

TECHNICAL MEMORANDUM

DATE July 5, 2016

TO Mr. Jim Bush

ADDRESS c/o Ocean Charter School, 12606 Culver Boulevard, Los Angeles, California 90066

FROM Ron Cavagrotti, D.Env.

SUBJECT Methane Testing
12870 Panama Street, Los Angeles, California 90066

PROJECT NUMBER OCCD-04.0

This Technical Memorandum provides the results of methane testing conducted for a property located at 12870 Panama Street, Los Angeles, California 90066 (“Site;” Figure 1). The purpose of the testing was to gather information regarding the possible presence of methane and other hazardous oil field gases beneath the Site to support Ocean Charter School’s (OCS’s) plans to acquire the property for construction of a new school. As currently envisioned, the new charter school would serve grades K-8 and have 19 classrooms for 532 students, along with an administration/kitchen/multipurpose building, lunch shelters, a turf play field, and an underground parking garage.

1.0 Site Description

The Site comprises two Los Angeles County Tax Assessor Parcels (APNs 4223-008-003 and 4223-008-004) that total approximately 2.15 acres in size. It is situated in a mixed commercial and residential neighborhood in the community of Del Rey. The Site is bounded by Panama Street to the north, Teledyne Reynolds to the east, E-Z Storage to the south, and former Teledyne Microelectronic Technologies to the west (Figure 2). The Site is currently developed with a 17,400-square-foot one-story industrial building, four accessory buildings, several metal cargo containers and storage sheds, and asphalt-paved parking areas. The entire Site is surrounded by chain-link fence and is accessed via four perimeter gates.

2.0 Methane Zone

The Site is located within a Methane Zone, as defined by the City of Los Angeles Department of Building and Safety (LADBS) and depicted on Citywide Methane Ordinance Map A-20960 (see Figure 3). The Methane Zone and associated Methane Buffer Zone at this location is generously applied around the administrative boundaries of the Playa del Rey Oil Field and appear to also incorporate areas where methane may be associated with historical wetlands (e.g., Playa Vista). The Site lies on the fringe of the designated Methane Zone, approximately 0.75 mile northeast of the oil field. No oil wells are present on or near the Site; the nearest oil wells are located approximately 2,400 feet west-southwest of the Site (Alta Environmental, 2016).

3.0 Field Investigation

Although the new school project is not expected to require LADBS permits or approvals, methane testing was conducted in accordance with the LADBS (2011) guidelines *Site Testing Standards for Methane*. In addition, because the California Department of Toxic Substances Control (DTSC) is expected to have oversight responsibility for the new school project, the methane testing approach also considered the DTSC (2005) guidelines *Advisory on Methane Assessment and Common Remedies at School Sites*.

The LADBS and DTSC guidance documents recommend the collection of methane samples at the rate of one sample per 10,000 square feet of property area. Because the Site is approximately 90,000 square feet in size, probes were installed at nine locations (SG1 to SG9) that were biased toward locations where new school buildings are to be constructed, while maintaining representative coverage throughout the Site (Figure 4). Both sets of guidance suggest testing at multiple depth intervals where groundwater conditions allow. Accordingly, two nested probes were installed at depths of 4 feet and 7 feet below ground surface (bgs) at each sample location. These relatively shallow installation depths were selected based on the anticipated presence of groundwater at 9.5 feet bgs, as determined from a recent Site investigation (Alta Environmental, 2015). In addition to methane, the soil gas samples were also analyzed for hydrogen sulfide and fixed gases, consistent with DTSC recommendations for testing above oil fields.

3.1 SOIL GAS PROBE INSTALLATION

Methane testing at the Site was conducted on April 19-20, 2016. Field services for soil gas probe installation were provided by InterPhase Environmental, Inc. (Los Angeles, California). Prior to installing the probes, Underground Service Alert was contacted and Goldak, Inc. (Glendale, California) performed a geophysical survey to ensure that no subsurface utilities or obstructions were present in the vicinities of the proposed boring locations. Drilling was allowed only after the absence of underground utilities was confirmed at each location.

The soil gas probes were installed using a truck-mounted Geoprobe[®] direct-push drill rig in general accordance with the DTSC/RWQCB (2015) guidance *Advisory – Active Soil Gas Investigations*. A small diameter drill rod was driven through the asphalt pavement into the soil using a hydraulic hammer. After being driven to the targeted depth (in this case 7.5 feet bgs), the drill rod was extracted from the ground, leaving an open borehole in which the soil gas probes could be constructed. Although soil samples were not collected and drill cuttings were not generated, previous investigators have described soils beneath the Site as consisting of predominantly clay with localized lenses of silt and sand to 10 feet bgs (Alta Environmental, 2015).

Soil gas probes were constructed with a prefabricated polypropylene filter tip attached to ¼-inch diameter flexible Teflon[®] tubing. Probe tips were set at the midpoint of 1-foot thick sand pack intervals (No. 3 Monterey sand) constructed at approximate depths of 3.5-4.5 feet bgs and 6.5-7.5 feet bgs within the borehole. An approximate 1-foot thick layer of dry granular bentonite was emplaced above each sand pack. Hydrated granular bentonite was then added above the dry granular bentonite to either the base of the upper probe sand pack or to the ground surface,

as applicable. The end of each probe was fitted with a gas-tight, three-way valve for sample collection and marked to designate the probe identification and depth. The surface completions were temporarily protected until soil gas samples could be collected. A daily field report that documents the probe installation activities is provided in Attachment A.

3.2 SAMPLE COLLECTION

The soil gas probes were allowed to equilibrate a minimum of 2 hours before conducting an initial round of sampling. A second round of sampling was conducted the following day after an additional 24 hours had elapsed. Prior to collecting soil gas samples, a magnehelic gauge was connected to the probe sampling port to observe naturally existing soil gas pressures or vacuums beneath the Site. The port valve was opened and the pressure (or vacuum) reading was recorded on a monitoring form.

After collecting pressure/vacuum measurements, the port valve was opened and the probe was purged of approximately one volume of resident air from the tubing and sand pack using a clean, gas-tight plastic syringe equipped with a Teflon™ plunger. Soil gas was withdrawn from the probe at an approximate rate of 200 milliliters per minute (ml/min) during purging. Properly-calibrated field instruments were then connected to the probe to collect measurements of methane, hydrogen sulfide, oxygen, and carbon dioxide. At probe locations with the highest methane concentrations (SG4-4' and SG5-7'), duplicate soil gas samples were collected in Tedlar bags for off-site confirmation analysis. A final reading of probe pressure/vacuum was obtained before disconnecting the sample train. Copies of field logs prepared during soil gas sampling are provided in Attachment A.

Upon completion of sampling, the probe sampling ports were disconnected and the tubing was manually extracted from the subsurface. Asphalt cold patches were applied at the cored locations to match the surrounding pavement.

3.3 ANALYTICAL RESULTS AND DISCUSSION

Field testing was conducted using the following field instruments:

- Photovac MicroFID® Flame Ionization Detector – Calibrated to methane and used to measure low-level methane concentrations (<500 parts per million by volume; ppmv).
- LandTec GEM™ 2000 Gas Analyzer – Used to collect measurements in high methane (% range)/low oxygen environments. Also used to measure oxygen and carbon dioxide.
- Jerome® 631X Analyzer – Used to measure hydrogen sulfide at concentrations as low as 0.003 ppmv.
- Dwyer Instruments Magnehelic Gauges (0-2, 0-10, and 0-100 in. H₂O ranges) – Used to collect pressure/vacuum measurements.

