.1	1	05/17/2017 22:24
4-Methyl-2-pentanone (MIBK)	ND	2.1	1	05/17/2017 22:24
Methyl-t-butyl ether (MTBE)	ND	1.8	1	05/17/2017 22:24
Methylene chloride	ND	8.8	1	05/17/2017 22:24
Methyl methacrylate	ND	2.1	1	05/17/2017 22:24
Naphthalene	ND	5.3	1	05/17/2017 22:24
Propene	ND	88	1	05/17/2017 22:24
Styrene	ND	2.2	1	05/17/2017 22:24
1,1,1,2-Tetrachloroethane	ND	3.5	1	05/17/2017 22:24
1,1,2,2-Tetrachloroethane	ND	3.5	1	05/17/2017 22:24
Tetrachloroethene	ND	3.4	1	05/17/2017 22:24
Tetrahydrofuran	ND	3.0	1	05/17/2017 22:24
Toluene	ND	1.9	1	05/17/2017 22:24
1,2,4-Trichlorobenzene	ND	3.8	1	05/17/2017 22:24
1,1,1-Trichloroethane	ND	2.8	1	05/17/2017 22:24
1,1,2-Trichloroethane	ND	2.8	1	05/17/2017 22:24
Trichloroethene	ND	2.8	1	05/17/2017 22:24
Trichlorofluoromethane	ND	2.8	1	05/17/2017 22:24
1,2,4-Trimethylbenzene	ND	2.5	1	05/17/2017 22:24
1,3,5-Trimethylbenzene	ND	2.5	1	05/17/2017 22:24

(Cont.)

 Angela Rydelius, Lab Manager



Analytical Report

Client: Geosolve, Inc.
Date Received: 5/15/17 17:00
Date Prepared: 5/17/17
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³

Volatile Organic Compounds

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SG-9	1705682-003A	SoilGas	05/15/2017 14:00	GC43	139079

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
14.73	29.36	AK

Analytes	Result	RL	DF	Date Analyzed
Vinyl Acetate	ND	18	1	05/17/2017 22:24
Vinyl Chloride	ND	1.3	1	05/17/2017 22:24
Xylenes, Total	ND	6.6	1	05/17/2017 22:24
Surrogates	REC (%)	Limits		
1,2-DCA-d4	96	70-130		05/17/2017 22:24
Toluene-d8	97	70-130		05/17/2017 22:24
4-BFB	102	70-130		05/17/2017 22:24



Analytical Report

Client: Geosolve, Inc.
Date Received: 5/15/17 17:00
Date Prepared: 5/17/17
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³

Volatile Organic Compounds

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SG-10	1705682-004A	SoilGas	05/15/2017 14:20	GC43	139079

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
12.59	25.10	AK

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	60	1	05/17/2017 08:51
Acrolein	ND	5.8	1	05/17/2017 08:51
Acrylonitrile	ND	1.1	1	05/17/2017 08:51
tert-Amyl methyl ether (TAME)	ND	2.1	1	05/17/2017 08:51
Benzene	ND	1.6	1	05/17/2017 08:51
Benzyl chloride	ND	2.6	1	05/17/2017 08:51
Bromodichloromethane	ND	3.5	1	05/17/2017 08:51
Bromoform	ND	5.2	1	05/17/2017 08:51
Bromomethane	ND	2.0	1	05/17/2017 08:51
1,3-Butadiene	ND	1.1	1	05/17/2017 08:51
2-Butanone (MEK)	ND	75	1	05/17/2017 08:51
t-Butyl alcohol (TBA)	ND	31	1	05/17/2017 08:51
Carbon Disulfide	ND	1.6	1	05/17/2017 08:51
Carbon Tetrachloride	ND	3.2	1	05/17/2017 08:51
Chlorobenzene	ND	2.4	1	05/17/2017 08:51
Chloroethane	ND	1.3	1	05/17/2017 08:51
Chloroform	ND	2.4	1	05/17/2017 08:51
Chloromethane	ND	1.0	1	05/17/2017 08:51
Cyclohexane	ND	18	1	05/17/2017 08:51
Dibromochloromethane	ND	4.4	1	05/17/2017 08:51
1,2-Dibromo-3-chloropropane	ND	0.12	1	05/17/2017 08:51
1,2-Dibromoethane (EDB)	ND	3.9	1	05/17/2017 08:51
1,2-Dichlorobenzene	ND	3.0	1	05/17/2017 08:51
1,3-Dichlorobenzene	3.5	3.0	1	05/17/2017 08:51
1,4-Dichlorobenzene	ND	3.0	1	05/17/2017 08:51
Dichlorodifluoromethane	2.5	2.5	1	05/17/2017 08:51
1,1-Dichloroethane	ND	2.0	1	05/17/2017 08:51
1,2-Dichloroethane (1,2-DCA)	ND	2.0	1	05/17/2017 08:51
1,1-Dichloroethene	ND	2.0	1	05/17/2017 08:51
cis-1,2-Dichloroethene	ND	2.0	1	05/17/2017 08:51
trans-1,2-Dichloroethene	ND	2.0	1	05/17/2017 08:51
1,2-Dichloropropane	ND	2.4	1	05/17/2017 08:51
cis-1,3-Dichloropropene	ND	2.3	1	05/17/2017 08:51

