#### SOURCE TEST REPORT

15-321, 15-322, 15-324

#### Conducted at

Orange County Sanitation District, Los Angeles County Sanitation District, and LA Sanitation (City of Los Angeles)

Street Manhole Locations

# **Evaluation of VOC Emissions from Vacuum Truck Transfers from Municipal Sewer Systems**

TESTED:

February 19, 2015

March 10, 2015

April 8, 2015

**ISSUED:** 

April 14, 2016

REPORTED BY:

William Welch

Air Quality Engineer II

REVIEWED BY

Michael Garibay

Supervising Air Quality Engineer



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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

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a. Firm	OCSD, LACSD, LA Sanitation
b. Test Location	Various Locations
c. Unit Tested	Municipal Sewer Vacuum Trucks
d. Test Requested by	South Coast Air Quality Management District
e. Reason for Test Request	Proposed Rule Information
f. Dates of Test	February 19, 2015, March 10, 2015, April 8, 2015
g. Source Test Performed by	C. Willoughby, R. LemM. Garibay, W. Stredwick, E. Padilla,
h. Test Arrangements Made Through	OCSD, LACSD, LA Sanitation



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### **EXECUTIVE SUMMARY**

South Coast Air Quality Management District (SCAQMD) Proposed Rule 1188 is designed to reduce volatile organic compound (VOC) emissions associated with transfer of materials using vacuum trucks. The Proposed Rule currently applies to vacuum trucks at refineries, bulk plants, bulk and marine terminals, and organic liquid pipeline facilities. SCAQMD Staff were interested in exploring the possibility of expanding the Proposed Rule to include vacuum truck transfers from municipal sewage systems. Working with the Orange County Sanitation District, Los Angeles County Sanitation District, and LA Sanitation (City of Los Angeles), the SCAQMD conducted three sets of tests as listed below:

- 1. SCAQMD source test #15-321, conducted on February 19, 2015.
- 2. SCAQMD source test #15-322, conducted on March 10, 2015.
- 3. SCAQMD source test #15-324, conducted on April 8, 2015.

Results for all of the aforementioned tests are included in this test report for reference. As shown in the following Table, results from all three tests show VOC emissions concentrations far below the Proposed Rule 1188 limit of 500 ppm (Table 1).

Table 1. Summary of Vacuum Truck Testing for Municipal Sewer Transfers

	Vacuum	VOC Emissions	Proposed Rule
Date	Truck ID	(ppm)	1188 Limit (ppm)
2/19/2015	Orange County Sanitation District	5	500
3/10/2015	Los Angeles County Sanitation District	9.5	500
4/8/2015	LA Sanitation	7.0	500



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#### RESULTS

Table 2. VOC Emissions from Vacuum Trucks for Municipal Sewer Transfers

Vacuum	Flow Rate	VOC Emissions	VOC Emissions	Proposed Rule	Mass Emissions	Mass Emissions
Truck ID	(dscfm)	M25.3 (ppm)	THC* (ppm)	1188 Limit (ppm)	(lb/hr)	(lb/event)
Orange County Sanitation District	3140	5	2.25	500	0.036	0.0059
Los Angeles County Sanitation District	2426	9.5	11.6	500	0.057	0.0095
LA Sanitation	3132	7.0	6.0	500	0.054	0.0090

Portable Total Hydrocarbon Analyzer

Table 3. Reduced Sulfur Compound Emissions from a Vacuum Truck for a Municipal Sewer Transfer

Vacuum	Flow Rate	Reduced Sulfur	Reduced Sulfur	Reduced Sulfur
Truck ID	(dscfm)	Emissions (ppm)	Emissions (lb/hr)	Emissions (lb/event)
Orange County Sanitation District	3140			ii
Hydrogen Sulfide		0.022	3.73E-04	6.21E-05
Carbonyl Sulfide		0.011	3.28E-04	5.47E-05
Methyl Mercaptan		0.010	2.39E-04	3.99E-05

#### INTRODUCTION

Personnel from the South Coast Air Quality Management District (SCAQMD), Source Test Engineering Branch (STE) conducted source testing on vacuum trucks at three street locations in the South Coast Air Basin. The testing was conducted for information purposes to determine the applicability of including municipal sewer vacuum trucks in Proposed Rule 1188.

The Proposed Rule currently applies to Volatile Organic Compound (VOC) emissions from vacuum trucks at refineries, bulk plants, bulk and marine terminals, and organic liquid pipeline facilities. SCAQMD Staff were interested in exploring the possibility of expanding the Proposed Rule to include vacuum truck transfers from municipal sewage systems. Testing was coordinated with the Orange County Sanitation District, Los Angeles County Sanitation District, and LA Sanitation (City of Los Angeles).

Testing of the vacuum trucks was conducted for VOC emissions using SCAQMD Method 25.3 as it applies to stack sources by sampling through chilled vials into specially prepared 6-liter summa canisters. Each test consisted of 10-minute duplicate samples taken from the exhaust of the vacuum truck during a transfer event.



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#### PROCESS OVERVIEW

A vacuum truck is a tank truck with a heavy duty vacuum designed to pneumatically load solids, liquids, sludge or slurry through suction lines typically 2-4" in diameter. The standard pump used in the industry is the rotary vane vacuum pump, but some are equipped with a positive displacement pump (PDP). The three trucks tested in this program were all the rotary vane type.

The truck can be configured to be a direct belt drive, or a hydraulic drive system. There are two different ways to mount the pump; either directly on the truck with the vacuum drive powered by the truck motor, or on the trailer with an independent motor. Each application has different handling characteristics, but all convey the material by producing a vacuum in the tank space without the pump directly contacting the materials.

Vacuum trucks are used by municipal governments and by commercial entities around the world (Figure 1).



Figure 1: Municipal Waste Vacuum Truck

Vacuum trucks are used in the petroleum industry for cleaning of storage tanks and spills. They are also an important part of drilling oil and natural gas wells, as they are located at the drilling site. Vacuum trucks are used to remove drilling mud, drilling cuttings, cement, spills, and for removal of brine water from production tanks. They dispose of this in sump pits or treatment plants.

All forms of sanitary waste disposal are handled by vacuum trucks. They are used to empty septage from cesspits, septic tanks, pit latrines and communal latrines, for street cleanup, for sewer clean out, and for individual septic systems and can also be used for cleanup of



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contaminated soil. The trucks are used in the cleaning of sanitary sewer lift stations. Vacuum trucks are used to empty portable toilets. In commercial aviation, vacuum trucks are used to collect waste from airplane toilets. Vacuum trucks discharge these wastes to the sewer network, to a wastewater treatment plant, or in a pit for composting.

Emissions from the process can occur when volatile hydrocarbons are transferred during a vacuum event and subsequently discharged into the atmosphere through the pump or blower exhaust (Figure 2).

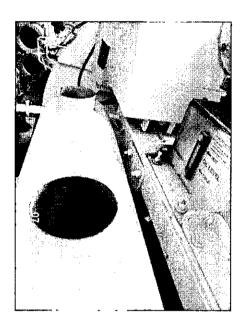


Figure 2: Vacuum Truck Exhaust Vent

## **Process Operating Conditions**

The trucks were positioned with the inlet line fed through a manhole into a section of sewer pipe. The manholes are located in low sections of the sewer pipe where sediments tend to accumulate. Following a cycle of pressure blasting with water (to free up stuck sediments), the vacuum pump was started. The vacuum process was operated at a constant flow rate for a minimum of ten minutes at each site.



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April 8, 2015

#### SAMPLING AND ANALYTICAL PROCEDURES

The testing of the vacuum trucks was conducted according to the following test matrix:

Unit Testing Conducted

Vacuum Trucks VOC & Fixed Gases

Total Hydrocarbons

Reduced Sulfur Compounds (Orange County site only)

Specially-prepared evacuated 6-liter summa canisters and condensate vials were used to sample for VOC. Fixed gases were sampled into an evacuated 6-liter canister to determine the molecular weight of the stack gases. Total hydrocarbons were monitored over the course of each test period with a total hydrocarbon (THC) analyzer. Reduced sulfur compounds were determined from a Tedlar bag sample taken at the Orange County test site. Flow rate was also determined so that the emissions could be reported on a mass basis as well as concentration. Further details of the methods are given in the following sections.

#### Stack Gas Velocity and Flow Rate

The velocity of the stack gas was measured at twelve points within the duct cross section of each vacuum truck according to SCAQMD Methods 1.1 and 2.1. This was performed using a calibrated Standard-type Pitot tube with a differential pressure manometer, and a type "K" thermocouple with a potentiometer (see Figure 3). The apparatus was checked for leaks both before and after use by introducing a pressure head and blocking the flow at the Pitot tip. An observation of the resulting stabilization in pressure at the manometer verified the absence of leaks in the system.

The exhaust ducts from the vacuum trucks were circular exhaust stack with diameters of either 6 or 8 inches. The sampling location was approximately one half stack diameters downstream and one half stack diameters upstream of the nearest flow disturbances (see Figure 3).

The volumetric flow rate was calculated for each sampling run using the stack's cross sectional area and average gas velocity. The flow rate was corrected to standard conditions by using the stack temperature and pressure along with the barometric pressure measured with by the nearest SCAQMD monitoring station. The flow rate was also corrected to dry conditions by determining gas stream moisture.



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#### Stack Gas Moisture Content

As the majority of the gaseous exhaust consisted of ambient air, the stack gas moisture content was determined from the nearest SCAQMD monitoring station for the dates and times of each test.

## SCAOMD Method 25.3 - Determination of Non-Methane Non-Ethane Hydrocarbons

Testing at the vacuum truck locations was conducted using SCAQMD Method 25.3. The sampling system consists of an in-stack filter, a probe, a Teflon line, a condensate trap, a flow controller, a vacuum gauge, a valve, and a canister (see Figure 5). Upon sampling, the canisters were returned to the lab and pressurized with nitrogen than analyzed within 24 hours of sampling. The traps are analyzed for total organic carbon by liquid injection into an infrared total organic carbon analyzer. The canisters are analyzed for VOC as non-methane nonethane organic compounds (NMNEOC) using the Method 25.1 approach. The analysis consists of foreflush and backflush of a gas chromatography (GC) column followed by an oxidizer, methanizer, and a flame ionization detector (FID). The GC separates the VOC component from the sample; the oxidizer converts the VOC to carbon dioxide; the methanizer converts the resulting carbon dioxide to methane. The results are determined by the FID in units of parts per million by volume as carbon (ppmC).

## EPA Method 21 - Determination of Volatile Organic Compound Leaks

Continuous total hydrocarbon (THC) emissions were monitored according to EPA Method 21. Following the method, a portable instrument is used to detect VOC leaks from individual sources. The instrument detector type is not specified, but it must meet certain specifications and performance criteria contained in the method. In this case, the SCAQMD used a portable flame ionization detector (FID) that met these criteria.

## SCAOMD Method 307-91 - Determination Sulfur in a Gaseous Matrix

SCAQMD Method 307-91 was used to determine reduced sulfur compound emissions at the Orange County site only. A sample was acquired from the truck tank exhaust stream into a clean, 10 liter Tedlar bag. Reduced sulfur compounds and SO<sub>2</sub> are separated by gas chromatography. These compounds are then combusted in a hydrogen-rich flame to yield sulfur monoxide and other products. The sulfur monoxide is reacted with ozone to yield sulfur dioxide, oxygen and light. The light is detected with a photomultiplier and the response is calibrated against previously run standards.



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### TEST CRITIQUE

The test results are considered to be measured accurately. The measured VOC emissions for the three tests ranged from 5.0 ppm to 9.5 ppm, which is far less than the Proposed Rule 1188 limit of 500 ppm.

The sampling locations for the vacuum truck exhausts were not ideal. The as-found ducting did not provide the minimum 2 diameters of straight run upstream of the sampling location to ensure fully developed uniform flow. In addition, there were no sampling ports. It was necessary to place the Pitot tube in the outlet of the exhaust duct in order to perform the velocity traverses. With this configuration, a standard-type Pitot tube was used to access differential pressure points that were a minimum of ½ the duct diameter inside the duct from the outlet.

The barometric pressure was determined from the SCAQMD monitoring station nearest to each of the test locations.

The static pressure in the exhaust duct could not be recorded during the tests due to the brevity of each test event. Using the exhaust flow rate, velocity, duct dimensions, gas densities, and frictional/dynamic loss coefficients, the static pressures were determined for the tests.

Due to the short duration of each vacuum transfer, there was not enough time to conduct a moisture train. As the majority of the exhaust stream consisted of air, the moisture content was assumed to be ambient. The moisture fraction was determined from relative humidity and temperature acquired from the SCAQMD monitoring station nearest to each of the test locations.

Duplicate sample analyses for the Orange County Sanitation District and Los Angeles City Sanitation District tests showed trap results that were greater than 20% of the duplicate average. In the first instance, the higher of the two results was eliminated due to suspected sample contamination. In addition, the higher value is a statistical outlier (> 3 SD from the mean of all data). For the LA Sanitation sample, the higher of the two results was used in the calculations as a worst case scenario.

The deviations from the reference methods described above are not considered to have a significant effect on the accuracy of the test results. The results are, therefore, considered valid for use in emissions estimates for these sources.