The two duplicate samples collected in Tedlar bags were submitted to Enthalpy (former Associated Laboratories; Orange, California) for analysis. Enthalpy is certified under the

California Department of Health Services (DHS), Environmental Laboratory Accreditation Program (ELAP). The soil gas samples were initially analyzed for methane and fixed gases (i.e., nitrogen, oxygen, carbon dioxide, carbon monoxide, and hydrogen) by USEPA Method 3C. Follow-up analysis of methane by ASTM Method D1946 was conducted to obtain a lower detection limit. A copy of the laboratory report for the two duplicate samples is provided in Attachment B.

Analytical results for the soil gas sampling are summarized in Table 1. When measured with field instruments, methane was detected at low-level concentrations ranging from 2.8 to 52.4 parts ppmv in all but one of the probes (SG3-7'). Hydrogen sulfide was not detected in any of the probes above the instrument detection limit of 0.003 ppmv. Oxygen concentrations ranged from 0.7% to 17.2%, while carbon dioxide concentrations ranged from <0.1% to 12.7%. These latter concentrations suggest localized biogenic activity, which may be the source of the low-level methane concentrations.

Positive pressures were recorded in four probes (SG1-4', SG3-4', SG4-7', and SG9-4'), ranging from 0.05 to 6.0 inches water (in. H₂O). The only measurements that exceeded the LADBS design threshold of 2.0 in. H₂O were recorded at probe SG3-4', where pressures of 3.0 and 6.0 in. H₂O were measured on successive days. These readings are not considered to be representative of overall Site conditions, since they were not observed at any of the other probe locations. The relatively low-level methane concentrations in probe SG3-4' (≤ 27.1 ppmv) suggest that the observed pressurization is not being caused by methane buildup, but rather site-specific geologic conditions. The low permeability formations (i.e., clays and silt lenses) in which the probe is completed likely impede the probe from attaining pressure equilibria in response to fluctuating barometric pressures or other influences.

Given its location in a Methane Zone and the measured methane concentrations and soil gas pressures (excluding the anomalous pressure readings at one probe), the Site would qualify for Design Level I (<2.0 in. H₂O) under the LADBS's methane mitigation standards. The minimum requirements for such a system include an impervious membrane, sub-slab passive vent system, trench dams, and utility conduit seals. The DTSC does not consider methane concentrations below 1,000 ppmv to be of significant concern and would not require further investigation or a mitigation response based on the test results (DTSC, 2005).

3.4 QUALITY ASSURANCE/QUALITY CONTROL

The primary quality assurance/quality control (QA/QC) considerations for field instruments are routine maintenance and calibration using laboratory-supplied standards. Procedures for these tasks are prescribed by the manufacturers and vary from instrument to instrument. The following procedures were used during soil gas testing to ensure the quality of data obtained using hand-held field instruments:

- The field instruments were properly maintained and operated in accordance with the manufacturers' specifications. The instruments were capable of reliable detection of methane and hydrogen sulfide at concentrations above detection limits of 0.5 ppmv and 0.003 ppmv, respectively.

- Field instruments were subjected to periodic diagnostic checks in accordance with manufacturers' recommendations. These checks typically are conducted by the equipment vendor as part of routine maintenance prior to rental and were documented in certification forms provided with the instrument. As an authorized testing laboratory under the LADBS's methane testing program, PlaceWorks is required to professionally refurbish and re-calibrate the Photovac MicroFID[®] monitor that was used on an annual basis. A copy of the current calibration certificate is provided in Attachment C.
- Field instruments were either pre-calibrated by the equipment vendor and/or calibrated/checked in the field prior to each day of monitoring with appropriate gas standards traceable to the National Institute of Standards and Technology (NIST). Standard calibration checks were repeated throughout the day after approximately every 20 measurements. A final standard check was run at the end of the day. Calibration checks were recorded on appropriate field forms (Attachment C).

Instrument-specific calibration/check procedures were as follows:

- The Photovac MicroFID[®] monitor was zeroed and then calibrated with a 100 ppmv methane standard in accordance with manufacturer recommendations.
- The Landtec GEM[™] 2000 Gas Analyzer was factory-calibrated within one year prior to rental, as confirmed by a certificate of calibration provided with the instrument. The instrument was zeroed and then calibrated with a 20% LEL methane standard in accordance with manufacturer recommendations.
- The Jerome[®] 631-X Analyzer was factory-calibrated within one year prior to rental, as confirmed by a certificate of calibration provided with the instrument. The instrument was regenerated and zeroed prior to each day of sampling and then checked with a 10 ppmv hydrogen sulfide standard in accordance with manufacturer recommendations.

Duplicate soil gas samples were collected at the rate of 11% (2 duplicates for 18 primary samples). This rate is acceptable with respect to the minimum 10% duplicate sampling rate generally used for environmental investigations. The primary and duplicate samples from probes SG4-4' and SG5-7' had relative percent differences (RPDs)¹ of 1% and 2%, respectively, for oxygen, and 3% and 11%, respectively, for carbon dioxide. The RPDs demonstrate good agreement and are within the typical acceptance range of 25-50% for QA/QC evaluations.

The only QA/QC issue identified in the laboratory report or from a review of the soil gas sampling logs was the exceedance of the holding time when conducting follow-up analysis for methane by ASTM Method D1946. Because the methane results for the two laboratory methods were consistent (i.e., non-detect) and the methane concentrations recorded by the field

¹ Calculated using the equation $RPD = \{(X_1 - X_2) / [(X_1 + X_2) / 2]\} \times 100$; RPDs only calculated for analytes detected in both primary and duplicate samples.

instruments and laboratory were below levels of safety concern, the data are considered valid and suitable for their intended use.

4.0 Summary and Conclusions

The methane test results indicate that hazardous oilfield gases are not present beneath the Site at concentrations that would pose a significant threat to human health or safety. The maximum detected methane concentration was 52.4 ppmv and hydrogen sulfide was not detected (<0.003 ppmv). Even under these demonstrably nonhazardous conditions, the LADBS requires the installation of a gas mitigation system under all new buildings constructed in a Methane Zone consistent with Design Level I (i.e., impermeable membrane, sub-slab passive vent system, trench dams, and utility conduit seals). Technically, such a system is not required if the project is not subject to permitting by the LADBS.² However, given the proposed sensitive land use (a school) and the fact that gas mitigation systems are routinely required for new construction on neighboring properties, OCS may wish to consider adding this protective feature to any new building design as a voluntary, conservative measure.

5.0 References

1. Alta Environmental. 2015. *Phase II Environmental Site Assessment, 12870 Panama Street, Los Angeles, California 90006*. Project No. MCGU-15-5422. September 9, 2015.
2. Alta Environmental. 2016. *Phase I Environmental Site Assessment Report Update, 12870 Panama Street, Los Angeles, California 90006*. Project No. OCSC-16-6110. June 30, 2016.
3. Department of Toxic Substances Control (DTSC). 2005. *Advisory on Methane Assessment and Common Remedies at School Sites*. June 16, 2005.
4. DTSC and Los Angeles/San Francisco Regional Water Quality Control Boards. 2015. *Advisory – Active Soil Gas Investigations*. July 2015.
5. Los Angeles Department of Building and Safety (LADBS). 2011. *Site Testing Standards for Methane*. Document No. P/BC 2011-101. January 1, 2011.