(Cont.)

 Angela Rydelius, Lab Manager



Analytical Report

Client: Geosolve, Inc.
Date Received: 5/15/17 17:00
Date Prepared: 5/17/17
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³

Volatile Organic Compounds

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SG-10	1705682-004A	SoilGas	05/15/2017 14:20	GC43	139079

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
12.59	25.10	AK

Analytes	Result	RL	DF	Date Analyzed
trans-1,3-Dichloropropene	ND	2.3	1	05/17/2017 08:51
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	3.6	1	05/17/2017 08:51
Diisopropyl ether (DIPE)	ND	2.1	1	05/17/2017 08:51
1,4-Dioxane	ND	1.8	1	05/17/2017 08:51
Ethanol	ND	960	10	05/17/2017 08:08
Ethyl acetate	ND	1.8	1	05/17/2017 08:51
Ethyl tert-butyl ether (ETBE)	ND	2.1	1	05/17/2017 08:51
Ethylbenzene	ND	2.2	1	05/17/2017 08:51
4-Ethyltoluene	ND	2.5	1	05/17/2017 08:51
Freon 113	ND	3.9	1	05/17/2017 08:51
Heptane	ND	21	1	05/17/2017 08:51
Hexachlorobutadiene	ND	5.4	1	05/17/2017 08:51
Hexane	ND	18	1	05/17/2017 08:51
2-Hexanone	ND	2.1	1	05/17/2017 08:51
4-Methyl-2-pentanone (MIBK)	ND	2.1	1	05/17/2017 08:51
Methyl-t-butyl ether (MTBE)	ND	1.8	1	05/17/2017 08:51
Methylene chloride	ND	8.8	1	05/17/2017 08:51
Methyl methacrylate	ND	2.1	1	05/17/2017 08:51
Naphthalene	ND	5.3	1	05/17/2017 08:51
Propene	ND	88	1	05/17/2017 08:51
Styrene	ND	2.2	1	05/17/2017 08:51
1,1,1,2-Tetrachloroethane	ND	3.5	1	05/17/2017 08:51
1,1,2,2-Tetrachloroethane	ND	3.5	1	05/17/2017 08:51
Tetrachloroethene	ND	3.4	1	05/17/2017 08:51
Tetrahydrofuran	ND	3.0	1	05/17/2017 08:51
Toluene	ND	1.9	1	05/17/2017 08:51
1,2,4-Trichlorobenzene	ND	3.8	1	05/17/2017 08:51
1,1,1-Trichloroethane	ND	2.8	1	05/17/2017 08:51
1,1,2-Trichloroethane	ND	2.8	1	05/17/2017 08:51
Trichloroethene	ND	2.8	1	05/17/2017 08:51
Trichlorofluoromethane	ND	2.8	1	05/17/2017 08:51
1,2,4-Trimethylbenzene	ND	2.5	1	05/17/2017 08:51
1,3,5-Trimethylbenzene	ND	2.5	1	05/17/2017 08:51

(Cont.)