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# **FIGURES**

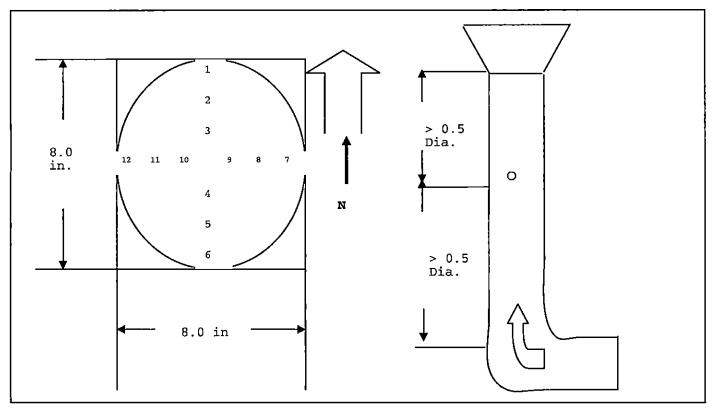


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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

Stack Orientation: Vertical, Circular



Traverse Point Number	Distance from inner stack wall (in.)
1,7	0.5
2, 8	1.2
3, 9	2.4
4, 10	5.6
5, 11	6.8
6, 12	7.7

Figure 3: Orange County and LA City Sanitation District Vacuum Truck 2-Port Sampling
Locations

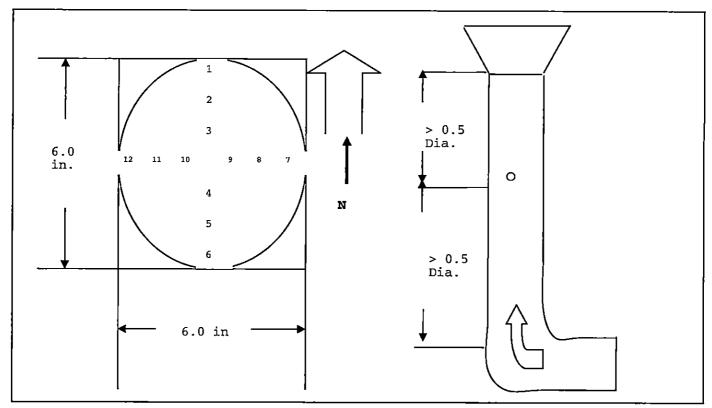


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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

Stack Orientation: Vertical, Circular



Traverse Point Number	Distance from inner stack wall (in.)
1, 7	0.5
2, 8	0.9
3,9	1.8
4, 10	4.2
5, 11	5.1
6, 12	5.7

Figure 4: LA County Sanitation District Vacuum Truck 2-Port Sampling Locations



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Test Dates: February 19, 2015 March 10, 2015

April 8, 2015

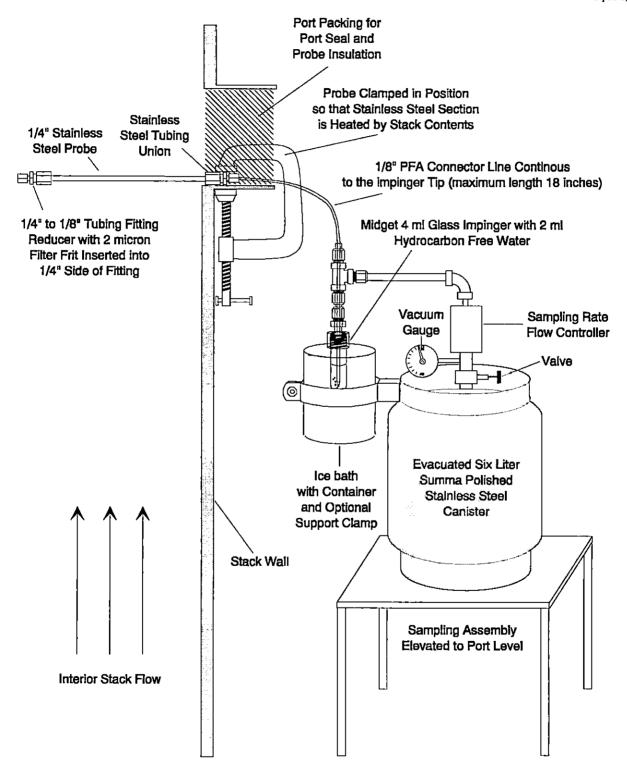


Figure 5: SCAOMD Method 25.3 for NMNEHC Sampling Train



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# **CALCULATIONS**



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#### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 E. Copley Dr. Diamond Bar, California 91765-4182

Test Date: 72/19/15 Test No. 15-321

Test No. 15-321					Test Date: 2/19/15					
		SOI	JRCE	TEST	CALCUL	ATIONS	<del></del>			
Sampling Location: Sample Train:	ick	Input by: B. Welch								
SUMMARY										
A. Average Traverse Ve										
3. Gas Meter Temperat										
C. Gas Meter Correction										
). Average Orifice Pres										
Nozzie Diameter						• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	******************		inch
1. Stack Diameter or D	Dimension #1	8	inci	า	M. Pitot	Correc	tion Facto	or	1.00	
2. Stack Dim #2 (blank	if circular)		incl	า					10	min
S. Stack Cross Sect. A	rea	0.349	ft2		O. Nozz	le X-Se	ct. Area		0.00000	ft
l. Average Stack Temp		89.3	deg	g F	P. Net S	Sample	Collection	l	0	mg
Barometric Pressure		29.90	"Hg	ıΑ	Q. Net	Solid Co	llection		0	mg
. Gas Meter Pressure					R. Wate	er Vapo	r Conden	sed	12.72	ml
K. Static Pressure		-0.16	"H₂	0	S. Gas	Volume	Metered		35.315	dcf
., Total Stack Pressure	(I+(K/13.6))	29.89	"Hg	ıΑ						
. Corrected Gas Volum	ne [(S x J/29.9	2) x 520/(4	60+E	3) x C					35.315	dscf
PERCENT MOISTURE	GAS DENSITY	ſ								
J. Percent Water Vapo	r in Gas Samp	ole ((4.64 x	R)/(	(0.0464	x R) + T)	)	••••••		1.64	%
/. Average Molecular \	Weight (Wet):									
Component		ol. Fract.	x	Moist.	Fract.	x	Mol	ecular Wt.	=	Wt./Mole
	0.016			1.000			18.0	1	0.30	
arbon Dioxide	0.001	Dry Basis		0.984			44.0	,	0.03	
arbon Monoxide		Dry Basis		0.984			28.0	,	0.00	
Oxygen		Dry Basis		0.984			32.0		6.31	
litrogen & Inerts	0.799	Dry Basis		0.984			28.2	,	22.16	
									22.10	
								, Sum	28.79	
FLOW RATE			<b></b>	<del></del>				Sum		
	 tion Factor (28	3.95 <b>/</b> V)^.5								
V. Gas Density Correc									28.79	
V. Gas Density Correct. Velocity Pressure Co	orrection Facto	or (29.92/L)	^.5						28.79 1.00 1.00	fps
V. Gas Density Correct V. Velocity Pressure Co V. Corrected Velocity ( V. Flow Rate (Y x G x 6)	orrection Factor A x M x W x X 50)	or (29.92/L) )	^.5. <i>.</i>						28.79 1.00 1.00 161.12 3375	•
V. Gas Density Correct V. Velocity Pressure Co V. Corrected Velocity (	orrection Factor A x M x W x X 50) d) {Z x (L/29.9	or (29.92/L) ) 92) x [520/(	)^.5 460+	 H)]}					28.79 1.00 1.00 161.12 3375 3191	cfm



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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 E. Copley Dr. Diamond Bar, California 91765-4182

Test No. 15-322 Test Date: 3/10/15

							Test Date: 3	,, 10, 13	
		SO	URCE	TEST CAL	CULATIONS				
Sampling Location: Sample Train:	LA County SE	O Manhole	Vac	uum Truck			Input by: E		
SUMMARY									
A. Average Traverse Ve	locity	•••••			******************		******	132.95	fps
B. Gas Meter Temperat	ure (Use 60 de	g.F for Te	mp C	omp. Meter	rs)				.deg F
C. Gas Meter Correction									
D. Average Orifice Pres									
E. Nozzle Diameter	••••••	••••••	••••		••••••		••••••	•••••	inch
F1. Stack Diameter or D	imension #1	6	inch	n M	Pitot Correcti	on Facto	חר	1.00	
F2. Stack Dim #2 (blank					Sampling Tim				min
G. Stack Cross Sect. Ar		0.196			Nozzle X-Sec				
H. Average Stack Temp		203.1			Net Sample C				mg
. Barometric Pressure	• • • • • • • • • • • • • • • • • • • •	29.80	"Hg		Net Solid Col			_	mg
J. Gas Meter Pressure (		29.80	"Hg		Water Vapor			9.85	ml
K. Static Pressure		-0.16			Gas Volume !	Metered.		0.000	dcf
L. Total Stack Pressure	(l+(K/13.6))	29.79	"Hg	A					
	~ [/e v   l/an na	\	eo i D	\C				25 245	.lf
I. Corrected Gae Volum			טייטט					35.315	usci
Corrected Gas Volum	ie [(O X 0/20.02	,(.		,					
T. Corrected Gas Volum PERCENT MOISTURE/0		, •=•.( .		,					
1. Corrected Gas Volum		,(.		, n <b>3</b>					
	GAS DENSITY	•						1.28	
PERCENT MOISTURE/0	GAS DENSITY r in Gas Sample	•							
PERCENT MOISTURE/0	GAS DENSITY r in Gas Sample	•							
PERCENT MOISTURE/0  J. Percent Water Vapor  V. Average Molecular \  Component	GAS DENSITY r in Gas Sample Veight (Wet): Vol	•			+ T))				
PERCENT MOISTURE/0 U. Percent Water Vapor V. Average Molecular \ Component	GAS DENSITY r in Gas Sample Veight (Wet):	e ((4.64 x	R)/(((	0.0464 x R)  Moist. Frac	+ T))	Mole	ecular Wt.	1.28	%
PERCENT MOISTURE/O  J. Percent Water Vapor  V. Average Molecular N  Component  Water	GAS DENSITY r in Gas Sample Veight (Wet): Vol	e ((4.64 x . Fract.	R)/(((	0.0464 x R)  Moist. Frac	+ T))	Mole 18.0	ecular Wt.	1.28	%
PERCENT MOISTURE/O  J. Percent Water Vapor  V. Average Molecular \  Component  Water  Carbon Dioxide	GAS DENSITY r in Gas Sample Veight (Wet):  Vol.  0.013 0.001 D	e ((4.64 x  . Fract.	R)/(((	0.0464 x R)  Moist. Frac  1.000  0.987	+ T))	Mole 18.0 44.0	ecular Wt.	1.28 = 0.23 0.04	%
PERCENT MOISTURE/O  J. Percent Water Vapor  J. Average Molecular \  Component  Water  Carbon Dioxide  Carbon Monoxide	GAS DENSITY  r in Gas Sample  Weight (Wet):  Vol.  0.013 0.001 D 0.000 D	e ((4.64 x  . Fract.  Dry Basis Ory Basis	R)/(((	Moist. Frac 1.000 0.987 0.987	+ T))	Mole 18.0 44.0 28.0	ecular Wt.	1.28 = 0.23 0.04 0.00	%
PERCENT MOISTURE/O  J. Percent Water Vapor  V. Average Molecular N  Component  Water  Carbon Dioxide  Carbon Monoxide  Dxygen	GAS DENSITY r in Gas Sample Veight (Wet):  Vol.  0.013 0.001 D	e ((4.64 x  . Fract.  Dry Basis Dry Basis Dry Basis	R)/(((	0.0464 x R)  Moist. Frac  1.000  0.987	+ T))	Mole 18.0 44.0	ecular Wt.	1.28 = 0.23 0.04	%
PERCENT MOISTURE/O  J. Percent Water Vapor  V. Average Molecular N  Component  Water  Carbon Dioxide  Carbon Monoxide  Dxygen	GAS DENSITY  r in Gas Sample  Weight (Wet):  Vol  0.013  0.001  0.000  0.201  D	e ((4.64 x  . Fract.  Dry Basis Dry Basis Dry Basis	R)/(((	Moist. Frac 1.000 0.987 0.987 0.987	+ T))	Mole 18.0 44.0 28.0 32.0	ecular Wt.	1.28 = 0.23 0.04 0.00 6.35	%
PERCENT MOISTURE/O  J. Percent Water Vapor  V. Average Molecular N  Component  Water  Carbon Dioxide  Carbon Monoxide  Dxygen	GAS DENSITY  r in Gas Sample  Weight (Wet):  Vol  0.013  0.001  0.000  0.201  D	e ((4.64 x  . Fract.  Dry Basis Dry Basis Dry Basis	R)/(((	Moist. Frac 1.000 0.987 0.987 0.987	+ T))	Mole 18.0 44.0 28.0 32.0	ecular Wt.	1.28 = 0.23 0.04 0.00 6.35	%
PERCENT MOISTURE/0 U. Percent Water Vapor V. Average Molecular \ Component	GAS DENSITY  r in Gas Sample  Weight (Wet):  Vol  0.013  0.001  0.000  0.201  D	e ((4.64 x  . Fract.  Dry Basis Dry Basis Dry Basis	R)/(((	Moist. Frac 1.000 0.987 0.987 0.987	+ T))	Mole 18.0 44.0 28.0 32.0	ecular Wt.	1.28 = 0.23 0.04 0.00 6.35 22.22	%
PERCENT MOISTURE/O  J. Percent Water Vapor  V. Average Molecular V  Component  Water  Carbon Dioxide  Carbon Monoxide  Dxygen  Nitrogen & Inerts	GAS DENSITY  r in Gas Sample  Weight (Wet):  Vol  0.013  0.001  0.000  0.201  D	e ((4.64 x  . Fract.  Dry Basis Dry Basis Dry Basis	R)/(((	Moist. Frac 1.000 0.987 0.987 0.987	+ T))	Mole 18.0 44.0 28.0 32.0	ecular Wt.	1.28 = 0.23 0.04 0.00 6.35 22.22	%
PERCENT MOISTURE/O  J. Percent Water Vapor  V. Average Molecular V  Component  Water  Carbon Dioxide  Carbon Monoxide  Dxygen  Nitrogen & Inerts  FLOW RATE	GAS DENSITY  r in Gas Sample  Vol.  0.013 0.001 0.000 0.201 0.798 D	e ((4.64 x . Fract. . Fract. . Pry Basis Pry Basis Pry Basis	R)/(((	0.0464 x R)  Moist. Frac  1.000 0.987 0.987 0.987 0.987	+ T))	Mole 18.0 44.0 28.0 32.0 28.2	ecular Wt.	1.28 = 0.23 0.04 0.00 6.35 22.22	%
PERCENT MOISTURE/O  J. Percent Water Vapor  V. Average Molecular V  Component  Water  Carbon Dioxide  Carbon Monoxide  Dxygen  Nitrogen & Inerts  FLOW RATE  W. Gas Density Correct	GAS DENSITY  r in Gas Sample  Vol.  0.013 0.001 D 0.000 D 0.201 D 0.798 D	e ((4.64 x  Fract.  Pry Basis Pry Basis Pry Basis Pry Basis	R)/(((	0.0464 x R)  Moist. Frac  1.000 0.987 0.987 0.987 0.987	+ T))	Mole 18.0 44.0 28.0 32.0 28.2	ecular Wt.	1.28 = 0.23 0.04 0.00 6.35 22.22	%
PERCENT MOISTURE/O  J. Percent Water Vapor  J. Average Molecular V  Component  Component  Carbon Dioxide  Carbon Monoxide  Dxygen  Nitrogen & Inerts  FLOW RATE  W. Gas Density Correct  C. Velocity Pressure Co	GAS DENSITY  r in Gas Sample  Vol.  0.013 0.001 D 0.000 D 0.201 D 0.798 D  tion Factor (28.5)	e ((4.64 x  . Fract.  . (29.92/L)	x 	0.0464 x R)  Moist. Frac  1.000 0.987 0.987 0.987 0.987	+ T))ct. x	Mole 18.0 44.0 28.0 32.0 28.2	ecular Wt.	1.28 = 0.23 0.04 0.00 6.35 22.22 28.84	%
PERCENT MOISTURE/O  J. Percent Water Vapor  J. Average Molecular V  Component  Component  Carbon Dioxide  Carbon Monoxide  Dxygen  Vitrogen & Inerts  FLOW RATE  V. Gas Density Correct  C. Velocity Pressure Co  J. Corrected Velocity (A	r in Gas Sample Veight (Wet):  Vol.  0.013 0.001 D 0.000 D 0.201 D 0.798 D 0.798 D  tion Factor (28.9)	e ((4.64 x  . Fract.  . (29.92/L)	x 	0.0464 x R)  Moist. Frac  1.000 0.987 0.987 0.987	+ T))	Mole 18.0 44.0 28.0 32.0 28.2	ecular Wt.	1.28 = 0.23 0.04 0.00 6.35 22.22 28.84	% Wt./Mol
PERCENT MOISTURE/O  J. Percent Water Vapor  J. Average Molecular V  Component  Water  Carbon Dioxide  Carbon Monoxide  Dxygen  Nitrogen & Inerts  FLOW RATE  W. Gas Density Correct  J. Velocity Pressure Co  J. Corrected Velocity (A  J. Flow Rate (Y x G x 6	GAS DENSITY r in Gas Sample Veight (Wet):  Vol  0.013 0.001 D 0.000 D 0.201 D 0.798 D 0.798 D tion Factor (28.9) xrection Factor A x M x W x X) 0)	e ((4.64 x  . Fract.  . Fract.  . Fract.  . Pry Basis	x 	0.0464 x R)  Moist. Frac  1.000 0.987 0.987 0.987	+ T))	Mole 18.0 44.0 28.0 32.0 28.2	ecular Wt.	1.28 = 0.23 0.04 0.00 6.35 22.22 28.84	% Wt./Mole
PERCENT MOISTURE/O  J. Percent Water Vapor  V. Average Molecular V  Component  Water  Carbon Dioxide  Carbon Monoxide  Dxygen  Nitrogen & Inerts	GAS DENSITY  r in Gas Sample  Vol	e ((4.64 x  . Fract.  . Fract.  . Fract.  . Pry Basis  .	x  ^.5	0.0464 x R)  Moist. Frac 1.000 0.987 0.987 0.987 0.987	+ T))	Mole 18.0 44.0 28.0 32.0 28.2	ecular Wt.	1.28 = 0.23 0.04 0.00 6.35 22.22 28.84 1.00 1.00 133.50	% Wt./Mole