PlaceWorks appreciates the opportunity to be of assistance for this proposed new school project. Please do not hesitate to contact the undersigned at (310) 670-9221 if you have any questions or we can be of further help.

Respectfully,



Ron Cavagrotti, D.Env.
Senior Project Manager
PlaceWorks

² Because the proposed project is a new school, the California Division of the State Architect (DSA) is charged with approving the building design.

Tables:

Table 1 – Methane Test Results

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Figure 1 – Regional Location

Figure 2 – Local Vicinity

Figure 3 – Methane and Methane Buffer Zones

Figure 4 -- Methane Testing Locations

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Attachment A – Field Forms

Attachment B – Laboratory Report

Attachment C – Instrument Calibration Records

TABLES

TABLE 1
METHANE TEST RESULTS
Ocean Charter School
12870 Panama Street, Los Angeles, California

Probe ID	Depth (ft bgs)	Date Sampled	Pressure (in. H ₂ O)	CH ₄ (ppmv)	H ₂ S (ppmv)	O ₂ (%)	CO ₂ (%)
SG1	4	4/19/2016	1.55	<0.5	<0.003	17.2	0.2
		4/20/2016	-30	5.9	<0.003	17.1	0.4
	7	4/19/2016	0	14.7	<0.003	9.8	5.9
		4/20/2016	0	<0.5	<0.003	9.2	8.4
SG2	4	4/19/2016	0	25.2	<0.003	6.5	9.1
		4/20/2016	0	<0.5	<0.003	5.4	10.4
	7	4/19/2016	0	16.7	<0.003	7.7	0.4
		4/20/2016	-4.0	23.4	<0.003	8.5	0.1
SG3	4	4/19/2016	3.0	21.2	<0.003	16.9	<0.1
		4/20/2016	6.0	27.1	<0.003	15.6	<0.1
	7	4/19/2016	0	<0.5	<0.003	14.5	3.6
		4/20/2016	0	<0.5	<0.003	14.0	5.9
SG4	4	4/19/2016	0	31.4	<0.003	11.3	6.2
		4/20/2016	0	32.3	<0.003	10.2	6.5
		Lab Dup	0	<5.0	--	10.3	6.68
	7	4/19/2016	0	19.1	<0.003	10.5	1.7
		4/20/2016	0.05	24.1	<0.003	9.4	0.7
SG5	4	4/19/2016	0	12.6	<0.003	16.7	0.6
		4/20/2016	0	21.0	<0.003	14.4	0.8
	7	4/19/2016	0	44.1	<0.003	12.2	6.8
		4/20/2016	0	52.4	<0.003	11.5	6.5
		Lab Dup	0	<5.0	--	11.3	7.24
SG6	4	4/19/2016	0	2.8	<0.003	2.6	7.7
		4/20/2016	0	<0.5	<0.003	0.7	12.7
	7	4/19/2016	0	<0.5	<0.003	1.5	11.2
		4/20/2016	0	15.7	<0.003	1.1	11.1
SG7	4	4/19/2016	0	18.9	<0.003	14.7	1.8
		4/20/2016	0	19.4	<0.003	12.2	2.3
	7	4/19/2016	0	20.8	<0.003	9.8	9.1
		4/20/2016	0	9.2	<0.003	9.7	8.0
SG8	4	4/19/2016	0	29.3	<0.003	15.0	1.4
		4/20/2016	0	6.9	<0.003	13.7	3.2
	7	4/19/2016	0	24.1	<0.003	13.8	4.3
		4/20/2016	0	17.4	<0.003	13.1	4.0
SG9	4	4/19/2016	0.05	25.6	<0.003	15.6	0.8
		4/20/2016	0	23.5	<0.003	13.4	1.2
	7	4/19/2016	0	24.0	<0.003	9.5	9.7
		4/20/2016	0	10.5	<0.003	9.2	10.3
Maximum			6	52.4	<0.003	17.2	12.7

"--" = Not analyzed

ft bgs = feet below ground surface

in. H₂O = inches water

ppmv = parts per million by volume

CH₄ = Methane

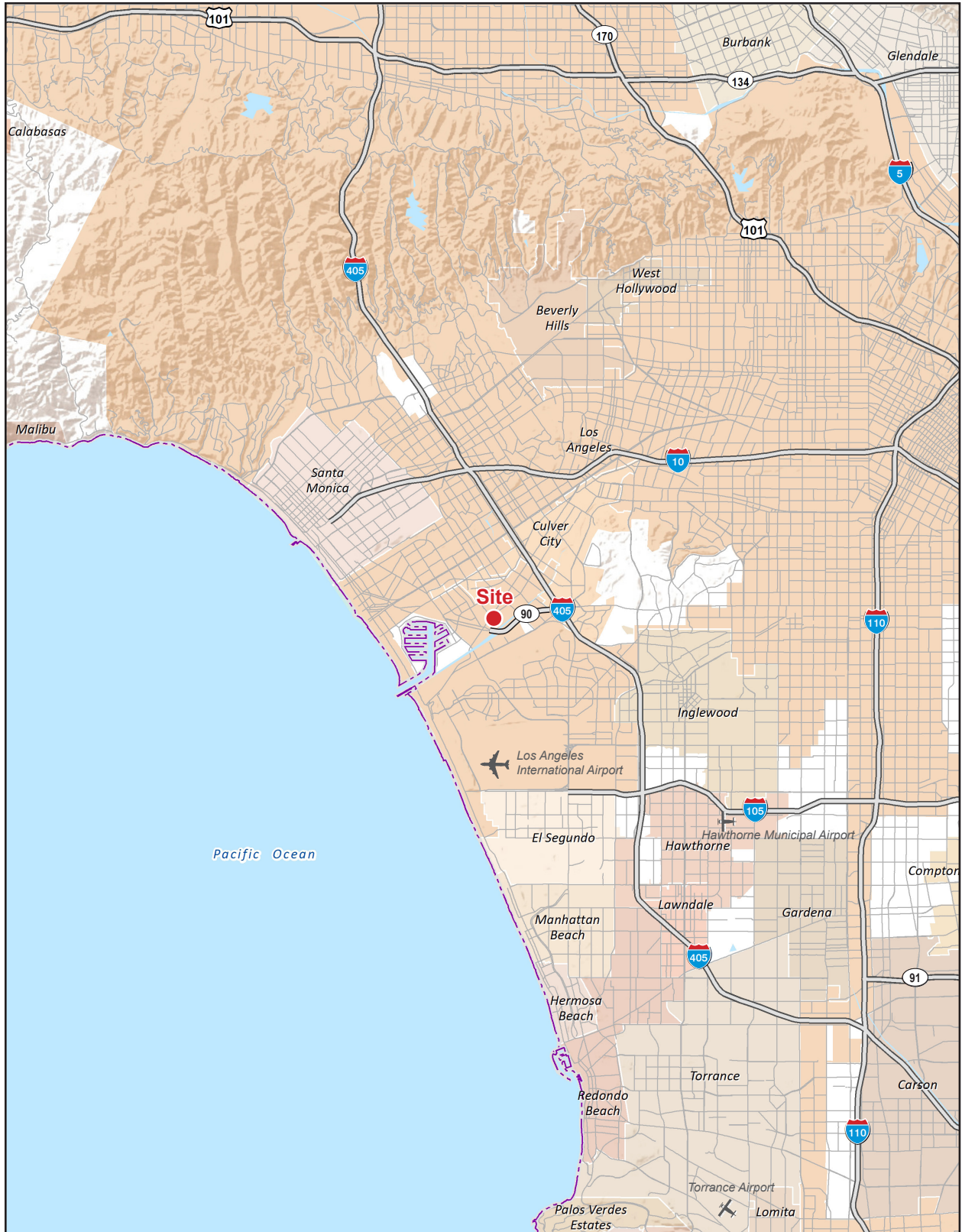
H₂S = Hydrogen sulfide

O₂ = Oxygen

CO₂ = Carbon dioxide

FIGURES

Figure 1 - Regional Location



Note: Unincorporated areas are shown in white.