 Angela Rydelius, Lab Manager



Analytical Report

Client: Geosolve, Inc.
Date Received: 5/15/17 17:00
Date Prepared: 5/17/17
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³

Volatile Organic Compounds

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
SG-10	1705682-004A	SoilGas	05/15/2017 14:20	GC43	139079

Initial Pressure (psia)	Final Pressure (psia)	Analyst(s)
12.59	25.10	AK

Analytes	Result	RL	DF	Date Analyzed
Vinyl Acetate	ND	18	1	05/17/2017 08:51
Vinyl Chloride	ND	1.3	1	05/17/2017 08:51
Xylenes, Total	ND	6.6	1	05/17/2017 08:51
Surrogates	REC (%)	Limits		
1,2-DCA-d4	97	70-130		05/17/2017 08:51
Toluene-d8	97	70-130		05/17/2017 08:51
4-BFB	103	70-130		05/17/2017 08:51

 Angela Rydelius, Lab Manager



Quality Control Report

Client: Geosolve, Inc.	WorkOrder: 1705682
Date Prepared: 5/16/17	BatchID: 139075
Date Analyzed: 5/16/17	Extraction Method: ASTM D 1946-90
Instrument: GC26	Analytical Method: ASTM D 1946-90
Matrix: SoilGas	Unit: %
Project: 2015-29; 19th and Harrison	Sample ID: MB/LCS-139075

QC Summary Report for ASTM D1946-90

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Oxygen	ND	0.572	0.20	0.70	-	82	70-130

QA/QC Officer



Quality Control Report

Client:	Geosolve, Inc.	WorkOrder:	1705682
Date Prepared:	5/16/17	BatchID:	139074
Date Analyzed:	5/16/17	Extraction Method:	ASTM D 1946-90
Instrument:	GC26	Analytical Method:	ASTM D 1946-90
Matrix:	SoilGas	Unit:	%
Project:	2015-29; 19th and Harrison	Sample ID:	MB/LCS-139074

QC Summary Report for ASTM D1946-90

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Carbon Dioxide	ND	0.00807	0.0020	0.010	-	81	70-130
Methane	ND	0.00701	0.00010	0.010	-	70	70-130

QA/QC Officer



Quality Control Report

Client: Geosolve, Inc.
Date Prepared: 5/16/17
Date Analyzed: 5/16/17
Instrument: GC43
Matrix: SoilGas
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
BatchID: 139079
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³
Sample ID: MB/LCS-139079

QC Summary Report for TO15

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Acetone	ND	73.9	30	60	-	123	60-140
Acrolein	ND	57.1	2.9	58.25	-	98	60-140
Acrylonitrile	ND	54.4	0.55	55	-	99	60-140
tert-Amyl methyl ether (TAME)	ND	119	1.0	105	-	113	60-140
Benzene	ND	78.3	0.80	80	-	98	60-140
Benzyl chloride	ND	137	1.3	132.5	-	103	60-140
Bromodichloromethane	ND	196	1.8	175	-	112	60-140
Bromoform	ND	320	2.6	262.5	-	122	60-140
Bromomethane	ND	105	1.0	97.5	-	107	60-140
1,3-Butadiene	ND	49.7	0.55	55	-	90	60-140
2-Butanone (MEK)	ND	71.0	38	75	-	95	60-140
t-Butyl alcohol (TBA)	ND	83.1	16	77.5	-	107	60-140
Carbon Disulfide	ND	87.0	0.80	80	-	109	60-140
Carbon Tetrachloride	ND	187	1.6	160	-	117	60-140
Chlorobenzene	ND	126	1.2	117.5	-	107	60-140
Chloroethane	ND	69.9	0.65	67.5	-	104	60-140
Chloroform	ND	121	1.2	122.5	-	98	60-140
Chloromethane	ND	53.5	0.50	52.5	-	102	60-140
Cyclohexane	ND	92.2	9.0	87.5	-	105	60-140
Dibromochloromethane	ND	255	2.2	217.5	-	117	60-140
1,2-Dibromo-3-chloropropane	ND	301	0.060	245	-	123	60-140
1,2-Dibromoethane (EDB)	ND	194	2.0	195	-	100	60-140
1,2-Dichlorobenzene	ND	190	1.5	152.5	-	125	60-140
1,3-Dichlorobenzene	ND	190	1.5	152.5	-	125	60-140
1,4-Dichlorobenzene	ND	177	1.5	152.5	-	116	60-140
Dichlorodifluoromethane	ND	104	1.2	125	-	84	60-140
1,1-Dichloroethane	ND	107	1.0	102.5	-	104	60-140
1,2-Dichloroethane (1,2-DCA)	ND	100	1.0	102.5	-	98	60-140
1,1-Dichloroethene	ND	101	1.0	100	-	101	60-140
cis-1,2-Dichloroethene	ND	107	1.0	100	-	107	60-140
trans-1,2-Dichloroethene	ND	105	1.0	100	-	105	60-140
1,2-Dichloropropane	ND	120	1.2	117.5	-	102	60-140
cis-1,3-Dichloropropene	ND	134	1.2	115	-	116	60-140
trans-1,3-Dichloropropene	ND	130	1.2	115	-	113	60-140
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	186	1.8	177.5	-	105	60-140
Diisopropyl ether (DIPE)	ND	114	1.0	105	-	108	60-140
1,4-Dioxane	ND	76.2	0.90	92.5	-	82	60-140

(Cont.)