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

#### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 E. Copley Dr. Diamond Bar, California 91765-4182

Test Date: 4/08/15 Test No. 15-324

		so	URCE	E TEST (	CALCULA	ATIONS				
Sampling Location: Sample Train:	LA City SD	Manhole V	acuun	n Truck	<b>*</b>			Input by: B	. Welch	
SUMMARY										
A. Average Traverse Vel										
B. Gas Meter Temperation										
C. Gas Meter Correctior D. Average Orifice Press	i racioi sire	***************	•			••••••	• • • • • • • • • • • • • • • • • • • •		•••••••	"LL
E. Nozzle Diameter										
							•			
F1. Stack Diameter or D			inch		M. Pitot	Correct	ion Facto	or	1.00	
F2. Stack Dim #2 (blank				1				•••••		min
G. Stack Cross Sect. Ar				_					0.00000	
i. Average Stack Temp.			deg			-		l		mg
. Barometric Pressure J. Gas Meter Pressure (			_					sed		mg ml
K. Static Pressure			, ⊓g } "H₂(					seq	6.22 0.000	
Total Stack Pressure					J. Gas	V Oldi I le	Metered	••••••	0.000	acı
Г. Corrected Gas Volum	e f(S.xl/29.)	92) x 520/(4	160+F	8) v.C					35.315	decf
		, ,		•						
PERCENT MOISTURE/	GAS DENSIT	Υ								
PERCENT MOISTURE/C U. Percent Water Vapor	r in Gas Sam	ple ((4.64 x	: R)/((	(0.0464 )	(R) + T))	<b>).</b>			0.81	%
	r in Gas Sam Veight (Wet)	ple ((4.64 x		(0.0464 x Moist. l		)x		ecular Wt.	0.81	% Wt./Mole
J. Percent Water Vapor	r in Gas Sam Veight (Wet)	ple ((4.64 x		Moist.			Mol	ecular Wt.	=	
J. Percent Water Vapor	r in Gas Sam Veight (Wet) V	ple ((4.64 x : /ol. Fract.		Moist. I			Mole 18.0	ecular Wt. ,	= 0.15	
J. Percent Water Vapor  J. Average Molecular V  Component  Water  Carbon Dioxide	Veight (Wet) 0.008 0.001	rple ((4.64 x : /ol. Fract. 		Moist.			Mol	ecular Wt. ,	=	
J. Percent Water Vapor  J. Average Molecular V  Component  Water  Carbon Dioxide  Carbon Monoxide	Veight (Wet) 0.008 0.001	ple ((4.64 x : /ol. Fract.		Moist. 1.000			Mol 18.0 44.0	ecular Wt. ,	= 0.15 0.03	
J. Percent Water Vapor V. Average Molecular V Component	0.008 0.001 0.201	rple ((4.64 x : /ol. Fract. Dry Basis Dry Basis		Moist. I 1.000 0.992 0.992			Mole 18.0 44.0 28.0	ecular Wt.  , ,	= 0.15 0.03 0.00	
J. Percent Water Vapor  J. Average Molecular V  Component  Water  Carbon Dioxide  Carbon Monoxide  Dxygen	0.008 0.001 0.201	rple ((4.64 x : /ol. Fract. Dry Basis Dry Basis Dry Basis		1.000 0.992 0.992 0.992			Mole 18.0 44.0 28.0 32.0	ecular Wt.  , ,	= 0.15 0.03 0.00 6.38	
J. Percent Water Vapor  J. Average Molecular V  Component  Water  Carbon Dioxide  Carbon Monoxide  Dxygen  Nitrogen & Inerts	0.008 0.001 0.201	rple ((4.64 x : /ol. Fract. Dry Basis Dry Basis Dry Basis		1.000 0.992 0.992 0.992			Mole 18.0 44.0 28.0 32.0	ecular Wt.	0.15 0.03 0.00 6.38 22.33	
J. Percent Water Vapor  J. Average Molecular V  Component  Water  Carbon Dioxide  Carbon Monoxide  Dxygen  Nitrogen & Inerts	0.008 0.001 0.000 0.201 0.798	ople ((4.64 x c) ol. Fract. Dry Basis Dry Basis Dry Basis Dry Basis	×	Moist. 1.000 0.992 0.992 0.992 0.992	Fract.	x	Mole 18.0 44.0 28.0 32.0 28.2	ecular Wt.	= 0.15 0.03 0.00 6.38 22.33 28.89	
J. Percent Water Vapor  J. Average Molecular V  Component  Water  Carbon Dioxide  Carbon Monoxide  Dxygen  Nitrogen & Inerts  FLOW RATE  W. Gas Density Correct	veight (Wet) 0.008 0.001 0.000 0.201 0.798	ople ((4.64 x c). /ol. Fract. Dry Basis Dry Basis Dry Basis Dry Basis	×	Moist. 1.000 0.992 0.992 0.992 0.992	Fract.	x	Mole 18.0 44.0 28.0 32.0 28.2	ecular Wt.	0.15 0.03 0.00 6.38 22.33	
J. Percent Water Vapor  J. Average Molecular V  Component  Water Carbon Dioxide Carbon Monoxide Dxygen Vitrogen & Inerts  FLOW RATE  W. Gas Density Correct  K. Velocity Pressure Co	Veight (Wet)  0.008 0.001 0.000 0.201 0.798  cion Factor (2	ople ((4.64 x c). /ol. Fract. Dry Basis Dry Basis Dry Basis Dry Basis Dry Basis	x 	Moist. 1.000 0.992 0.992 0.992 0.992	Fract.	x	Mole 18.0 44.0 28.0 32.0 28.2	ecular Wt.	= 0.15 0.03 0.00 6.38 22.33 28.89	Wt./Mole
J. Percent Water Vapor  J. Average Molecular V  Component  Water Carbon Dioxide Carbon Monoxide Dxygen Vitrogen & Inerts  FLOW RATE  N. Gas Density Correct C. Velocity Pressure Co J. Corrected Velocity (A  J. Flow Rate (Y x G x 6	Veight (Wet)  0.008 0.001 0.000 0.201 0.798  tion Factor (2	ople ((4.64 x c)	x 	1.000 0.992 0.992 0.992 0.992	Fract.	x	18.0 44.0 28.0 32.0 28.2	ecular Wt.	= 0.15 0.03 0.00 6.38 22.33 28.89	Wt./Mole
J. Percent Water Vapor  V. Average Molecular V  Component  Water  Carbon Dioxide  Carbon Monoxide  Dxygen	0.008 0.001 0.000 0.201 0.798	ople ((4.64 x c)	x )^.5	Moist. 1.000 0.992 0.992 0.992 0.992	Fract.	x	Mole 18.0 44.0 28.0 32.0 28.2	ecular Wt.	= 0.15 0.03 0.00 6.38 22.33 28.89 1.00 1.00 163.38	Wt./Mole



Test Nos. 15-321, 15-322, 15-	324	-20	0-		Test Dates: February 19, 2015 March 10, 2015 April 8, 2015
OCSD 2/19/15					
	Canister	Impinger/Trap	_ Total	Final	Diff. from mean
Sample 1	0	22	22	23.892	0.00%
Sample 2	0	22	22	23.892	0.00%
Stack Oxygen:	20.05				
Exhaust Flow	3140			186 bias factor is ont	y for 25.3, not 25.1
		mean	22		
			Average:	23.892	
% O2 to adjust to:		]		;	
Adjusted Concentration:					
Mass emissions:	0.170536564				
LACOUNTSD 3/10/15					-
LACCOMISE SHOWS	Canister	Impinger/Trap	Total	Final	Diff. from mean
Sample 1	0	11	11	11.946	15.79%
Sample 2	0	8	8	8.688	-15.79%
Stack Oxygen:	20.1		_ 0	0.000	10.7070
Exhaust Flow	2426		Note: the 1.0	86 bias factor is onl	v for 25.3, not 25.1
		mean	9.5		, is,,
	:				
_	1 4 441000			· :	2
-			Average:	10.317	
% O2 to adjust to:					
Adjusted Concentration:					
Mass emissions:	0.056895718				
•	Note: The mass of	emission calculation	uses the MW	of 14.36, as per Me	ethod 25.3.