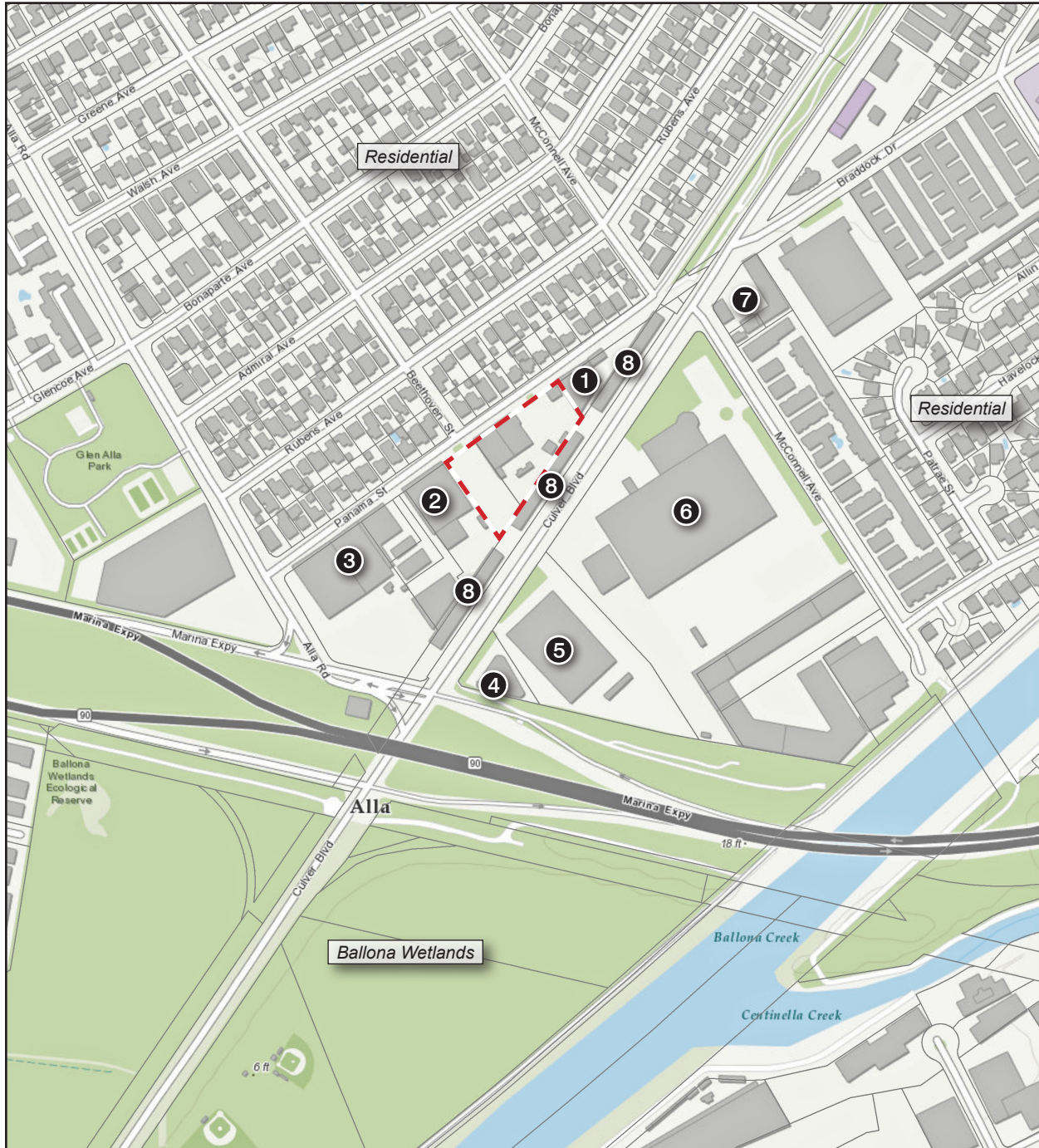


Base Map Source: ESRI, 2016

OCCD-04.0

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Figure 2 - Local Vicinity



- | | | |
|---------------------|---------------------|---------------|
| 1 Teledyne Reynolds | 4 AMV Digital Media | 7 Retail |
| 2 Vacant | 5 Office | 8 E-Z Storage |
| 3 Vacant | 6 DirecTV | |

--- Site Boundary

0 500
Scale (Feet)



Base Map Source: ESRI, 2016

Figure 3 - Methane and Methane Buffer Zones

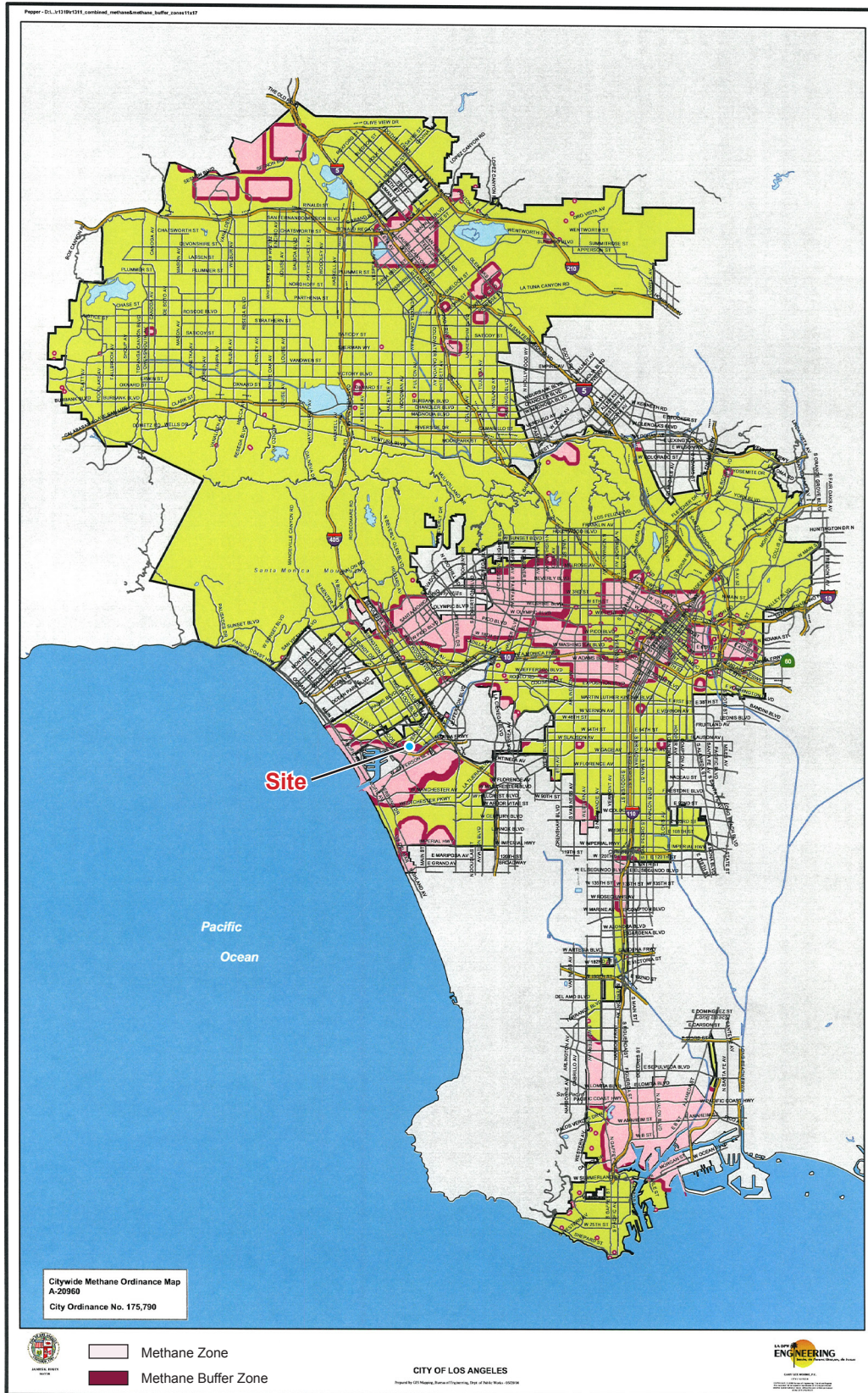


Figure 4 - Methane Testing Locations



— Project Boundary ✦ SG1 Methane Sample Location

0 100
Scale (Feet)





ATTACHMENT A – Field Forms



DAILY FIELD REPORT

PROJECT NAME	Methane Investigation	DATE	4/19/16
PROJECT LOCATION	12870 Panama St.	REPORT SEQUENCE NO.	1
CLIENT	Ocean Charter	CONTRACTOR	Interphase
		TPC JOB NO.	OCCD-04.0
SCHEDULED ACTIVITIES	Clear borings with Goldak, drill & install soil gas probes with Interphase, take first round of samples with handheld equipment.		

Arrived at the site at 630 and met with Al Becerra. Marked locations SG1 through SG9. Interphase and Goldak arrived at 705. Got them signed in at front office. Goldak cleared all 9 borings with no changes in location necessary. Interphase installed 9 borings, with soil gas probes at 4 foot bgs and 7 foot bgs. No groundwater was encountered. Calibrated instruments and tested all 18 probes.

FIELD HOURS		
ARRIVE SITE: 630 AM/PM		DEPART SITE: 330 AM/PM
REGULAR HOURS: 8	OVERTIME HOURS: 0.5	
TPC PROJECT MANAGER Ran Cavagrotti	TPC FIELD REPRESENTATIVE Mike Watson	SIGNATURE OF TPC FIELD REPRESENTATIVE

Soil Gas Sampling Log

Job Number: 06CD-04.0
 Site Name: 12870 Paranna St.
 Geologist/Engineer: Mike Watson
 Field Crew: Mike Watson
 Date: 4/19/16
 Weather: Sunny

Probe Number	Probe Constructed (Date & Time)	Probe Depth (ft bgs)	Flow Rate (mL/min)	Purge Volumes (1, 3, 10)	Leak Test Compound	Sample Collected (Date & Time)	Initial Pressure ("H ₂ O)	Final Pressure ("H ₂ O)	Notes
SG1-4'	4/19/16 820	4	<200	1	NA	4/19/16 1220	1.55P	<0.05	-96V
SG1-7'	4/19/16 820	7	<200	1	NA	4/19/16 1230	<0.05	<0.05	
SG2-4'	4/19/16 902	4	<200	1	NA	4/19/16 1240	<0.05	<0.05	
SG2-7'	4/19/16 902	7	<200	1	NA	4/19/16 1250	<0.05	78V	
SG3-4'	4/19/16 835	4	<200	1	NA	4/19/16 1300	3P	91V	
SG3-7'	4/19/16 835	7	<200	1	NA	4/19/16 1310	<0.05	<0.05	
SG4-4'	4/19/16 915	4	<200	1	NA	4/19/16 1320	<0.05	<0.05	
SG4-7'	4/19/16 915	7	<200	1	NA	4/19/16 1330	<0.05	84V	
SG5-4'	4/19/16 1020	4	<200	1	NA	4/19/16 1340	<0.05	26V	
SG5-7'	4/19/16 1020	7	<200	1	NA	4/19/16 1350	<0.05	4V	
SG6-4'	4/19/16 1035	4	<200	1	NA	4/19/16 1405	<0.05	<0.05	
SG6-7'	4/19/16 1035	7	<200	1	NA	4/19/16 1415	<0.05	<0.05	
SG7-4'	4/19/16 930	4	<200	1	NA	4/19/16 1425	<0.05	4V	
SG7-7'	4/19/16 930	7	<200	1	NA	4/19/16 1435	<0.05	<0.05	



Soil Gas Sampling Log

Job Number: OCCD-04.0
 Site Name: 12870 Panama St
 Geologist/Engineer: Mike Watson
 Field Crew: Mike Watson
 Date: 7/19/16
 Weather: Sunny

Probe Number	Probe Depth (ft. bgs)	Methane (ppmv)	Hydrogen Sulfide (ppmv)	Carbon Dioxide (% volume)	Oxygen (% volume)	Notes
SG1-4'	4	<0.5	<0.003	0.2	17.2	
SG1-7'	7	14.7	<0.003	5.9	9.8	
SG2-4'	4	25.2	<0.003	9.1	6.5	
SG2-7'	7	16.7	<0.003	0.4	7.7	
SG3-4'	4	21.2	<0.003	<0.1	16.9	
SG3-7'	7	<0.5	<0.003	3.6	14.5	
SG4-4'	4	31.4	<0.003	6.2	11.3	
SG4-7'	7	19.1	<0.003	1.7	10.5	
SG5-4'	4	12.6	<0.003	0.6	16.7	
SG5-7'	7	44.1	<0.003	6.8	12.2	
SG6-4'	4	2.8	<0.003	7.7	2.6	
SG6-7'	7	<0.5	<0.003	11.2	1.5	
SG7-4'	4	18.9	<0.003	1.8	14.7	
SG7-7'	7	20.8	<0.003	9.1	9.8	

Soil Gas Sampling Log

Job Number: OCGD-04.0
 Site Name: 12870 Panama St.
 Geologist/Engineer: Mike Watson
 Field Crew: Mike Watson

Date: 4/19/16
 Weather: Sunny

Probe Number	Probe Depth (ft. bgs)	Methane (ppmv)	Hydrogen Sulfide (ppmv)	Carbon Dioxide (% volume)	Oxygen (% volume)	Notes
SG8-4'	4	29.3	<0.003	1.4	15.0	
SG8-7'	7	24.1	<0.003	4.3	13.8	
SG9-4'	4	25.6	<0.003	0.8	15.6	
SG9-7'	7	24.0	<0.003	9.7	9.5	





DAILY FIELD REPORT

PROJECT NAME	Methane Investigation	DATE	4/20/16
PROJECT LOCATION	12870 Panama St.	REPORT SEQUENCE NO.	2
CLIENT	Ocean Charter	CONTRACTOR	N/A
		TPC JOB NO.	OCCD-04.0
SCHEDULED ACTIVITIES	Take second round of samples, then collect 2 Tedlar bags of highest 2 readings. Abandon probes, patch surface. Drop off equipment and samples to lab.		

Arrived at the site at 805 and signed in at front office. Calibrated instruments and tested all 18 probes. Collected two Tedlar bags at locations with the highest methane (SG4-4' & SG5-7'). Abandoned probes and patched surface with concrete. Dropped off equipment and delivered Tedlar bags to Enthalpy Labs in Orange.

FIELD HOURS		
ARRIVE SITE:	8 AM/PM	DEPART SITE: 1 AM/PM
REGULAR HOURS:	7	OVERTIME HOURS: NA
TPC PROJECT MANAGER	TPC FIELD REPRESENTATIVE	SIGNATURE OF TPC FIELD REPRESENTATIVE
Ron Caragrotti	Mike Watson	

Soil Gas Sampling Log

Job Number: 0CCD-04.0
 Site Name: 12870 Panama St
 Geologist/Engineer: Mike Watson
 Field Crew: Mike Watson

Date: 4/20/16
 Weather: sunny

Probe Number	Probe Constructed (Date & Time)	Probe Depth (ft bgs)	Flow Rate (mL/min)	Purge Volumes (1, 3, 10)	Leak Test Compound	Sample Collected (Date & Time)	Initial Pressure ("H ₂ O)	Final Pressure ("H ₂ O)	Notes
SG1-4'	4/19/16 800	4	<200	1	NA	4/20/16 855	30V	98V	
SG1-7'	4/19/16 820	7	<200	1	NA	4/20/16 905	<0.05	<0.05	
SG2-4'	4/19/16 900	4	<200	1	NA	4/20/16 915	<0.05	<0.05	
SG2-7'	4/19/16 850	7	<200	1	NA	4/20/16 925	4V	100V	
SG3-4'	4/19/16 835	4	<200	1	NA	4/20/16 935	6P	82V	
SG3-7'	4/19/16 835	7	<200	1	NA	4/20/16 945	<0.05	<0.05	
SG4-4'	4/19/16 915	4	<200	1	NA	4/20/16 955	<0.05	<0.05	
SG4-7'	4/19/16 915	7	<200	1	NA	4/20/16 1005	0.05P	100V	
SG5-4'	4/19/16 1020	4	<200	1	NA	4/20/16 1015	<0.05	14V	
SG5-7'	4/19/16 1025	7	<200	1	NA	4/20/16 1025	<0.05	8V	
SG6-4'	4/19/16 1035	4	<200	1	NA	4/20/16 1040	<0.05	<0.05	
SG6-7'	4/19/16 1035	7	<200	1	NA	4/20/16 1050	<0.05	<0.05	
SG7-4'	4/19/16 930	4	<200	1	NA	4/20/16 1100	<0.05	40V	
SG7-7'	4/19/16 930	7	<200	1	NA	4/20/16 1110	<0.05	1.45V	



Soil Gas Sampling Log

Job Number: 0CCD-04.0
 Site Name: 12870 Panama St.
 Geologist/Engineer: Mike Watson
 Field Crew: Mike Watson

Date: 4/20/16
 Weather: Sunny

Probe Number	Probe Depth (ft. bgs)	Methane (ppmv)	Hydrogen Sulfide (ppmv)	Carbon Dioxide (% volume)	Oxygen (% volume)	Notes
SG1-4'	4	5.9	<0.003	0.4	17.1	
SG1-7'	7	<0.5	<0.003	8.4	9.2	
SG2-4'	4	<0.5	<0.003	10.4	5.4	
SG2-7'	7	23.4	<0.003	0.1	8.5	
SG3-4'	4	27.1	<0.003	<0.1	15.6	
SG3-7'	7	<0.5	<0.003	5.9	14.0	
SG4-4'	4	32.3	<0.003	6.5	10.2	
SG4-7'	7	24.1	<0.003	0.7	9.4	
SG5-4'	4	21.0	<0.003	0.8	14.4	
SG5-7'	7	52.4	<0.003	6.5	11.5	
SG6-4'	4	<0.5	<0.003	12.7	0.7	
SG6-7'	7	15.7	<0.003	11.1	1.1	
SG7-4'	4	19.4	<0.003	2.3	12.2	
SG7-7'	7	9.2	<0.003	8.0	9.7	

Soil Gas Sampling Log

Job Number: OCCD-04.0
Site Name: 12870 Panama St.
Geologist/Engineer: Mike Watson
Field Crew: Mike Watson
Date: 4/20/16
Weather: Sunny

Probe Number	Probe Depth (ft bgs)	Methane (ppmv)	Hydrogen Sulfide (ppmv)	Carbon Dioxide (% volume)	Oxygen (% volume)	Notes
SG8-41	4	6.9	<0.003	3.2	13.7	
SG8-71	7	17.4	<0.003	4.0	13.1	
SG9-41	4	23.5	<0.003	1.2	13.4	
SG9-71	7	10.5	<0.003	10.3	9.2	





ATTACHMENT B – Laboratory Report



Enthalpy Analytical, Inc.

Formerly Associated Labs
806 N. Batavia - Orange, CA 92868
Tel: (714)771-6900 Fax: (714)538-1209
www.associatedlabs.com
info-sc@enthalpy.com



Client: Placeworks
Address: 9841 Airport Blvd.
Suite 1010
Los Angeles, CA 90045-5409
Attn: Ron Cavagrotti

Lab Request: 368605
Report Date: 05/02/2016
Date Received: 04/20/2016
Client ID: 10577

Comments: Methane Investigation
OCCD-04.0
12870 Panama St, Los Angeles, CA

REVISED REPORT. Methane was re-analyzed past the recommended holding time via ASTM D-1946 in order to report a lower detection limit.

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods. Methods accredited by NELAC are indicated on the report. This cover letter is an integral part of the final report.

<u>Sample #</u>	<u>Client Sample ID</u>
368605-001	SG4-4'
368605-002	SG5-7'

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

Report Review performed by: Ranjit Clarke, Project Manager

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 60 days from date received.

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Matrix: Air	Client: Placeworks	Collector: Client
Sampled: 04/20/2016 12:07	Site:	
Sample #: <u>368605-001</u>	Client Sample #: SG4-4'	Sample Type:

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: ASTM D1946	Prep Method: Method		QCBatchID: QC1166312				
Methane	ND	1	5	Vppm	04/29/16 15:17	TT	T4
Method: EPA 3C	Prep Method: Method		QCBatchID: QC1166086				
Carbon Dioxide	6.68	1	0.2	%	04/22/16 13:09	EW	
Carbon Monoxide	ND	1	0.2	%	04/22/16 13:09	EW	
Hydrogen	ND	1	0.5	%	04/22/16 13:09	EW	
Methane	ND	1	0.2	%	04/22/16 13:09	EW	
Nitrogen	83.0	1	0.2	%	04/22/16 13:09	EW	
O2 (Oxygen)	10.3	1	0.2	%	04/22/16 13:09	EW	

Matrix: Air	Client: Placeworks	Collector: Client
Sampled: 04/20/2016 12:15	Site:	
Sample #: <u>368605-002</u>	Client Sample #: SG5-7'	Sample Type:

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: ASTM D1946	Prep Method: Method		QCBatchID: QC1166312				
Methane	ND	1	5	Vppm	05/02/16 15:21	TT	T4
Method: EPA 3C	Prep Method: Method		QCBatchID: QC1166086				
Carbon Dioxide	7.24	1	0.2	%	04/22/16 14:01	EW	
Carbon Monoxide	ND	1	0.2	%	04/22/16 14:01	EW	
Hydrogen	ND	1	0.5	%	04/22/16 14:01	EW	
Methane	ND	1	0.2	%	04/22/16 14:01	EW	
Nitrogen	81.5	1	0.2	%	04/22/16 14:01	EW	
O2 (Oxygen)	11.3	1	0.2	%	04/22/16 14:01	EW	

QC Batch ID: **QC1166086**

Analyst: sandyw

Method: EPA 3C

Matrix: Air

Analyzed: 04/22/2016

Instrument: VOA-GC (group)

Blank Summary

Analyte	Blank Result	Units	RDL	Notes
QC1166086MB1				
Carbon Dioxide	ND	%	0.2	
Carbon Monoxide	ND	%	0.2	
Hydrogen	ND	%	0.5	
Methane	ND	%	0.2	
Nitrogen	ND	%	0.2	
O2 (Oxygen)	ND	%	0.2	

Duplicate Summary

Analyte	Sample Amount	Duplicate Amount	Units	RPD	Limits RPD	Notes
QC1166086DUP1						Source: 368605-001
Carbon Dioxide	6.68	6.64	%	0.6	20	
Carbon Monoxide	ND	ND	%	0.0	20	
Hydrogen	ND	ND	%	0.0	20	
Methane	ND	ND	%	0.0	20	
Nitrogen	83.0	83.0	%	0.0	20	
O2 (Oxygen)	10.3	10.3	%	0.0	20	

QC Batch ID: <u>QC1166312</u>	Analyst: ttran	Method: ASTM D1946
Matrix: Air	Analyzed: 05/02/2016	Instrument: VOA-GC (group)

Blank Summary

Analyte	Blank Result	Units	RDL	Notes
QC1166312MB1				
Methane	ND	Vppm	5	

Duplicate Summary

Analyte	Sample Amount	Duplicate Amount	Units	RPD	Limits RPD	Notes
QC1166312DUP1						Source: 368605-002
Methane	ND	ND	Vppm	0.0	20	

Data Qualifiers and Definitions

Qualifiers

A	See Report Comments.
B	Analyte was present in an associated method blank.
B1	Analyte was present in a sample and associated method blank greater than MDL but less than DRL.
BQ1	No valid test replicates. Sample Toxicity is possible. Best result was reported.
BQ2	No valid test replicates.
BQ3	No valid test replicates. Final DO is less than 1.0 mg/L. Result may be greater.
C	Possible laboratory contamination.
D	RPD was not within control limits. The sample data was reported without further clarification.
D1	Lesser amount of sample was used due to insufficient amount of sample supplied.
D2	Reporting limit is elevated due to sample matrix. Target analyte was not detected above the elevated reporting limit.
DW	Sample result is calculated on a dry weigh basis.
E	Concentration is estimated because it exceeds the quantification limits of the method.
I	The sample was read outside of the method required incubation period.
J	Reported value is estimated
L	The laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) was out of control limits. Associated sample data was reported with qualifier.
M	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits due to matrix interference. The associated LCS and/or LCSD was within control limits and the sample data was reported without further clarification.
M1	The matrix spike (MS) or matrix spike duplicate (MSD) is not within control limits due to matrix interference.
M2	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits. The associated LCS and/or LCSD was not within control limits. Sample result is estimated.
N1	Sample chromatography does not match the specified TPH standard pattern.
NC	The analyte concentration in the sample exceeded the spike level by a factor of four or greater, spike recovery and limits do not apply.
P	Sample was received without proper preservation according to EPA guidelines.
P1	Temperature of sample storage refrigerator was out of acceptance limits.
P2	The sample was preserved within 24 hours of collection in accordance with EPA 218.6.
Q1	Analyte Calibration Verification exceeds criteria. The result is estimated.
Q2	Analyte calibration was not verified and the result was estimated.
Q3	Analyte initial calibration was not available or exceeds criteria. The result was estimated.
Q4	Analyte result out of calibration range. Result was estimated.
S	The surrogate recovery was out of control limits due to matrix interference. The associated method blank surrogate recovery was within control limits and the sample data was reported without further clarification.
S1	The associated surrogate recovery was out of control limits; result is estimated.
S2	The surrogate was diluted out due to the presence of high concentrations of target and/or non-target compounds. Surrogate recoveries in the associated batch QC met recovery criteria.
T	Sample was extracted/analyzed past the holding time.
T1	Reanalysis was reported past hold time due to failing replicates in the original analysis (BOD only).
T2	Sample was analyzed ASAP but received and analyzed past the 15 minute holding time.
T3	Sample received and analyzed out of hold time per client's request.
T4	Sample was analyzed out of hold time per client's request.
T5	Reanalysis was reported past hold time. The original analysis was within hold time, but not reportable.
T6	Hold time is indeterminable due to unspecified sampling time.
T7	Sample was analyzed past hold time due to insufficient time remaining at time of receipt.

Definitions

DF	Dilution Factor
MDL	Method Detection Limit. Result is reported ND when it is less than or equal to MDL.
ND	Analyte was not detected or was less than the detection limit.
NR	Not Reported. See Report Comments.
RDL	Reporting Detection Limit
TIC	Tentatively Identified Compounds



Chain of Custody Record

Lab Job No. 368605
 Page 1 of 1

REQUIRED TURN AROUND TIME: Standard: X
 72 Hours: _____ 48 Hours: _____ 24 Hours: _____

CUSTOMER INFORMATION				PROJECT INFORMATION			
COMPANY: <u>PLATEWORKS</u>				PROJECT NAME: <u>METHANE INVESTIGATION</u>			
SEND REPORT TO: <u>KON CAVAGROTTI</u>				NUMBER: <u>DECD-04.0</u>			
EMAIL: <u>KCAVAGROTTI@PLATEWORKS.COM</u>				ADDRESS: <u>12870 PANAMA ST</u>			
ADDRESS: <u>9841 AIRPORT BLVD #1010</u>				ADDRESS: <u>LOS ANGELES CA</u>			
PHONE: <u>310 670 9001</u>				P.O. #: _____			
				SAMPLED BY: <u>MIKE WATTS</u>			
Sample ID	Date	Time	Matrix	Container Number/Size	Pres.	ANALYSIS REQUEST	
1	9/20/16	12:07	soil	1 gallon	NA	FIXED GASES	
2	9/20/16	12:15	soil	1 gallon	NA	FIXED GASES	
3						FIXED GASES	
4						FIXED GASES	
5						FIXED GASES	
6						FIXED GASES	
7						FIXED GASES	
8						FIXED GASES	
9						FIXED GASES	
10						FIXED GASES	
11						FIXED GASES	
12						FIXED GASES	
13						FIXED GASES	
14						FIXED GASES	
15						FIXED GASES	

Total No. of Samples: _____ Method of Shipment: _____ Preservative: 1 = Ice 2 = HCl 3 = HNO₃ 4 = H₂SO₄ 5 = NaOH 6 = Other

1. Received By:		1. Relinquished by		2. Received By:		2. Relinquished by		3. Received By:	
Signature:	Signature:	Signature:	Signature:	Signature:	Signature:	Signature:	Signature:	Signature:	Signature:
Printed Name:	Printed Name:	Printed Name:	Printed Name:	Printed Name:	Printed Name:	Printed Name:	Printed Name:	Printed Name:	Printed Name:
Date:	Date:	Date:	Date:	Date:	Date:	Date:	Date:	Date:	Date:
Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:	Time:



SAMPLE ACCEPTANCE CHECKLIST

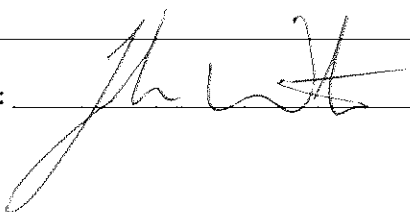
Section 1
 Client: Placeworks Project: Methane Investigation
 Date Received: 4-20-16 Sampler's Signature Present: Yes No
 Sample temperature: Air Bag
 Sample(s) received in cooler: Yes No (Skip Section 2)
 Shipping Information: _____

Section 2
 Was the cooler packed with: Ice Ice Packs Bubble Wrap Styrofoam
 Paper None Other _____
 Cooler 1 Temperature: _____ Cooler 2 Temperature: _____ Cooler 3 Temperature: _____
(Acceptance range is 0 to 6 Deg. C. or arrival on ice; For Microbiology sample ≤ 10 Deg. C or arrival on ice)

Section 3	YES	NO	N/A
Was a COC received?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were IDs present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were sampling dates & times present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was a signature present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were tests clearly indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were custody seals present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If Yes – were they intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were all samples sealed in plastic bags?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did all samples arrive intact? If no, indicate below.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did all bottle labels agree with COC? (ID, dates and times)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were correct containers used for the tests required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was a sufficient amount of sample sent for tests indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was there headspace in VOA vials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were the containers labeled with correct preservatives?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Was total residual chlorine measured (Fish Bioassay samples only)? *	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<i>*If the answer is no, please inform Fish Bioassay Dept. immediately.</i>			

Section 4
 Explanations/Comments

Section 5
 Was the Project Manager notified via email of discrepancies: Y / N N/A
 Project Manager's response: _____

Completed By:  Date: 4-20-16



ATTACHMENT C – Instrument Calibration Records

MONITORING FORM 1

CALIBRATION AND BACKGROUND MONITORING FORM
12870 Panama Street

PLACEWORKS	
9841 Airport Boulevard, Suite 1010 Los Angeles, California 90045 (310) 670.9221	
Project Name: 12870 Panama Street	
Date: 4/19/16	
Purpose: Methane Zone Investigation	
Field Personnel Present: Mike Watson	
Recorded by: Mike Watson	
Weather Conditions: Sunny	
Photovac MicroFID Serial Number:	GZUE308
Jerome 631X Serial Number:	631-2170
GEM 2000 Serial Number:	GM13288

METEOROLOGICAL CONDITIONS (LAX)

Event	Time	Wind Speed/ Direction	Temp. (°F)	Date of Last Precipitation	Bar. Pressure (in. Hg)	Comments/Observations
Initial	1153	W7	82		29.98	
Check #1	1353	W10	78		29.96	Partly cloudy
Check #2						
Final	1453	W12	78		29.96	

INSTRUMENT CALIBRATION

Event	Time	CH ₄ (% LEL)		CH ₄ (ppmv)		H ₂ S (ppmv)	
		Standard	Result	Standard	Result	Standard	Result
Initial	1150	20	20	100	99.9	10	9.7
Check #1	1400	20	20	100	99.7	10	9.6
Final	1520	20	20	100	99.8	10	9.6

AMBIENT AIR BACKGROUND

Location	Time	CH ₄ (ppmv)	H ₂ S (ppmv)	Comments/Observations
Near Front Office	1205	<0.5	<0.003	<0.1% CH ₄ w/ GEM, 20.5% O ₂ , 40.1% CO ₂

MONITORING FORM 1

CALIBRATION AND BACKGROUND MONITORING FORM
12870 Panama Street

DAILY CALIBRATION AND BACKGROUND MEASUREMENTS		PLACEWORKS 9841 Airport Boulevard, Suite 1010 Los Angeles, California 90045 (310) 670.9221					
Project Name: 12870 Panama Street		Photovac MicroFID Serial Number: CZV6308					
Date: 4/20/16		Jerome 631X Serial Number: 631-2170					
Purpose: Methane Zone Investigation		GEM 2000 Serial Number: GM13288					
Field Personnel Present: Mike Watson							
Recorded by: Mike Watson							
Weather Conditions: Sunny							
METEOROLOGICAL CONDITIONS (LAX)							
Event	Time	Wind Speed/ Direction	Temp. (°F)				
Initial	853	Variable 3mph	71				
Check #1	1053	W 7	79				
Check #2							
Final	1153	W 9	81				
Event	Date of Last Precipitation	Bar. Pressure (in. Hg)	Comments/Observations				
Initial		29.94	SUNNY				
Check #1		29.95					
Check #2							
Final		29.95					
INSTRUMENT CALIBRATION							
Event	Time	CH ₄ (% LEL)		CH ₄ (ppmv)		H ₂ S (ppmv)	
		Standard	Result	Standard	Result	Standard	Result
Initial	838	20	20	100	99.9	10	9.6
Check #1	1035	20	20	100	99.8	10	9.7
Final	1200	20	20	100	99.9	10	9.7
AMBIENT AIR BACKGROUND							
Location	Time	CH ₄ (ppmv)	H ₂ S (ppmv)	Comments/Observations			
New Fract off	845	<0.5	<0.03	<0.1 CH ₄ w/GEN, <0.1 CO ₂ , 20.9 O ₂			



FIELD ENVIRONMENTAL INSTRUMENTS, INC.

www.fieldenvironmental.com

301 Brushton Avenue
Suite A
Pittsburgh PA 15221
800-393-4009 Toll Free
(412) 436-2600 Local
(412) 436-2616 Fax

Photovac FID Calibration Certificate

Methane Gas	Lot #	Expiration
	15-5193	2/26/2017

Cal Standard 500 ppm	Reading ppm	Acceptable Range
	499.9	490 - 500 PPM ▼

Pump Flow mL/min	Acceptable Range
578	(596 - 606)

H₂ Flow mL/min	Acceptable Range
	(12.87 - 13.13)

H₂ Pressure (psi)
1700

- Low Range
- High Range

Response Factor
1.0

Model	MicroFID
S/N	CZUE308
Barcode	
Order #	309233

Calibrated By Josh Charles ▼

Date of Calibration 4/12/16 MD

All calibrations performed by FEI conform to manufacturer's specifications. Please report any issues within 24 hours of receiving equipment.
All calibration gas used is traceable to NIST. Additional documentation is available upon request.