QA/QC Officer



Quality Control Report

Client: Geosolve, Inc.
Date Prepared: 5/16/17
Date Analyzed: 5/16/17
Instrument: GC43
Matrix: SoilGas
Project: 2015-29; 19th and Harrison

WorkOrder: 1705682
BatchID: 139079
Extraction Method: TO15
Analytical Method: TO15
Unit: µg/m³
Sample ID: MB/LCS-139079

QC Summary Report for TO15

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Ethanol	ND	ND	48	47.5	-	63	60-140
Ethyl acetate	ND	91.7	0.90	92.5	-	99	60-140
Ethyl tert-butyl ether (ETBE)	ND	114	1.0	105	-	109	60-140
Ethylbenzene	ND	123	1.1	110	-	112	60-140
4-Ethyltoluene	ND	169	1.2	125	-	135	60-140
Freon 113	ND	199	2.0	195	-	102	60-140
Heptane	ND	112	10	105	-	107	60-140
Hexachlorobutadiene	ND	276	2.7	270	-	102	60-140
Hexane	ND	115	9.0	90	-	127	60-140
2-Hexanone	ND	93.0	1.0	105	-	89	60-140
Isopropyl Alcohol	ND	56.3	25	62.5	-	90	60-140
4-Methyl-2-pentanone (MIBK)	ND	106	1.0	105	-	101	60-140
Methyl-t-butyl ether (MTBE)	ND	101	0.90	92.5	-	109	60-140
Methylene chloride	ND	87.8	4.4	87.5	-	100	60-140
Methyl methacrylate	ND	107	1.0	104	-	103	60-140
Naphthalene	ND	373	2.6	265	-	141, F2	60-140
Propene	ND	ND	44	42.5	-	81	60-140
Styrene	ND	120	1.1	107.5	-	111	60-140
1,1,1,2-Tetrachloroethane	ND	188	1.8	175	-	107	60-140
1,1,2,2-Tetrachloroethane	ND	182	1.8	175	-	104	60-140
Tetrachloroethene	ND	193	1.7	172	-	112	60-140
Tetrahydrofuran	ND	73.7	1.5	75	-	98	60-140
Toluene	ND	101	0.95	95	-	107	60-140
1,2,4-Trichlorobenzene	ND	242	1.9	187.5	-	129	60-140
1,1,1-Trichloroethane	ND	152	1.4	137.5	-	111	60-140
1,1,2-Trichloroethane	ND	141	1.4	137.5	-	103	60-140
Trichloroethene	ND	140	1.4	137.5	-	102	60-140
Trichlorofluoromethane	ND	144	1.4	142.5	-	101	60-140
1,2,4-Trimethylbenzene	ND	177	1.2	125	-	141, F2	60-140
1,3,5-Trimethylbenzene	ND	163	1.2	125	-	131	60-140
Vinyl Acetate	ND	117	9.0	90	-	130	60-140
Vinyl Chloride	ND	48.3	0.65	65	-	74	60-140
Xylenes, Total	ND	373	3.3	330	-	113	60-140

(Cont.)

QA/QC Officer



Quality Control Report

Client: Geosolve, Inc.	WorkOrder: 1705682
Date Prepared: 5/16/17	BatchID: 139079
Date Analyzed: 5/16/17	Extraction Method: TO15
Instrument: GC43	Analytical Method: TO15
Matrix: SoilGas	Unit: µg/m ³
Project: 2015-29; 19th and Harrison	Sample ID: MB/LCS-139079

QC Summary Report for TO15

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Surrogate Recovery							
1,2-DCA-d4	473.6	467		500	95	93	70-130
Toluene-d8	482.5	486		500	97	97	70-130
4-BFB	511.1	531		500	102	106	70-130

QA/QC Officer



1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1705682

ClientCode: GSP

WaterTrax WriteOn EDF Excel EQUIS Email HardCopy ThirdParty J-flag

Report to:

Rob Campbell
Geosolve, Inc.
1807 Santa Rita Road, Suite D-165
Pleasanton, CA 94566
(925) 963-1198 FAX:

Email: rcampbell@geosolve-inc.com
cc/3rd Party:
PO: 2015-29
ProjectNo: 2015-29; 19th and Harrison

Bill to:

Lisa Campbell
Geosolve, Inc.
1807 Santa Rita Road, Suite D-165
Pleasanton, CA 94566
lcampbell@geosolve-inc.com

Requested TAT: 5 days;

Date Received: 05/15/2017

Date Logged: 05/15/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1705682-001	SG-7	SoilGas	5/15/2017 13:40	<input type="checkbox"/>	A	A		A	A	A	A	A				
1705682-002	SG-8	SoilGas	5/15/2017 13:50	<input type="checkbox"/>	A	A		A	A	A	A	A				
1705682-003	SG-9	SoilGas	5/15/2017 14:00	<input type="checkbox"/>	A	A		A	A	A	A	A				
1705682-004	SG-10	SoilGas	5/15/2017 14:20	<input type="checkbox"/>	A	A		A	A	A	A	A				
1705682-005	Unused Summa 1	SoilGas	<Not Provided>	<input type="checkbox"/>			A						A			
1705682-006	Unused Summa 2	SoilGas	<Not Provided>	<input type="checkbox"/>			A						A			
1705682-007	Unused Summa 3	SoilGas	<Not Provided>	<input type="checkbox"/>			A						A			

Test Legend:

1	ATMOSPHERICGAS_SG(%)	2	LG_SUMMA_SOILGAS(%)	3	PRUNUSEDSUMMA	4	TO15_HIGHLEVEL_SOIL(UG/M3)
5	TO15_HIGHLEVEL-LC_SOIL(UG/M3)	6	TO15_Scan-SIM_SOIL(UG/M3) [N]	7	TO15-8260_SOIL(UG/M3) [N]	8	TO15-LC_SOIL(UG/M3) [N]
9	UNUSED_SUMMA	10		11		12	

Prepared by: Jena Alfaro

The following SamplIDs: 001A, 002A, 003A, 004A contain testgroup TO15_SG(UG/M3).

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days). Hazardous samples will be returned to client or disposed of at client expense.



WORK ORDER SUMMARY

Client Name: GEOSOLVE, INC.
Client Contact: Rob Campbell
Contact's Email: rcampbell@geosolve-inc.com

Project: 2015-29; 19th and Harrison
Comments: changed to 3 day 5/16/17.

Work Order: 1705682
QC Level: LEVEL 2
Date Logged: 5/15/2017

WaterTrax WriteOn EDF Excel Fax Email HardCopy ThirdParty J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1705682-001A	SG-7	SoilGas	TO15 for Soil Vapor (Scan-SIM)	1	1L Summa	<input type="checkbox"/>	5/15/2017 13:40	5 days		<input type="checkbox"/>	
			ASTM D1946-90 (CO, CO2, C1-C6) <Carbon Dioxide_2, Methane_4>			<input type="checkbox"/>		3 days			
			ASTM D1946-90 (N2 O2) <Oxygen>			<input type="checkbox"/>		3 days			
1705682-002A	SG-8	SoilGas	TO15 for Soil Vapor (Scan-SIM)	1	1L Summa	<input type="checkbox"/>	5/15/2017 13:50	5 days		<input type="checkbox"/>	
			ASTM D1946-90 (CO, CO2, C1-C6) <Carbon Dioxide_2, Methane_4>			<input type="checkbox"/>		3 days			
			ASTM D1946-90 (N2 O2) <Oxygen>			<input type="checkbox"/>		3 days			
1705682-003A	SG-9	SoilGas	TO15 for Soil Vapor (Scan-SIM)	1	1L Summa	<input type="checkbox"/>	5/15/2017 14:00	5 days		<input type="checkbox"/>	
			ASTM D1946-90 (CO, CO2, C1-C6) <Carbon Dioxide_2, Methane_4>			<input type="checkbox"/>		3 days			
			ASTM D1946-90 (N2 O2) <Oxygen>			<input type="checkbox"/>		3 days			
1705682-004A	SG-10	SoilGas	TO15 for Soil Vapor (Scan-SIM)	1	1L Summa	<input type="checkbox"/>	5/15/2017 14:20	5 days		<input type="checkbox"/>	
			ASTM D1946-90 (CO, CO2, C1-C6) <Carbon Dioxide_2, Methane_4>			<input type="checkbox"/>		3 days			
			ASTM D1946-90 (N2 O2) <Oxygen>			<input type="checkbox"/>		3 days			
1705682-005A	Unused Summa 1	SoilGas	Unused Summa	1	1L Summa	<input type="checkbox"/>	<Not Provided>	5 days		<input type="checkbox"/>	
1705682-006A	Unused Summa 2	SoilGas	Unused Summa	1	1L Summa	<input type="checkbox"/>	<Not Provided>	5 days		<input type="checkbox"/>	
1705682-007A	Unused Summa 3	SoilGas	Unused Summa	1	1L Summa	<input type="checkbox"/>	<Not Provided>	5 days		<input type="checkbox"/>	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