-21-Test Dates: February 19, 2015 March 10, 2015 April 8, 2015 Test Nos. 15-321, 15-322, 15-324 **LACITSD 4/8/15** Canister Impinger/Trap Final Diff. from mean Total 0.00% Sample 1 0 7 7 7.602 0.00% Sample 2 0 7 7 7.602 Stack Oxygen: 20.1 **Exhaust Flow** 3132 Note: the 1.086 bias factor is only for 25.3, not 25.1 mean 7.602 Average: % O2 to adjust to: Adjusted Concentration: Mass emissions: 0.054123388

Note: The mass emission calculation uses the MW of 14.36, as per Method 25.3.



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

# **APPENDICES**

Equipment Information, Field Data, Calibration Data, and Laboratory Results



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

# APPENDIX A

Field Data



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

#### South Coast Air Quality Management District Date: 2/ Sample Train: Company: OC S.D Test No. 15-32/ Vacuum Trick a sever manhole Sampling Location Traverse Source Test Data Post-Test Leak Check: Pre-Test Leak Check: Filter: \_\_\_\_ cfm @ "Hg vac Filter: \_\_\_ cfm @ - "Hg vac "Hg vac cfm @ Probe: cfm @ Pitot Tube Leak Check: Pass / Fail Pitot Tube Leak Check: (Pass) Fail Vacuum Hg Meter Temp. Gas Meter Stack Calculated Probe Filter Imp. Time Reading (dcf) Sampling | Orifice Rate .' P Temp Temp. Velocity Temp Velocity Temp. Heac ٥F ۴ Out ("H<sub>2</sub>O) (cfm) ("H<sub>2</sub>O) 950 61.4 и 91 10 11 12 (Net Vol. Uncorr.) Start: \_\_\_\_\_ "Hg vac Canister #. K-Factor: Stack Moisture: Nozzle Diameter. Recorded By-Pitot Factor: Barometric Pressure: Static Pressure in Stack; Calibration Data (Cal. Inclined Manometer Magnehelic No. (Cal: Stack 20108 (Cal: 2/17 Pitot Tube No. Dimensions Potentiometer No No3/5 (Cal Thermocouple No (Cal. (Cal Gas Meter No. Meter Corr. Factor Rectangular / Circular Stack, Horizontal / Vertical Sampling Probe. Stamless Steel / Borosilicate / Quartz

Revision 01/09



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT METHOD 25.3 TEST DATA SHEET

	pany/Sampling	32/ 32/ 3 Location <u>Or</u> Equipment		nty S truc	9 n.		Reco District er man	No.: orded By: _ - Church hole +1-	ch st w	alnut
	SA	MPLE A		$\neg$			s	AMPLE B	_	
Tank #: 547	<u>74</u> Viai#:	Re	g. #:		Ta	ank#: 5416	4 Vial	#: _2	Reg. #:	
	est Leak Check		uge: 30				st Leak Checl		Gauge:	30
		χέa	s)/ Fail						Pas8/ F	ail
Post-	Test Leak Chec	( ~	uge:2			Post-Te	est Leak Chec	:k:	Gauge:	11
		Pá	se/ Fail						Pass/ F	ail
Time	Vacuum ("Hg)	Flow (ce/min)	Comments			Time	Vacuum ("Hg)	r Flor (cc/m		omments
959 AM	30				-	9 54 AM	30			
1000	2				1	09	11			
				_	<u>L</u>					
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<u></u>			<del></del>		_		<del> </del>			
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-	-				-		1			
							<del> </del>		_	
_							1			
				_						
						,				
Approximate	Time To Fill	Tank (minutes)	20	30		40	50	60	90	120
ΔP Setting		-	62	30		21	14	8	5	2



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

	South Coast Air Quality Management District												
Test No. 15-322 Company: 11 (14 San. Dist. Date: 7/10/15 Sampling Location: Sever man have Vacuum fruck exhausample Train:													
S	ampling	Location:	Sen	10011y.	van hal	e Va	cvvm	frick	exhauss	mple Ti	ain:		
Traverse Source Test Data													
Pi	Pre-Test Leak Check:         Post-Test Leak Check:           Filter:         cfm @ "Hg vac           Probe:         cfm @ "Hg vac												
Fi	ilter: _	cfm @ cfm @		"Hg	vac		Filt	er:	c	fm @ _		"Hg v	ac
Pi	robe: 🔃	cfm @		"Hg	vac		Pro	be:	,c	tm @ _		"Hg v	ac
Pi	itot Tube	Leak Check:	Pass	/ Fail			Pito	ot lube i	eak Cn	eck:	Pass / F	-all	
Time	Sample	Gas Vieter Reading (dcf)	Sta	ck	(	Calculated		Probe	Filter	lmp.	Meter	emp.	Vacuum "Hg
	Point #		Velocity Head	Temp.	Velocity (fps)	Sampling Rate	Orifice ΔP	Temp.	Temp.	Temp.	*F		ן פיי
	"	Start: VOC	("H <sub>2</sub> O)		(cha)	(cim)	("H₂O)	°F	°F	°F	ln	Out	
	1	3	0.5		12-1	2.7	("H₂O) 26 3	,					
7.77. 0.77.	2	10.		127		2.1	267	! !-			,,		
	3	8	2-5	166	17.1	2.5	270	,	/	420	~~ )	<del>,</del>	
· · · · · · · · · · · · · · · · · · ·	4	<u> </u>	3-9	/8/_	13-2	43_	271	:	(_,	1.47	7/3	·	
	- 5		4.0	205	12.9	5-2	273		- (1	الإسلال	$\mathcal{M}$		
3 N	6		41.2	217	4.8	4-9	274	<u> </u>	·				
			<i>A</i>	0.50							0.7		
	7	14	3/1	227			·	:	<u> </u>	2,00	167 V		
<del></del>	1	14.1	4.0	244		,	R - MINE	person -		<u> </u>			
<u> </u>	10	14.1	4-3	252			- <u> </u>			1 77,300	-	<u></u> -	
-	11	- 13.9	3.4	257			7						
<u> </u>	12	13.6	2.9	261									
		<del></del>	<u> </u>	1201-				1					
		<del> </del>											
	<u> </u>	t.											
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			2000 to 1.7.7				Beh	~0	784	) )/	-		
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	<del> </del>		100	<u> </u>	7/10	(ovnd	,	8	2.0		<del> </del>		
			V 07	<b>/</b>	VCHG	1 24 1160		7	ol v. l	[	<u> </u>		
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<u> </u>	·	***************************************		<del>                                     </del>	ar an a 196 - 1 - 2 - 2 - 2	. !	<u> </u>						
(Net Vo	ol. Uncorr.)		Avg.	<del> </del>		_				J		·	
K-Fac				Moistu	re:	C	anister #	<u>'</u> #:		Start	t:	ø	Hg vac
					· · · · · · · · · · · · · · · · · · ·				1/2	· ·····			_
	e Diame		$-\frac{1}{2}$	\	( 4 1 - 4		ecorded		20			_	-
	netric Pro		179.8	$\frac{1}{2}$	J·lgA "		itot Fact	or: <u>—</u>					
Static	Pressur	e in Stack: (	**************************************		1 1 1 1	H₂O				$\hat{}$		7	
		Calibration [		<u> </u>	1-0.10	BU	1	/	3	ו לען	f	1	
Incline	ed Mano			(Cal: _	N/A	)	'	פו ינגו	4 4 8		diam.		1
	ehelic No			Cal:		)	1	l l	3 1	•	<b>*</b>   (	b su	eck
	Tube No.			Cal: <u>2</u>	<u>  17/15 </u>	)	1 1		<sup>2</sup> /		·		mensions
	tiometer			(Cal: _2	417/15	) [	-	+ >	-		diam.		
	nocouple			(Cal: _		)	1	<b>4</b> —			<b>↓</b> '	<del>رر / _</del>	-,
	/leter No			(Cal: _		)			}		$\overline{}$	<u> </u>	
Meter	Corr. Fa	actor:						•	<del></del>				

Stack: Horizontal / Vertical

Rectangular / Circular

Revision 01/09

Sampling Probe: Stainless Steel / Borosilicate / Quartz



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT METHOD 25.3 TEST DATA SHEET

Date: _	3/10/	15	_				Page	: No.: <i>3/</i> orded By:	10/15	
Test No.:	15-3	<u>22</u>	-				Reco	orded By:	94	
Com Basic	pany/Sampling c and Control l	g Location <u>[A</u> Equipment	County Sewer	, San	ila fo hole	on D	istric acuvin	trick		
Baro	metric Pressur	e:	'HgA			Static P	ressure:	+/-	■H <sub>2</sub> C	)
		MPLE A		1			-	AMPLE B		
Tank #: 5418	31 Vial #:		g.#:		Tank #	1: 540°	<u>19</u> Vial	#: <u>14</u>	Reg. #:	
Pre-T	est Leak Check	k: Ga	uge: <u>~ 30</u>			Pre-Tes	t Leak Checl	<b>c</b> :	Gauge:	30
		Pa	ss/Fail						Pass/ Fa	il
Post-7	Fest Leak Che	ck: Ga	iuge:	_		Post-Te	st Leak Chec	:k:	Gauge:	
		Pa	ss / Pail						Pass / Fa	ii1
Time	Vacuum ("Hg)	Flow (cc/min)	Comments			ime	Vacuum ("Hg)	Flov (cc/m	l l	mments
9.30 Am	30			•	93	AM	30			_
935	22				93	3	12			
940	<u> 13</u>			_	94		0_			
-							<u> </u>			
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			7	_						
				_						
							<u> </u>			
Approximate	Time To Fill	Tank (minutes)	20	30		40	50	60	90	120
ΔP Setting			62	30		21	14	8	5	2



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

			So	uth Co	ast Air C	Quality M	anagen	nent Dis	trict				
Test No. 15-324 Company: 1A C. 74 - C. Jabon Dehict Date: 4/8/15													
5	Test No. 15-324 Company: IA City - San Habian Dehict Date: 4/8/15 Sampling Location: manhale at Emption Way/Century H:// Sample Train:  Traverse Source Test Data												
				•	Traverse	Source	Test Da	ita				_	
ŀ	re-lest	Leak Check:					Po	st-Test L	_eak Ch∈	eck:			
	riiter:	cfm @ cfm @	ž	"Hg	l vac		FIII	ter: obe:	<u>`</u>	cim @ _		_ "Hg '	vac
F	Pitot Tub	e Leak Check:	Pass	Fail	, vac		Pit	ot Tube	Leak Ch	ieck:	Pass /	- ng · Fail	vac
Time	Sample Point			ck		Calculated	· · · · · · · · · · · · · · · · · · ·	Probe	Filter	Imp.		Temp.	Vacuum " Hg
	#	Reading (dcf)	Velocity Head ("H <sub>2</sub> O)	°F	Velocity (fps)	Sampling Plate (cim)	Qrifice ∆P ("H <sub>2</sub> O)	Temp.	Temp. °F	Temp.	ln	F Out	1 19
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	3	6-29	7.0	35.7				-		H20-	1	,	
	4	6.78	5.0	97-9					Ì	. 12	23/1	/	
·	5	7.21	4.7	101.2						1 p.	7		
	6	7.68	1.5	107.1				٠					5.555251
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	1	7-97	6.4	1057									
	2	1-53	4.7	113.6					_				
	9	8-31	75	114.0									
, , .	10	3-65	4.6	107.2									
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Stack: Horizontal / Vertical

Rectangular / Circular

Revision 01/09

Sampling Probe: Stainless Steel / Borosilicate / Quartz



Test Nos. 15-321, 15-322, 15-324

Approximate Time To Fill Tank (minutes)

ΔP Setting

-29-

Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT METHOD 25.3 TEST DATA SHEET

Date:	npany/Samplingic and Control Pressur	g Location L Equipment C	A JK C Ay	San I An Fra EMI Static	Recorder  N DISTRI		- NYVRY Hill
Tank #:Pre-1	SA Vial #: Test Leak Check	2 I k: ( i ck: (	Reg. #: Gauge: Pass / Fail Gauge: Pass / Fail	Tank #:Pre-Te	SAM Vial #: st Leak Check: est Leak Check:	3 R	eg. #: iauge: ass / Fail iauge: ass / Fail
Time /6: 0 / 0	Vacuum ("Hg) 30 10 10 123 221 20	Flow (cc/min)	Comments	Time /o:0 {	Vacuum ("Hg) 30 71 /// 9 5 24	Flow (cc/min)	Comments

20

62

(max.)

.30

30

40

21

50

14

60

8

90

5

120

2



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

#### APPENDIX B

**Calibration Records** 



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

#### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT THERMOCOUPLE - POTENTIOMETER CALIBRATION

#### INDEX

PAGE NO.	STQC# POTENTIOMETER/ 2-LEADWIRES	STQC# THERMOCOUPLES	CAL DATE	CAL. TYPE	COMMENTS
26	20108	20108	2-17-15	M1 M2 SA	
27	C0301 N0315	30108	3-30-15	M1 M2 SA	·
29	NO113 NO311	MOR3	9-2-15	M1 M2 SA	
				M1 M2 SA	
				M1 M2 SA	
	-			M1 M2	
				M1 M2	
				M1 M2 SA	

<sup>\*</sup> M1 = First Bimonthly, M2 = Second Bimonthly, SA = Semiannual.



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

SOUTH	COAST	AIR	QUALITY	MANAGEMENT	DISTRICT
		PITO:	TURE	CALIBRATION	

Calibrated by:

At: HQ 5047

S-Type STQC# : 10413

Standard S/N : NA

OD: 3/8" Length: 4 ft

		A-Side Calibration	-	
ΔP (in.H2O) STD	ΔP (in.H2O) S	Cp (S)	Dev.	95% CI
Cort	ornetica	( Check	io o K	
•				
Avei	rage : Cp (A)	0.84		

B-Side Calibration									
ΔP (in.H2O) STD	ΔP (in.H2O)	Cp (S)	Dev.	95% CI					
<del></del>									
Ave	rage : $\overline{Cp}$ (B)								

Cp (S)	= Cp (STD)	ΔP STD Remarks:
Dev. =	Cp (S) - Cp	( must be < 0.01 )
Cp (A)	$-\overline{Cp}$ (B) =	( must be < 0.01 )



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

# APPENDIX C

**Laboratory Results** 



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

Print Document	P
SOURCE TEST RI	EQUEST FOR EQUIPMENT/ANALYSIS
Company Orange County Senitation District	Source Test No. 15-321
Address THO (street manhale location)	Request Date February 10, 2015
Basic Equipment Vacuum Truck	Control Device N/A
Analysis/Equipment Requested By Eric Padilla	Date Equipment Needed February 18, 2015
For Compliance, Rule(s) PR 1188	
Other (specify)	
· · · · · · · · · · · · · · · · · · ·	
	Perp Leboratory No. 1504121
Prop Reference	Prep Laboratory No. 12 04 21
Dry Ice Needed	con a constant
Quantity and Description	1D. Nos. 54/64
Two pairs of 25.3 setups (4 Cantsters) Two Tedlar bags	Conster Nos: 54317, 54662
V 1wo 1cular bags	5425( 54586,54774
	12 Viuls (Nos.1- 70 No12
	2 Tadlas bags. Noc 1, 2
	Reference : Blue Book No
	Page No 88.
Source Test No. 09-290 Sample Description	UIPMENT ANALYSIS REQUEST  Analysis Laboratory No.  50 5 0 13  Analysis Requested Teclar Bas
25.3 setups	H <sub>2</sub> S
Tedlar bags Bog # /	1110
54774 V. al #/	
12 54164 val + 2	
4	
SAMPLE EQU	IPMENT CHAIN OF CUSTODY
Sample Equipment # Frotto To	For (S/T, Analysis, Cleanup, Not Used) Date Time
T Arte While So	ST 2-18-15 101 W
The set undilled	D 48-Analys 2-19-15 12:45
	·



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

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# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

#### MONITORING & ANALYSIS REPORT OF LABORATORY ANALYSIS Page 1 of 2

то	Mike Garibay, Supervising AQ Engineer Monitoring/Source Testing	LABORATORY NO	1505014
		DATE RECEIVED	02/19/2015
SAM.	PLE DESCRIBED AS		
	Two 6L Canisters	FACILITY ID NO	NA
		REQUESTED BY	Eric Padilla
SAM	PLING LOCATION		
	Orange County Sanitation District TBD (street manhole location) NA	ST NO/PROJECT	15-321

Carbon monoxide (CO), methane (CH<sub>i</sub>), earbon dioxide (CO<sub>2</sub>), ethane (C<sub>2</sub>H<sub>6</sub>), and non-methane non-ethane organic earbon (NM/NEOC) in ppmvC by SCAQMD Method 25.1 (TCA FID).

Туре	Canister	Canister
Number	<u>54774</u>	54164
Pressure (Torr)	721	494
CO, ppm	<1	< 1
CH4, ppm	3	3
CO <sub>2</sub> , ppm	652	624
Ethane, ppmvC	<1	< 1
NM/NEOC, ppmvC	<1	< 1

Date Approved: 2/30/15

Approved By:

Rudy Eden, Senior Manager Laboratory Services 909-396-2391



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

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#### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

#### MONITORING & ANALYSIS QUALITY CONTROL SUMMARY Page 2 of 2

SAMPLE DESCRIBED AS

LABORATORY NO

1505014

Two 6L Canisters

REQUESTED BY

Eric Padilla

Carbon monoxide (CO), methane (CH<sub>4</sub>), carbon dioxide (CO<sub>2</sub>), ethane (C<sub>2</sub>H<sub>6</sub>), and non-methane non-ethane organic carbon (NM/NEOC) in ppmvC by SCAQMD Method 25.1 (TCA FID).

#### QUALITY CONTROL - End of run control recovery

CC91340	MDI.	Theoretical	Mensured	Percent Difference	QC Limit ±5% or ± 1
CO, ppmvC	0.3	10.40	10.25	-1.41	PASS
CH <sub>4</sub> , ppmvC	0.3	10.17	10.27	1.01	PASS
CO <sub>2</sub> , ppmvC	0.4	10.38	10.56	1.73	PASS
C₂H <sub>€</sub> , ppmvC	0.4	NA	NΛ	NA	NΛ
C <sub>2</sub> H <sub>6</sub> , ppmvC	0.2	11.00	10.06	-8.55	PASS
NM/NEOC, ppmvC	0.2	10.64	10.38	-2.48	PASS
CC135067	MDL	Theoretical	Measured	Percent Difference	QC Limit
CO, ppmvC	0.3	10100	10075	-0.25	PASS
CH <sub>4</sub> , ppmvC	0.3	10000	9972	-0.28	PASS
CO <sub>2</sub> , ppmvC	0.4	10100	10111	0.11	PASS
C <sub>2</sub> H <sub>4</sub> , ppmvC	0.4	NA	NΛ	NA	NA
C <sub>2</sub> H <sub>6</sub> , ppmvC	0.2	9900	9858	-0.42	PASS
NM/NEOC, ppmvC	0.2	10000	9943	+0.57	PASS

DATE ANALYZED REFERENCE NO:

02/26/2015 15QM2AA QM2-101-49



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015

April 8, 2015

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то

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#### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

#### MONITORING & ANALYSIS REPORT OF LABORATORY ANALYSIS Page 1 of 2

Mike Garibay, Supervising AQ Engine: LABORATORY NO 1505014 Monitoring/Source Testing 02/19/2015 DATE RECEIVED SAMPLE DESCRIBED AS

FACILITY ID NO NΛ

> REQUESTED BY Eric Padilla ST NO / PROJECT 15-321

SAMPLING LOCATION **Orange County Sanitation District** TBD (street manhole location)

Two 6L Canisters

#### **VOC by Total Organic Carbon**

Type	Canister	Canister
Number	<u>54774</u>	<u>54164</u>
Pressure (Torr)	721	494
Type	Vial	Vial
Number	1	2
TOC, ppmC	5	22

Date Approved: 3/25/15

Approved By:

Rudy Eden, Senior Manager Laboratory Services 909-396-2391



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

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#### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

#### MONITORING & ANALYSIS QUALITY CONTROL SUMMARY Page 2 of 2

SAMPLE DESCRIBED AS

LABORATORY NO

1505014

Two 6L Canisters

REQUESTED BY

Eric Padilla

VOC by Total Organic Carbon.

### QUALITY CONTROL; Pre and post recovery

QC check must bracket sample concentration

	MDL	Theoretical	Measured	Percent Difference	QC Limit ±10%
TC, ppmC	ı	10.00	11.28	-12.75	FAIL
IC, ppmC	1	10.00	10.65	-6.50	PASS
TC, ppmC	1	10.00	9.40	6.05	PASS
IC, ppmC	1	10,00	11.55	-15.45	FAIL

DATE ANALYZED REFERENCE NO

02/25/2015 15TO20225B TO2-26-71

1505014



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015

March 10, 2015 April 8, 2015

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# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copicy Drive, Diamond Bar CA 91765-1482

# MONITORING & ANALYSIS REPORT OF LABORATORY ANALYSIS

Page 1 of 2

TO	Mike Garibay, Supervising AQ Engin Monitoring/Source Testing	eer LABORATORY NO	1505014
	ŭ ŭ	DATE RECEIVED	02/19/2015
SAM	PLE DESCRIBED AS Two 61. Canisters	FACILITY ID NO	NA
		REQUESTED BY	Eric Padilla
SAM	PLING LOCATION Orange County Sanitation District	ST NO/PROJECT	15-321
	TBD (street manhole location) NA		

#### Percent hydrogen (II<sub>2</sub>), nitrogen (N<sub>2</sub>), oxygen (O<sub>2</sub>) and methane (CH<sub>4</sub>) by SCAQMD Method 10.1 (GC TCD).

Туре	Canister	Canister
Number	<u>54774</u>	54164
Pressure (Torr)	721	494 (1)
H <sub>2</sub> , percent	< 0.2	< 0.2
O2, percent	20.3	19.8
N <sub>2</sub> , percent	76.5	76.2
CH <sub>4</sub> , percent	< 0.2	< 0.2

NOTE (1) Gas concentration total appears low. Sample was re-analyzed with the same results. Error was postulated to be either in the sample pressurization manifold or connector fitting.

Date Approved: 9/36//5

Approved By:

Rudy Eden, Senior Manager Laboratory Services 909-396-2391



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

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#### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

#### MONITORING & ANALYSIS QUALITY CONTROL SUMMARY Page 2 of 2

SAMPLE DESCRIBED AS

LABORATORY NO

1505014

Two 6L Canisters

REQUESTED BY

Eric Padilla

Percent hydrogen (H<sub>2</sub>), nitrogen (N<sub>2</sub>), oxygen (O<sub>2</sub>) and methane (CH<sub>4</sub>) by SCAQMD Method 10.1 (GC TCD).

#### QUALITY CONTROL -- End of run control recovery

CC12089	MDL
H <sub>2</sub> , percent	0.2% abs
O <sub>2</sub> , percent	0.2% abs
N <sub>2</sub> , percent	0.2% abs
CH, percent	0.2% abs

Theoretical	Manned	Absolute	QC Limit 0.5% Abs.
Treorencal	Measured	Difference	U.374 A.US.
1.04	1.01	-0.03	PASS
1.01	1.02	0.02	PASS
0.99	1.15	0.2	PASS
1.05	1.03	-0.02	PASS

CC73109	MDL
H <sub>2</sub> , percent	0.2% abs
O2, percent	0.2% abs
N2, percent	0.2% abs
CH4, percent	0.2% abs

		Absolute	QC Limit
Theoretical	Measured	Difference	0.5% Abs.
0.00	0.00	NA	NA
24.63	24,47	-0.16	PASS
4.94	4.92	0.0	PASS
0.00	0,00	NA	NA

DATE ANALYZED REFERENCE NO:

2/26/2015 15TC3AA TC3-18-107



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015

March 10, 2015 April 8, 2015

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#### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

#### MONITORING & ANALYSIS REPORT OF LABORATORY ANALYSIS Page 1 of 4

то	Mike Garibay, Supervising AQ Engineer Monitoring/Source Testing	LABORATORY NO	1505014
	womoring source resting	DATE RECEIVED	02/19/2015
SAM	PLE DESCRIBED AS		
	Two 6L Canisters	FACILITY ID NO	NA
5434	DI VINCUT ACADICAN	REQUESTED BY	Eric Padilla
SAM.	PLING LOCATION		
	Orange County Sanitation District TBD (street manhole location) NA	ST NO / PROJECT	15-321

# Hydrocarbon speciation, excluding aromatic compounds, by cryo GC FID (normalized to NM/NEOC)

Type	Canister	Canister
Number	<u>54774</u>	<u>54164</u>
Pressure (Torr)	721	494
C <sub>3</sub> , ppmv	< 0.1	< 0.1
C <sub>4</sub> , ppmv	< 0.1	< 0.1
C <sub>5</sub> , ppmv	< 0.1	< 0.1
C <sub>6</sub> , ppmv	1.0 >	< 0.1
C <sub>1</sub> , ppmv	< 0.1	< 0.1
C <sub>s</sub> , ppmv	< 0.1	< 0.1
C <sub>9</sub> -C <sub>12</sub> , ppmv	< 0.1	< 0.1

Note: The reported values include BTEX (benzene, toluene, ethylbenzene and xylenes).

Note: Because this sample was scrubbed through chilled water, speciation does not represent all of the VOCs in the sample.

Date Approved: 9/30/15

Approved By:

Rudy Eden, Senior Manager Laboratory Services 909-396-2391

http://onbasewinprd.aqmd.gov/AppNet/PrintHandler.ashx

1/29/2016



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

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# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

#### MONITORING & ANALYSIS REPORT OF LABORATORY ANALYSIS Page 2 of 4

SAMPLE DESCRIBED AS

LABORATORY NO

1505014

Two 6L Canisters

REQUESTED BY

Eric Padilla

# Benzene, Tolucne, Ethylhenzene, and Xylenes, by cryo GC FID (normalized to NM/NEOC)

Type	Canister	Canister
Number	<u>54774</u>	54164
Pressure (Torr)	721	494
Benzene, ppmv	< 0.1	< 0.1
Toluene, ppmv	< 0.1	< 0.1
Ethylbenzene, ppmv	< 0.1	< 0.1
m+p-Xylenes, ppmv	< 0.1	1.0 >
o-Xylene, ppmv	< 0.1	< 0.1



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

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#### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bur CA 91765-1482

#### MONITORING & ANALYSIS QUALITY CONTROL SUMMARY Page 3 of 4

SAMPLE DESCRIBED AS

LABORATORY NO

1505014

Two 6L Canisters

REQUESTED BY

Eric Padilla

Hydrocarbon speciation and benzene, toluene and xylenes by eryo GC FID, normalized to NM/NEOC.

#### QUALITY CONTROL - End of run control recovery

CC318590	MDL	Theoretical	Measured	Percent Difference	QC Limit ±7.5%
Methane, ppmv	0.3	NΛ	NA	NA	NΛ
Ethylene, ppmv	0,2	5.03	5.00	-0.70	PASS
Ethane, ppmv	0.1	NΛ	NΛ	NΛ	NΛ
Propane, ppmv	0.1	3	2.99	-0.20	PASS
Isobutane, ppmv	0.1	3.1	3.19	2.84	PASS
n-Butane, ppmv	0.1	3.03	2.97	-1.85	PASS
Isopentane, ppmv	0.1	2.02	2.03	0.35	PASS
n-Pentane, ppmv	0.1	2.01	2.01	0,20	PASS
Hexane, ppmv	0.1	2.02	2.05	1.29	PASS
Heptane, ppmv	0.1	1.02	1.05	3.14	PASS
Octane, ppmv	0.0	1.01	1.04	3.07	PASS

Note: QC limit for heptane and octane is 15%

				Percent	QC Limit
CC318590		Theoretical	Measured	Difference	±7.5%
Benzene, ppmv	0.2	5.03	5.07	0.83	PASS
Toluene, ppmv	0.0	1.01	1.03	1.88	PASS
Ethylbenzene, ppmv	0.1	1.01	1.05	3.47	PASS
m+p-Xylene, ppmv	0.1	1.014	1.03	1.38	PASS
o-Xylene, ppinv	0.1	1.01	1.03	2.08	PASS

DATE ANAYLYZED

REFERENCE NO:

3/19/2015 15FI4AÅ

FI4-101-103



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015

March 10, 2015 April 8, 2015

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# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

#### MONITORING & ANALYSIS QUALITY CONTROL SUMMARY Page 4 of 4

SAMPLE DESCRIBED AS

LABORATORY NO

1505014

Two 6L Canisters

REQUESTED BY

Eric Padilla

Hydrocarbon speciation and benzene, toluene and xylenes by cryo GC-FID, normalized to NM/NEOC.

### QUALITY CONTROL - End of run control recovery

FF135	MDL	Theo
Methane, ppmv	0.3	
Ethylene, ppmv	0.2	50
Ethane, ppmv	0.1	
Propane, ppniv	0.1	3.
Isobutane, ppiny	0.1	
n-Butane, ppmv	0.1	25
Isopentane, ppmv	0.1	
n-Pentane, ppmy	0.1	20
Hexane, ppmv	0.1	16
Hentane, ppmy	0.1	10
Octane, ppmy	0.0	24
***		

Theoretical	Measured	Percent Difference	QC Limit ±7.5%
0	0	NA	NA
505	507	0,34	PASS
0	0	NA	NΛ
336	338	0.53	PASS
0	1	NA	NΛ
253.9	256	0.65	PASS
0	l	NA	NΛ
202.6	203	0.34	PASS
163.7	164	0.25	PASS
100.2	100	0.27	PASS
24.47	24.5	0.26	PASS

Note: QC limit for heptane and actane is 15%

CLM001646	
Benzene, ppmv	0.2
Toluene, ppmv	0.0
Ethylbenzene, ppmv	0.1
m+p-Xylene, ppinv	0.1
o-Xylene, ppmv	0.1

Theoretical	Measured	Percent Difference	QC Limit ±7.5%
104	102	-1.84	PASS
30.8	30,6	-0.65	PASS
31.2	31.3	0.21	PASS
31	30.9	-0.29	PASS
31	30 R	-0.67	PASS

DATE ANAYLYZED REFERENCE NO:

3/19/2015 15FI4AA FI4-101-103



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015

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#### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Dr., Diamond Bar, CA 91765-4182

#### MONITORING & ANALYSIS REPORT OF LABORATORY ANALYSIS Page 1 of 1

TO Rudy Eden, Senior Enforcement Manager LABORATORY NO. 1505013-01 Science & Technology Advancement DESCRIBED AS DATE RECEIVED 2/19/2015 One Tedlar™ Bag SOURCE LD. NO. 15-321 SAMPLING LOCATION Orange County Sanitation District REQUESTED BY Eric Padilla Orange County, CA PROJECT/ST NO. \_\_\_\_ PR1188 Reduced Sulfur Compounds by SCAQMD 307-91 AQMD (ppmV) 0.022 No. Labeled as Sampling point -01 Bag#1 Orange County Hydrogen Sulfide Carbonyl Sulfide /SO2 0.011 Methyl Mercatpan 0.010 REF: AAC-150158 (Attached) Date Approved: 2/25/15 Approved By: Rudy Eden, Senior Manager

Rudy Eden, Senior Manag Laboratory Services 909-396-2391



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

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	IPLE ANALYS	IS REQUEST	· · · · · · · · · · · · · · · · · · ·	LABORATOR	RY NO.
то: :		OTHER:	<del></del>	<b></b>	
SOURCE NAME:					
Source Address: _			City:	<u>Dia</u>	mond Bar
Mailing Address: Contact Person:			City: Principal, AO C	hemist Tel:	Zip: 9170
	<del> </del>				
Analysis Requested b					
Approved by:					
REASON REQUEST Suspected Violation		ing Board 🔲		Hazardo	ous/Tóxic Spill
suspected violation			Other	<del></del>	
	77 <i>2</i> U <i>a</i>	_	Date:		
One tedlar bag # 1	77346	6			
One tedlar bag # 1  Analysis Requested: F  Relinquished b	Please analyze for			Date   09   19	



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015

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### Atmospheric Analysis & Consulting, Inc.

CLIENT : South Coast Air Quality Management District

PROJECT NAME : SCAQMD AAC PROJECT NO. : 150158 REPORT DATE : 2/20/2015

On February 19, 2015, Atmospheric Analysis & Consulting, Inc. received one (1) Tedlar Bug for Total Reduced Sulfur analysis by SCAQMD 307.91. Upon receipt, the sample was assigned a unique Laboratory ID number as follows:

Client ID	Lab No.
Beg #1	150158-77346

SCAQMD 307.91 Analysis — Up to a 1 mL aliquot of sample is injected into the GC/SCD for analysis following SCAMQD307.91 as specified in the SOW.

No problems were encountered during receiving, preparation, and/or analysis of this sample. The test results included in this report meet all requirements of the NELAC Standards and/or AAC SOP# AACI-SCAQMD 307.91.

I certify that this data is technically accurate, complete and in compliance with the terms and conditions of the contract. The Laboratory Director or his designee, as verified by the following signature, has authorized the release of the data contained in this hardcopy data package.

If you have any questions or require further explanation of data results, please contact the undersigned.

Marcus Hueppe Laboratory Director

This report consists of 4 pages.



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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

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### Atmospheric Analysis & Consulting, Inc.

#### LABORATORY ANALYSIS REPORT

CLIENT : SCAQMD PROJECT NO. : 150158 MATRIX UNITS

: AIR : ppmV

SAMPLING DATE : 02/19/2015 RECEIVING DATE: 02/19/2015 ANALYSIS DATE : 02/20/2015 REPORT DATE : 02/20/2015

#### Total Reduced Sulfur Compounds Analysis by SCAQMD 307.91

Client ID	Bag #1
AAC ID	150158-77346
Annlyte	Result
Hydrogen Sulfide	0,022
Czrbenyl Sulfide / Sulfür Dioxide	0.011
Methyl Mercaptan	0.010
Ethyl Merceptan	< 0.005
Dimethyl Sulfide	< 0.005
Carbon Disulfide	< 0.005
Isopropyl Mercaptan	< 0.005
tert-Butyl Mercapton	< 0.005
n-Propyl Mercapten	< 0.005
Methylethylsulfide	< 0.005
sec-Butyl Mercaptan	< 0.005
Thiophene	< 0.005
iso-Butyl Mercaptan	< 0.005
Diethyt Sulfide	< 0.005
n-Butyl Mercaptan	< 0.003
Dimethyl Disulfide	< 0.005
2-Methylthiophene	< 0.005
3-Methylthiophene	< 0.035
Tetrahydrothiophene	< 0.005
Uromothlophene	< 0.005
Thiophenol	< 0.015
Diethyl disulfide	< 0.005
Total Unidentified Sulfer	< 0.005
Fotal Reduced Sulfirs as H <sub>2</sub> S	0.032

All compound's concentrations expressed in terms of H<sub>2</sub>S (TRS does not include COS and SO<sub>2</sub>)

Sample Reporting Limit (SRL) is equal to Reporting Limit a Cenister Dil. Fac. A Analysis Dil. Fac.

(1) - Analyta was detected below the PQL and should be considered estimated

Moreus Hucppe Laboratory Director

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Test Dates: February 19, 2015

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### Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report SCAQMD 307.91

Date Analyzed: 2/20/2015 Analyst:

lustroment ID: SCD#10 Calb. Date: 10/20/2014

Opening Calibration Verification Standard

	Resp. (area)	Result (ppbV)	% Rec*	% RPD ****
laitin	15124	497	99.4	NA
Duplicate	14935	491	98.2	1.3
Triplicate	[4933	491	98.2	1.3

Method Blank Analyte Result

ı	Dopileste Analysi	*		Sample ID	150158-77346 x
	Analyte	Sample Result	Duplicate Result	Мелп	% RFD ***
ľ	H2S	23.0	21.3	22.2	7.8

Matrix Spike & D	tuplicate		Sample ID	150158-77346	.2		
Analyte	Sample	Spike	MS	MSD	MS	MSD	% RPD ***
- Apartice	Cont.	Added	Result	Result	% Rec **	% Rec **	
HZS	[1.]	250.0	248.2	748.2	95.1	95.1	0.0

Bfust be 95-105%

\*\* Must be 90-110%

\*\* Must be < 5% RPD from Initial result.

Marcus Hueppe Laboratory Director

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Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

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Company Los Angeles County Sanhation District  Address TBD (street manhola tocation)  Basic Equipment Vacuum Truck  Analysis Equipment Requested By Eric Padilla  For Compliance, Rule(s) PR 1183  Other (specify)  SAMPLE  Prep Reference  Dry Ice Needed  Quantity and Description  Two pairs of 25.3 setups (4 canisters, § Vials, 2 cups/cupholders)	Source Test No. 15322 Request Date March 1, 2015 Control Device N/A  Date Equipment Needed March 10, 2015  EQUIPMENT REQUEST Prop Laboratory No. 50 6250 I.D. Nos. 7  Nos. 54055, 54065, 54099, Vials Nos. 13,14,15,16,17,11  Reference: Alue Book No. Page No. 88
Basic Equipment   Vacuum Truck   Analysis Equipment Requested By   Eric Padilla   For Compliance, Rule(s)   PR 1188   Other (specify)   SAMPLE Prep Reference   Dry Ice Needed   Quantity and Description   Two pairs of 25.3 setups (4 canisters, § vials, 2	Request Date March 3, 2015  Control Device N/A  Date Equipment Needed March 10, 2015  EQUIPMENT REQUEST Prop Laboratory No. 50 6250  1.D. Nos. 54055, 54046, 54099  Viols Nos: 13,14,15,16,17,1  Reference: Glue Book No.
Analysis Equipment Requested By Eric Padilla  For Compliance, Rule(s) PR 1188  Other (specify)  SAMPLE  Prep Reference  Dry Ice Needed  Quantity and Description  Two pairs of 25.3 setups (4 canisters, § vials, 2	Date Equipment Needed Merch 10, 2015  EQUIPMENT REQUEST Prop Laboratory No. 150 6250  1.D. 10, 10, 17, 10  Nos: 54055, 54046, 54099  Viols Nos: 13,14,15,16,17, 10  Reference: Glue Book No.
For Compliance, Rule(s) PR 1188  Other (specify)  SAMPLE  Prep Reference  Dry Ice Needed  Quantity and Description  Two pairs of 25.3 setups (4 canisters, § vials, 2	Prop Laboratory No. 150 6250  150 6250  1.D. Mos. 7  Nos. 54055, 54065, 54099  Viols Nos. 13,14,15,16,17, 11  Reference: Glue Book No.
Other (specify)  SAMPLE  Prep Reference  Dry Ice Needed  Quantity and Description  Two pairs of 25.3 scups (4 canisters, # vials, 2	Nos: 54055, 54066, 54099 Vigils Nos: 13,14,15,16,17, 1.
Prop Reference  Dry loc Needed  Quantity and Description Two pairs of 25.3 soups (4 canisters, \$ vials, 2	Nos: 54055, 54066, 54099 Vigils Nos: 13,14,15,16,17, 1.
Prep Reference  Dry lee Needed   Quantity and Description  Two pairs of 25.3 setups (4 canisters, # vials, 2	Nos: 54055, 54066, 54099 Vigils Nos: 13,14,15,16,17, 1.
Prep Reference  Dry Ice Needed   Quantity and Description  Two pairs of 25.3 setups (4 canisters, # vials, 2	Nos: 54055, 54066, 54099 Vigils Nos: 13,14,15,16,17, 1.
Outstity and Description Two pairs of 25.3 setups (4 canisters, # vials, 2	Nos: 54055, 54066, 54099 Vijls Nos: 13,14,15,16,17, 1 Reference: Blue Book No.
Quantity and Description Two pairs of 25.3 setups (4 canisters, # Vials, 2	Nos: 54055,54066,54099 Viols Nos: 13,14,15,16,17, 1 Reference: glue Book No.
Two pairs of 25.3 setups (4 canisters, \$ vials, 2	Viols Nos: 13,14,15,16,17, 1. Reference: Qlue Book No.
	Viols Nos: 13,14,15,16,17, 1. Reference: Qlue Book No.
	Viols Nos: 13,14,15,16,17, 1. Reference: Qlue Book No.
	Reference: Blue Book No.
	A
	Page No. 88
	/
	PMENT ANALYSIS REQUEST
Source Test No. 15-322	Arialysis Leberatory No. 1506913
Sample Description 25.3 setups	VOC, fixed gases
Used 44187 (Vial 15)	100, 1100 5000
54099 ( VILL 14)	
others and used	
Sample Equity	MENT CHAIN OF CUSTODY
	For (S/T, Analysis,
Sample Equipment   From To	Cleanup, Not Used) Date Ti
	3.1 3-10-15 12 5
gr gh	quelifer 17
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Test Dates: February 19, 2015 March 10, 2015

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#### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

# MONITORING & ANALYSIS REPORT OF LABORATORY ANALYSIS Page 1 of 2

TO	Mike Garibay, Supervising AQ Engineer	LABORATORY NO	1506913
	Monitoring/Source Testing		
		DATE RECEIVED	03/10/2015
SAMI	PLE DESCRIBED AS		
	Two 6L Canisters	FACILITY ID NO	NA
		DEOLECTED BY	ma nama
0.34	N ING LOCUTION	REQUESTED BY	Eric Podilla
SAMU	PLING LOCATION  Los Ángeles County Sanitation District	ST NO/PROJECT	15-322
	TBD (street manhole location)	or movemble.	40 000
	Los Angeles, CA		

Carbon monoxide (CO), methane (CH<sub>4</sub>), carbon dioxide (CO<sub>2</sub>), ethane (C<sub>1</sub>H<sub>6</sub>), and non-methane non-ethane organic carbon (NM/NEOC) in ppmvC by SCAQMD Method 25.1 (TCA FID).

Турс	Canister	Canister
Number	<u>54187</u>	54099
Pressure (Torr)	437	747
CO, ppm	<1	<1
CH <sub>4</sub> , ppm	16	20
CO <sub>2</sub> , ppm	863	895
Ethane, ppmvC	< 1	<1
NM/NEOC, ppmvC	< 1	<1

Date Approved: 5/25/15

Approved By:

Rudy Edon, Senior Manager Laboratory Services 909-396-2391



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

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# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

# MONITORING & ANALYSIS QUALITY CONTROL SUMMARY Page 2 of 2

SAMPLE DESCRIBED AS

LABORATORY NO

1506913

Two 6L Canisters

REQUESTED BY

Eric Padilla

Carbon monoxide (CO), methane (CH), carbon dioxide (CO<sub>2</sub>), ethane (C<sub>2</sub>H<sub>6</sub>), and non-methane non-ethane organic carbon (NM/NEOC) in ppmvC by SCAQMD Method 25.1 (TCA FID).

#### QUALITY CONTROL -- End of run control recovery

				Percent	QC Limit
CC91340	MDL	Theoretical	Measured	Difference	#5% or ± 1
CO, ppmvC	0,3	10.40	10.33	-0.68	PASS
CH <sub>4</sub> , ppmvC	0.3	10.17	10.30	1.25	PASS
CO2, ppmvC	0.4	10.38	10.55	1.66	PASS
C2H4, ppmvC	0.4	NA.	NA	NA	NA
C <sub>2</sub> H <sub>6</sub> , ppmvC	0.2	11.00	10.15	-7.74	PASS
NM/NEOC, ppmvC	0.2	10.64	10.43	-1.97	PASS
aantaa	2101	Theoretical	Manusad	Percent	QC Limit
CC135067	MDL	Theoretical	Measured	Difference	15% or ± 1
CO, ppmvC	0.3	10100	10175	Difference 0.74	±5% or ± 1 PASS
* *				Difference	15% or ± 1
CO, ppmvC	0.3	10100	10175	Difference 0.74	±5% or ± 1 PASS
CO, ppmvC CH <sub>4</sub> , ppmvC	0.3 0.3	10100 10000	10175 10070	Difference 0.74 0.70	PASS PASS
CO, ppmvC CH <sub>4</sub> , ppmvC CO <sub>2</sub> , ppmvC	0.3 0.3 0.4	10100 10100	10175 10070 10276	Difference 0.74 0.70 1.74	PASS PASS PASS

DATE ANALYZED REFERENCE NO:

03/19/2015 15QM2AA QM2-101-50



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

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#### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

#### MONITORING & ANALYSIS REPORT OF LABORATORY ANALYSIS Page 1 of 2

Mike Garibay, Supervising AQ Enginee LABORATORY NO 1506913 Monitoring/Source Testing DATE RECEIVED 03/10/2015 SAMPLE DESCRIBED AS Two 6L FACILITY ID NO NA REQUESTED BY Eric Padilla SAMPLING LOCATION Los Angeles County Sanitation District ST NO / PROJECT 15-322 TBD (street manhole location) Los Angeles, CA

#### VOC by Total Organic Carbon

Туре	Canister	Canister
Number	<u>54187</u>	<u>54099</u>
Pressure (Torr)	437	747
Туре	Vial	Vial
Number	<u>15</u>	14
TOC, ppmC	11	8

Date Approved: 3/25/15

Rudy Eden, Senior Manager Laboratory Services



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

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# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

#### MONITORING & ANALYSIS QUALITY CONTROL SUMMARY Page 2 of 2

SAMPLE DESCRIBED AS

LABORATORY NO

1506913

Two 6L Canisters

REQUESTED BY

Eric Padilla

VOC by Total Organic Carbon.

#### QUALITY CONTROL: Pre and post recovery

QC check must bracket sample concentration

	MDL	Theoretical	Measured	Percent Difference	QC Limit ±10%
TC, ppmC	1	10,00	9.22	7.80	PASS
IC, ppmC	1	10.00	9.12	8.80	PASS
TC, ppmC	1	10.00	9.45	5.55	PASS
IC, ppmC	1	10.00	9.46	5.45	PASS

DATE ANALYZED REFERENCE NO 03/17/2015 15TO20317B TO2-26-75

1505913



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015

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#### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

#### MONITORING & ANALYSIS REPORT OF LABORATORY ANALYSIS Page 1 of 2

*		1506913
Monitoring/Source Testing		
	DATE RECEIVED	03/10/2015
'LE DESCRIBED AS		
Two 6L Canisters	FACILITY ID NO	NA
	REQUESTED BY	Eric Padilla
LING LOCATION		
Los Angeles County Sanitation District	ST NO / PROJECT	15-322
TBD (street manhole location)		•
Los Angeles, CA		
	Monitoring/Source Testing PLE DESCRIBED AS Two 6L Canisters PLING LOCATION Los Angeles County Sanitation District TBD (street manhole location)	DATE RECEIVED PLE DESCRIBED AS Two 6L Canisters  FACILITY ID NO  REQUESTED BY PLING LOCATION Los Angeles County Sanitation District TBD (street manhole location)

Percent hydrogen (II<sub>2</sub>), nitrogen (N<sub>1</sub>), oxygen (O<sub>2</sub>) and methane (CH<sub>4</sub>) by SCAQMD Method 10.1 (GC TCD).

Турс	Canister	Canister
Number	<u>54187</u>	54099
Pressure (Torr)	437	747
H <sub>2</sub> , percent	< 0.2	< 0.2
O2, percent	19.9	20.3
N <sub>2</sub> , percent	76.9	76.7
CH, percent	<02	< 0.2

Date Approved: 8/25/15

Approved By:

Rudy Eden, Senior Manager Laboratory Services 909-396-2391



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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

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#### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

# MONITORING & ANALYSIS QUALITY CONTROL SUMMARY Page 2 of 2

SAMPLE DESCRIBED AS

LABORATORY NO

1506913

Two 6L Canisters

REQUESTED BY

Eric Padilla

Percent hydrogen (H<sub>2</sub>), nitrogen (N<sub>2</sub>), oxygen (O<sub>2</sub>) and methane (CH<sub>4</sub>) by SCAQMD Method 10.1 (GC TCD).

QUALITY CONTROL - End of run control recovery

CC12089 MDL
H<sub>2</sub>, percent 0.2% abs
O<sub>2</sub>, percent 0.2% abs
N<sub>2</sub>, percent 0.2% abs
CII<sub>4</sub>, percent 0.2% abs

Theoretical	Measured	Absolute Difference	QC Limit 0.5% Abs.
1.04	1.02	-0.02	PASS
1.01	1,03	0.02	PASS
0.99	1.05	0.1	PASS
1.05	1.02	-0.02	PASS

CC73109 MDI.

H<sub>2</sub>, percent 0.2% abs
O<sub>2</sub>, percent 0.2% abs
N<sub>2</sub>, percent 0.2% abs
CH<sub>4</sub>, percent 0.2% abs

Theoretical	Measured	Absolute Difference	QC Limit 0.5% Abs.
0.00	0.00	NA	NA
24.63	24.55	-0.08	PASS
4.94	4.94	0,0	PASS
0.00	0.00	NA	NA

DATE ANALYZED REFERENCE NO:

3/16/2015 15TC3AA TC3-18-107



Test Nos. 15-321, 15-322, 15-324

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#### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

#### MONITORING & ANALYSIS REPORT OF LABORATORY ANALYSIS Page 1 of 4

то	Mike Garibay, Supervising AQ Engineer	LABORATORY NO	1506913
	Monitoring/Source Testing	DATE RECEIVED	03/10/2015
SAM	PLE DESCRIBED AS Two 6L Canisters	FACILITY ID NO	NA
		REQUESTED BY	Bric Padilla
SAM	PLING LOCATION  Los Angeles County Sanitation District  TBD (street manhole location)	ST NO / PROJECT	15-322
	Los Angeles, CA		

# Hydrocarbon speciation, excluding aromatic compounds, by cryo GC FID (normalized to NM/NEOC)

Type Number	Canister 54187	Canister 54099
Pressure (Torr)	437	747
C3, ppiny	< 0.1	< 0.1
C4, ppmv	< 0.1	< 0.1
C <sub>1</sub> , ppmy	< 0.1	< 0.1
C <sub>64</sub> ppmv	< 0.1	< 0.1
C <sub>2</sub> , ppmv	< 0.1	< 0.1
Cg, ppmv	< 0.1	< 0.1
C <sub>9</sub> -C <sub>12</sub> , ppmv	0.1	< 0.1

Note: The reported values include BTEX (benzene, toluene, ethylbenzeno and xylenes).

Date Approved: 8/25/15

Approved By:

Rudy Edon, Senior Manager Laboratory Services 909-396-2391



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

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#### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

#### MONITORING & ANALYSIS REPORT OF LABORATORY ANALYSIS Page 2 of 4

SAMPLE DESCRIBED AS

LABORATORY NO

1506913

Two 6L Canisters

REQUESTED BY

Eric Padilla

Benzene, Toluene, Ethylbenzene, and Xylenes, by cryo GC FID (normalized to NM/NEOC)

Туре	Canister	Canister
Number	54187	<u>54099</u>
Pressure (Torr)	437	747
Benzene, ppmv	< 0,1	< 0.1
Toluene, ppmv	< 0.1	< 0.1
Ethylbenzene, ppmv	1.0 >	< 0.1
m+p-Xylenes, ppinv	< 0.1	< 0.1
o-Xylene, ppmv	< 0.1	< 0.1



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#### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

#### MONITORING & ANALYSIS QUALITY CONTROL SUMMARY Page 3 of 4

SAMPLE DESCRIBED AS

LABORATORY NO

1506913

Two 6L Canisters

REQUESTED BY

Eric Padilla

Hydrocarbon speciation and benzene, toluene and xylenes by eryo GC FID, normalized to NM/NEOC.

#### QUALITY CONTROL -- End of run control recovery

CC318590	MDL	Theoretical	Measured	Percent Difference	QC Limit ±7.5%
Methane, ppmv	0.3	NA	NA	NA	NA
Ethylene, ppmv	0.2	5.03	5.00	-0.70	PASS
Ethane, ppmv	0.1	NA	NA	NΛ	NA
Propane, ppmv	0.1	3	2.99	-0.20	PASS
Isobutane, ppmy	0.1	3.1	3.19	2.84	PASS
n-Butane, ppiny	0.1	3.03	2.97	-1.85	PASS
Isopentane, ppmy	0.1	2.02	2.03	0.35	PASS
n-Pentane, ppmv	0.1	2.01	2.01	0.20	PASS
Hexane, ppmv	0.1	2.02	2.05	1.29	PASS
Heptane, ppmv	0.1	1.02	1.05	3.14	PASS
Octane, ppmv	0.0	1.01	1.04	3.07	PASS

Note: QC limit for heptane and octane is 15%

				Percent	QC Limit
CC318590		Theoretical	Measured	Difference	±7.5%
Benzene, ppmv	0.2	5.03	5,07	0.83	PASS
Toluene, ppmv	0.0	1.01	1.03	1.88	PASS
Ethylbenzene, ppmv	0.1	1.01	1.05	3.47	PASS
m+p-Xylene, ppmv	0.1	1.014	1.03	1.38	PASS
o-Xylene, ppmv	0.1	1.01	1.03	2.08	PASS
o myseries, primary					

DATE ANAYLYZED REFERENCE NO:

3/19/2015 15FI4AA FI4-101-103

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Test Nos. 15-321, 15-322, 15-324

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#### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

#### MONITORING & ANALYSIS QUALITY CONTROL SUMMARY Page 4 of 4

SAMPLE DESCRIBED AS

LABORATORY NO

1506913

Two 6L Canisters

REQUESTED BY

Eric Padilla

Hydrocarbon speciation and benzene, toluene and xylenes by cryo GC FID, normalized to NM/NEOC.

#### QUALITY CONTROL -- End of run control recovery

FF135	MDL
Methane, ppmv	0.3
Ethylene, ppmv	0.2
Ethane, ppmv	1.0
Propane, ppmv	0.1
Isobutane, ppmv	0.1
n-Butane, ppniv	0.1
lsopentane, ppmv	0.1
n-Pentanc, ppmv	0.1
Hexanc, ppmv	0.1
Heptane, ppmv	0.1
Octane, ppmv	0.0

		Percent	QC Limit
Theoretical	Measured	Difference	±7.5%
0	0	NA	NA
505	507	0.34	PASS
. 0	0	NA	NA
336	338	0.53	PASS
0	1	NA	NΛ
253.9	256	0.65	PASS
0	1	NA	NΛ
202.6	203	0.34	PASS
163.7	164	0.25	PASS
100.2	100	0.27	PASS
24.47	24.5	0.26	PASS

Note: QC limit for heptone and octane is 15%

CLM001646	
Benzene, ppmv	0.2
Toluene, ppmv	0.0
Ethylbenzene, ppniv	0.1
m+p-Xylene, ppmv	0.1
o-Xylene, ppmv	0.1

Theoretical	Measured	Percent Difference	QC Limit ±7:5%
104	102	-1.84	PASS
30.8	30.6	-0.65	PASS
31.2	31.3	0.21	PASS
31	30.9	-0.29	PASS
31	30.8	-0.67	PASS

DATE ANAYLYZED REFERENCE NO:

3/19/2015 15F14AA F14-101-103

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Test Nos. 15-321, 15-322, 15-324

Revision: January 2012

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

			ST FOR EQUIPMENT/AN			
	Company Los Angeles City Sanitation	District	Source Test No. 15-324			
	Address TBD (street manhole location)	Request Da				
	Basic Equipment	· · · · · · · · · · · · · · · · · · ·	Control De	vice N/A		
	Analysis/Equipment Requested By Eric	Padilla	Date Equip	ment Needed April 8	, 2105	
	For Compliance, Rule(s) PR 1188					
	Other (specify)					
	Prep Reference		UIPMENT REQUEST Prep Laboratory No.	509711		
	Dry Ice Needed		11cp 2	<u> </u>		
~(	Quantity and Description One pair of 25.3 setups (two canisters as	tion	1	I.D. Nos.	5 - 1	
4	one pad or 20.0 domps (two dumsters at	10 1001 11015)	54055,5	र्तााठी हत	251	
			Vial 1	<del>, 23</del> ,4	· · · · · · · · · · · · · · · · · · ·	
		<del> </del>				
				<u> </u>		
			<u> </u>	·		
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-						
_			<u> </u>			
		SAMPLE EQUIPME	NT ANALYSIS REQUEST	Г		
	Source Test No. 15-324	<del></del>	Analysis Laboratory No.			
_	Sample Description		·-	Analysis Requested		
<del>_</del>	25.3 setups		VOC		· · · · ·	
11 3	, , , , , , , , , , , , , , , , , , , ,	110(Vial 3) used				
W E	54251 - not Used		! 	<u> </u>		
-		<del>- ,</del> .				
-			<u> </u>		<del></del>	
_						
_						
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_						
		SAMPLE EQUIPMEN	NT CHAIN OF CUSTODY			
	Sample Equipment # From;	т-	For (S/T, Analysis,	D-1-		
_	10.00	To To	Cleanup, Not Used)	Date	Time	
	T Gen Mygy	11/10/10	1 4	4-7-15	2300	
_		Jou Max	Analyses	4.8-15	l:30	
		V				
	·	<del></del>				
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_			ļ			
	,		<u> </u>			



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

# MONITORING & ANALYSIS REPORT OF LABORATORY ANALYSIS

Page 1 of 2

то	Rudy Eden, Sr. Enforcement Manager Laboratory Services	LABORATORY NO	1509817
SAMI	PLE DESCRIBED AS	DATE RECEIVED	04/08/2015
	Two Summa Canisters	FACILITY ID NO	NA
SAMP	LING LOCATION	REQUESTED BY	Eric Padilla
	Los Angeles City Sanitation District Street manhole location Los Angeles, CA	ST NO / PROJECT	15-324
<u> </u>			

Carbon monoxide (CO), methane (CH<sub>4</sub>), carbon dioxide (CO<sub>2</sub>), ethane (C<sub>2</sub>H<sub>6</sub>), and non-methane non-ethane organic carbon (NM/NEOC) in ppmvC by SCAQMD Method 25.1 (TCA FID).

Туре	Canister	Canister
Number	<u>54055</u>	<u>54110</u>
Pressure (Torr)	317	674
CO, ppm	< 1	< 1
CH <sub>4</sub> , ppm	6	6
CO <sub>2</sub> , ppm	829	548
Ethane, ppmvC	<1	< 1
NM/NEOC, ppmvC	< 1	<1

Date Approved: 3/15/16

Approved By:

Rudy Eden, Senior Manager

Laboratory Services 909-396-2391



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015

April 8, 2015

# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

# MONITORING & ANALYSIS QUALITY CONTROL SUMMARY

Page 2 of 2

SAMPLE DESCRIBED AS

LABORATORY NO

1509817

Two Summa Canisters

REQUESTED BY

Eric Padilla

Carbon monoxide (CO), methane (CH<sub>4</sub>), carbon dioxide (CO<sub>2</sub>), ethane (C<sub>2</sub>H<sub>6</sub>), and non-methane non-ethane organic carbon (NM/NEOC) in ppmvC by SCAQMD Method 25.1 (TCA FID).

### QUALITY CONTROL -- End of run control recovery

				Percent	QC Limit
CC91340	MDL	Theoretical	Measured	Difference	±5% or ± 1
CO, ppmvC	0.3	10,40	10.14	-2.47	PASS
CH₄, ppmvC	0.3	10.17	10.13	-0.37	PASS
CO <sub>2</sub> , ppmvC	0.4	10.38	10.40	0.20	PASS
C₂H₄, ppmvC	0.4	NA	NA	NA	NA
C₂H <sub>6</sub> , ppmvC	0.2	11.00	10.02	-8.89	PASS
NM/NEOC, ppmvC	0.2	10.64	10.06	-5.46	PASS
				Percent	QC Limit
CC135067	MDL	Theoretical	Measured	Difference	±5% ar ± 1
CO, ppmvC	0.3	10100	9841	-2.57	PASS
CH₄, ppmvC	0.3	10000	9718	-2.82	PASS
CO <sub>2</sub> , ppmvC	0.4	10100	9928	-1.71	PASS
C₂H₄, ppmvC	0.4	NA	NA	NA	NA
C <sub>2</sub> H <sub>6</sub> , ppmvC	0.2	9900	9610	-2.92	PASS
NM/NEOC, ppmvC					

DATE ANALYZED REFERENCE NO:

04/22/2015 15QM2AA QM2-101-51



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

#### **MONITORING & ANALYSIS** REPORT OF LABORATORY ANALYSIS

Page 1 of 2

то	Rudy Eden, Sr. Enforcement Manager Laboratory Services	LABORATORY NO	1509817
		DATE RECEIVED	04/08/2015
SAM	PLE DESCRIBED AS		
	Two Summa Canisters	FACILITY ID NO	NA
S 4 7 4	NI ING LOG (PROV	REQUESTED BY	Eric Padilla
SAIYII	PLING LOCATION  Los Angeles City Soultation District	er no / project	16.204
	Los Angeles City Sanitation District Street manhole location	ST NO / PROJECT	15-324
	Los Angeles, CA		

### Percent hydrogen (H2), nitrogen (N2), oxygen (O2) and methane (CH4) by SCAQMD Method 10.1 (GC TCD).

Type Number Pressure (Torr)	Canister <u>54055</u> 317	Canister <u>54110</u> 674
H <sub>2</sub> , percent	< 0.2	< 0.2
O <sub>2</sub> , percent	20.1	20.1
N <sub>2</sub> , percent	75.7	75.5
CH4, percent	< 0.2	< 0.2

Date Approved: 3/15/16

Approved By:

Rudy Eden, Senior Manager

Laboratory Services

909-396-2391



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

# MONITORING & ANALYSIS QUALITY CONTROL SUMMARY

Page 2 of 2

C A	MPI	17	ne	COD	TRED	PAR
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**LABORATORY NO** 

1509817

Two Summa Canisters

REQUESTED BY

Eric Padilla

# Percent hydrogen (H<sub>2</sub>), nitrogen (N<sub>2</sub>), oxygen (O<sub>2</sub>) and methane (CH<sub>4</sub>) by SCAQMD Method 10.1 (GC TCD).

#### QUALITY CONTROL -- End of run control recovery

CC12089	MDL 0.2% abs	
O <sub>2</sub> , percent	0.2% abs	
N <sub>2</sub> , percent CH <sub>4</sub> , percent	0.2% abs 0.2% abs	

		Absolute	QC Limit
Theoretical	Measured	Difference	0.5% Abs.
1.04	1.01	-0.03	PASS
1.01	1.02	0.01	PASS
0.99	1.02	0.0	PASS
1.05	1.00	-0.05	PASS

CC73109	MDL
H <sub>2</sub> , percent	0.2% abs
O2, percent	0.2% abs
N <sub>2</sub> , percent	0.2% abs
CH4, percent	0.2% abs

Theoretical	Measured	Absolute Difference	QC Limit 0.5% Abs.
0.00	0.00	NΛ	NA
24.63	24.41	-0.22	PASS
4.94	4.98	0.0	PASS
0.00	0,00	ΝA	NA

DATE ANALYZED REFERENCE NO:

4/16/2015 15TC3AA TC3-18-108



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

### **MONITORING & ANALYSIS** REPORT OF LABORATORY ANALYSIS

Page 1 of 2

то	Rudy Eden, Sr. Enforcement Manager Laboratory Services	LABORATORY NO	1509817
CA MID	PLE DESCRIBED AS	DATE RECEIVED	04/08/2015
SAME	Two Summa Canisters	FACILITY ID NO	NA
04550	u ryg i og i green	REQUESTED BY	Eric Padilla
SAMP	LING LOCATION  Los Angeles City Sanitation District	ST NO / PROJECT	15-324
	Street manhole location		
	Los Angeles, CA		
	VOC by Tot	al Organic Carbon	

#### VOC by Total Organic Carbon

Type Number Pressure (Torr)	Canister <u>54055</u> 317	Canister <u>54110</u> 674
Type Number	Vial <u>2</u>	Vial <u>3</u>
TOC, ppmC	7	4

Date Approved: 3/15/16

Approved By:

Rudy Eden, Senior Manager

Laboratory Services 909-396-2391



Test Nos. 15-321, 15-322, 15-324

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Test Dates: February 19, 2015 March 10, 2015 April 8, 2015

### SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT 21865 Copley Drive, Diamond Bar CA 91765-1482

### **MONITORING & ANALYSIS** QUALITY CONTROL SUMMARY

Page 2 of 2

SAMPLE DESCRIBED AS	LABORATORY NO	1509817
Two Summa Canisters	REQUESTED BY	Eric Padilla

VOC by Total Organic Carbon.

#### QUALITY CONTROL: Pre and post recovery

QC check must bracket sample concentration

				Percent	QC Limit
	MDL	Theoretical	Measured	Difference	±10%
TC, ppmC	1	10.00	10.87	-8.65	PASS
IC, ppmC	1	10.00	10.84	-8.40	PASS
TC, ppmC	1	10.00	10.89	-8.90	PASS
IC, ppmC	1	10.00	11.17	-11.70	FAIL

DATE ANALYZED REFERENCE NO

4/23/2015 **15FI4AA** FI4-101-107

1509817