changed to 3 day 5/16/17

RUSH

McCAMPBELL ANALYTICAL, INC.
 1534 Willow Pass Rd. Pittsburg, Ca. 94565-1701
 Telephone: (877) 252-9262 / Fax: (925) 252-9269
www.mccampbell.com main@mccampbell.com

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush 2 Day Rush **3 Day Rush** STD Quote #

J-Flag / MDL ESL Cleanup Approved Bottle Order #

Delivery Format: PDF GeoTracker EDF EDD Write On (DW) EQuIS

Report To: Rob Campbell Bill To: GeoSolve, Inc.
 Company: GeoSolve, Inc.
 Email: rcampbell@geosolve-inc.com
 Alt Email: Tele: (925) 963-1198
 Project Name: 19th and Harrison Project #: 2015-29
 Project Location: 1750 Webster Street Oakland, CA PO # 2015-29
 Sampler Signature: *[Signature]*

Analysis Requested

SAMPLE ID Location / Field Point	Sampling		#Containers	Matrix	Preservative
	Date	Time			
SG-7	5-15-17	13:40	1	Soil-gas	φ
SG-8	5-15-17	13:50	1	↓	↓
SG-9	5-15-17	14:00	1	↓	↓
SG-10	5-15-17	14:20	1	↓	↓

BTEX & TPH as Gas (8021/8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silica Gel	Total Oil & Grease (1664/9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664/9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/608/8081 (CI Pesticides)	EPA 608/8082 PCB's; Aroclors only	EPA 524.2/624/8260 (VOCs)	EPA 525.2/625/8270 (SVOCs)	EPA 8270 SIM/8310 (PAHs/PNAs)	CAM 17 Metals (200.8/6020)*	Metals (200.8/6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis
				φ/316-1319						-30/-5				X
				0886-2514/316-870						-30/-5				X
				1973-1921/316-1332						-30/-5				X
				φ/316-748				(X)		-30/-5				X

*70-15
O₂, CO₂
CH₄*

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate \$250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
<i>[Signature]</i> / GeoSolve, Inc.	5-15-17	1523	<i>[Signature]</i>	5/15	1523
	5/15	1700		5/15/17	1800

Comments / Instructions

*SG-10
70-15
VOCs +
O₂, CO₂, CH₄*

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other
 Preservative Code: 1=4°C 2=HCl 3=H₂SO₄ 4=HNO₃ 5=NaOH 6=ZnOAc/NaOH 7=None
 Temp _____ °C Initials _____



Sample Receipt Checklist

Client Name: **Geosolve, Inc.**
 Project Name: **2015-29; 19th and Harrison**
 WorkOrder No: **1705682** Matrix: SoilGas
 Carrier: Benjamin Yslas (MAI Courier)

Date and Time Received: **5/15/2017 17:00**
 Date Logged: **5/15/2017**
 Received by: **Jena Alfaro**
 Logged by: **Jena Alfaro**

Chain of Custody (COC) Information

Chain of custody present? Yes No
 Chain of custody signed when relinquished and received? Yes No
 Chain of custody agrees with sample labels? Yes No
 Sample IDs noted by Client on COC? Yes No
 Date and Time of collection noted by Client on COC? Yes No
 Sampler's name noted on COC? Yes No

Sample Receipt Information

Custody seals intact on shipping container/cooler? Yes No NA
 Shipping container/cooler in good condition? Yes No
 Samples in proper containers/bottles? Yes No
 Sample containers intact? Yes No
 Sufficient sample volume for indicated test? Yes No

Sample Preservation and Hold Time (HT) Information

All samples received within holding time? Yes No NA
 Sample/Temp Blank temperature Temp: NA
 Water - VOA vials have zero headspace / no bubbles? Yes No NA
 Sample labels checked for correct preservation? Yes No
 pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)? Yes No NA
 Samples Received on Ice? Yes No

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522? Yes No NA
 Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539? Yes No NA

 Comments: