

**AIR PERMIT WAIVER
QUARTERLY MONITORING REPORT
FOURTH QUARTER 2016**

**FORMER GENERAL MOTORS PLANT
801 BOXWOOD ROAD, WILMINGTON, DELAWARE**

UST Facility ID: 3-000541

LUST Project#: N8708035

DE-1149 Operable Unit 4

Prepared For:

Air Quality Management Section
Division of Air and Waste Management
Department of Natural Resources &
Environmental Control
391 Lukens Drive
New Castle, Delaware 19720

Submitted and Prepared By:



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File # 2734.05.51



INTERNAL QUALITY CONTROL SHEET

This Quarterly Monitoring Report has been prepared by BrightFields, Inc. (BrightFields). This Report represents BrightFields' knowledge of conditions on the subject site at the time of preparation.

This Quarterly Monitoring Report was prepared and reviewed by the following BrightFields personnel:

Prepared By:

A handwritten signature in blue ink, reading "Kelly P. Wilkinson", is written over a horizontal line.

Kelly P. Wilkinson
Environmental Analyst

Reviewed and Approved By:

A handwritten signature in blue ink, reading "Kenneth Hannon", is written over a horizontal line.

Kenneth Hannon, P.E.
Engineering Program Manager



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QUARTERLY MONITORING REPORT

1.0 INTRODUCTION

BrightFields, Inc. (BrightFields) has been retained by the Revitalizing Auto Communities Environmental Response (RACER) Trust to install and operate an interim remediation system to remediate hydrocarbon contamination in soil vapors and prevent migration of soil vapors to offsite receptors located at the Former General Motors Plant on Boxwood Road in Wilmington, Delaware, Underground Storage Tank (UST) Facility ID 3-000541 (herein referred to as the “Site”) (Figure 1). This Quarterly Monitoring Report is being submitted to meet the requirements of the State of Delaware Department of Natural Resources and Environmental Control (DNREC) Permit Waiver for air emissions and to document the conditions of the Site during this reporting period.

Petroleum contamination has been confirmed present at the Site through numerous investigations. The contamination appears to have resulted from the historical operation of the Site and leakage from several former USTs.

This Quarterly Monitoring Report describes the system installation and covers all operations from September 28, 2016 through December 30, 2016 and contains operations details, monitoring details, and air sampling results.

The remediation system was installed by BrightFields and started in late March 2015. During this quarter, the soil vapor extraction (SVE) system was operated for 2,253.2 hours. System inspection field sheets are included in Appendix A.

1.1 Purpose

This Quarterly Monitoring Report has been prepared to meet air permit waiver requirements. The permit waiver is included as Appendix B.

1.2 Site History

The Former General Motors Plant is approximately 142 acres consisting of two tax parcels. The larger parcel is 126.6 acres with a 3-million square foot auto assembly plant, waste water

treatment plant, and parking lots. The second parcel is a 15-acre undeveloped wooded lot. The surrounding use of the Site is commercial and residential.

Historical research indicates that the main plant facility was constructed by General Motors in 1947 and operated until July 2009. General Motors filed for bankruptcy in June 2009 and the property was purchased by Fisker Automotive in July 2010. In March 2011, the RACER Trust was formed as part of the bankruptcy settlement to clean up and promote redevelopment of Former General Motors properties. In April 2014, Wanxiang Delaware acquired the property.

An April 9, 1990 letter from DNREC to General Motors stated that 12 underground storage tanks (USTs) were removed from the property. Ten of those tanks were adjacent to the Anchor Motor Freight Building, located in the southeast section of the plant along Dodson Avenue. Additionally, one gasoline UST (GMGT-1) was removed from near the southeastern corner of the assembly plant and one waste oil tank (WW-1) was removed from the stormwater area. The USTs contained diesel (four tanks), gasoline (three tanks), heating oil (two tanks), waste oil (two tanks), and engine oil (one tank).

A contaminated groundwater plume extends from the Anchor Motor Freight Building towards the northeast across Dodson Avenue. Groundwater contamination includes several volatile organic compounds (VOCs) including 1,2,4-trimethylbenzene, benzene, ethylbenzene, toluene, and xylenes (BTEX). Groundwater contamination also includes semivolatile organic compounds (SVOCs) including naphthalene and 2-methylnaphthalene. Subsurface contaminated soil extends from the edge of the Anchor Motor Freight Building to approximately the eastern edge of Dodson Avenue. Soil contamination also consists of VOCs including 1,2,4-trimethylbenzene, benzene, ethylbenzene, toluene, and xylenes.

Results of a vapor intrusion investigation, with sampling events from October 2012 through December 2013, show that offsite contaminated soil vapors extended from the edge of the property to approximately 100 feet east of Dodson Avenue. Soil gas samples that were collected contain VOCs, including 1,2,4-trimethylbenzene, benzene, ethylbenzene, and xylenes.

In July 2014, BrightFields completed a Focused Feasibility Study (FFS) for the Site to address potential vapor intrusion issues into nearby residential structures along Dodson Avenue. The FFS evaluated remedial alternatives and selected installation of a SVE system as an interim vapor phase remediation.

1.3 System Installation

In order to facilitate the remediation activities for the property, BrightFields installed six 2-inch diameter extraction wells northeast of the Anchor Motor Freight Building from December 17 to December 19, 2014. The wells were drilled to depths of approximately 20 feet below ground surface (bgs) and screened from approximately 12 feet bgs to 20 feet bgs. Each screen is 2-inch outer diameter polyvinyl chloride (PVC), 12 feet in length, with a slot size of 0.020 inches.

BrightFields began installing the underground conveyance piping to the blower on February 6, 2015. Each well was connected to the manifold by a separate 2-inch PVC line. An additional 4-inch PVC pipe was installed in the conveyance trench and capped inside of the trench box for future use if needed.

The installation was completed in February 2015 and system start-up was implemented on March 30, 2015.

1.4 Description of System

The remediation system consists of a Falco 300 Catalytic Oxidizer with a 15-horsepower (hp) regenerative blower. The blower is capable of extracting 295 standard cubic feet per minute (scfm) of vapor flow at 60-inches of water vacuum. The blower is connected to extraction wells SVE-01 through SVE-06 (Figure 2).

Extracted vapors are currently treated by means of a catalytic oxidizer. Main components of the treatment system are as follows:

- Below ground piping to connect remediation wells to the system;
- Regenerative 15-hp SVE vacuum blower; and,
- Catalytic oxidizer to treat the extracted soil-gas.

There is a 40-gallon water knockout drum between the manifold and the catalytic oxidizer. A high-level switch connected to the water knockout drum turns off the blower and catalytic oxidizer to prevent drawing water into the catalytic oxidizer.

2.0 SYSTEM OPERATIONS AND MONITORING

BrightFields started the SVE system on March 30, 2015. This Quarterly Monitoring Report documents the remediation and monitoring activities performed at the Site from September 28, 2016 through December 30, 2016 (the fourth quarter of 2016).

2.1 Operations

The SVE system remained in operation during the entire monitoring period from September 28, 2016 through December 30, 2016 .

2.2 Site Visits

The SVE system was inspected once per week during this quarter in an effort to optimize system operations and ensure compliance with the permit waiver requirements. The table below outlines the inspection dates and significant notes collected at the time of the inspection (the raw field sheets are included in Appendix A).

The following table presents the inspection dates and relevant information. Bolded dates represent dates that air bag samples were collected.

Inspection Dates:	Significant Notes:
10/5/2016	System running successfully. Blower filter, vapor control valve, and low pressure port adequate. Gauged SVE wells, GM-MW49, and GM-MW50.
10/12/2016	System running successfully. Drained water from knockout drum.
10/20/2016	Collected air bag samples. Drained water from knockout drum.
10/27/2016	System running successfully. Drained water from knockout drum.
11/4/2016	System running successfully. Drained water from knockout drum.
11/8/2016	System running successfully. Drained water from knockout drum.
11/15/2016	Collected air bag samples. Drained water from knockout drum.
11/23/2016	System running successfully. Drained water from knockout drum.
12/2/2016	System running successfully. Drained water from knockout drum. Blower filter adequate. Gauged SVE wells, GM-MW49, and GM-MW50.
12/9/2016	System running successfully. Drained water from knockout drum.

Inspection Dates:	Significant Notes:
12/13/2016	Collected air bag samples. Drained water from knockout drum.
12/21/2016	System running successfully. Gauged SVE wells, GM-MW49, and GM-MW50.
12/30/2016	System running successfully. Drained water from knockout drum.

2.3 Compliance

Air samples were collected from the system to evaluate the efficiency of the system and to comply with the air permit waiver. Grab air samples were collected during system operations at the influent (pre-treatment) and at the effluent to the catalytic oxidizer (post-treatment) using one liter Tedlar[®] bags. Influent samples provided information pertaining to the mass extraction of hydrocarbons of subsurface soil vapor, and the effluent samples provided information regarding the efficiency of the catalytic oxidizer destruction of the contaminants, prior to their discharge to the atmosphere. All air samples were submitted to Eurofins Scientific in Lancaster, Pennsylvania for analysis using Environmental Protection Agency (EPA) Method TO-18. Raw mass loading/emission estimates and analytical data for each air bag sample collected are provided in Appendix C and Appendix D, respectively.

Based on the analytical data and data collected during the site visits, the effluent discharge estimates for this monitoring period have not exceeded the limit of 0.1 pounds (lbs)/hour or 2.4 lbs/day (system post treatment).

Table 1 provides the SVE System Monitoring Data summary and Chart 1 displays the estimated hydrocarbon mass removal for the SVE system. The mass removal estimate for the SVE system was approximately 1,801 lbs of petroleum hydrocarbons for this quarter.

2.4 Free Product Recovery

On October 5, 2016, the passive bailer was drained during monitoring well gauging. The bailer contained mostly water with a thin layer of product on the surface. On December 2, 2016, emulsified product was drained from the passive bailer, however, no free product was observed. Additional emulsified product was drained from the passive bailer on December 21, 2016. Overall, the quantity of emulsified product removed from SVE-03 this quarter was minimal. All recovered material was placed in a 55-gallon steel drum and was removed from the site for disposal on December 30, 2016.

2.5 Waste Disposal

On December 30, 2016, six soil and 12 groundwater drums were transported and disposed offsite. The soil disposed was accumulated as investigation-derived waste during supplemental evaluation of OU-4. The groundwater drums were a combination of investigation-derived waste and groundwater drained from the water knockout drum. As of the end of the fourth quarter of 2016, one drum remained onsite with approximately 16 gallons of water drained from the water knockout drum on December 30, 2016.

Waste disposal documentation has not yet been received and will be provided with the next quarterly report.

3.0 SUMMARY

This Quarterly Monitoring Report documents remediation system operations conducted at the Site for the fourth quarter of 2016. During this period, the SVE system was operated for 2,253.2 hours.

3.1 Estimated Recovery

Based on the monitoring data, the total mass of hydrocarbons removed during this monitoring period from SVE recovery efforts is estimated to be approximately 1,801 lbs. Since startup on March 30, 2015, an estimated 6,109 lbs of hydrocarbons have been removed by the SVE system. An additional 12.7 lbs was removed as separate phase product by hand bailing and absorbent sock since the system was installed.

3.2 Plan for Next Quarter

The remediation effort began in late March 2015; since that date, significant quantities of VOCs have been recovered. BrightFields will continue to operate the SVE system and monitor recovery, as required by the permit waiver. In addition, BrightFields will continue to monitor the passive bailer in SVE-03.

FIGURES



Former Wilmington Assembly Plant Property (DE-1149)

Tax Parcels

Source: DEMAC - Aerial 2013; Delaware DataMIL - Tax Parcels.

BrightFields, Inc.
Environmental Evaluation
Investigation, and Remediation

801 Industrial Street, Suite 1
Wilmington, Delaware 19801

302-656-9600
302-656-9700 fax

Site Map
Former General Motors Plant
Wilmington, DE

	By	Date	Scale:	File Name:
Drawn	KEP	7/9/2015	1:1,800	Fig1SiteMap.mxd
Checked	KLH	7/9/2015	Fig. No.	
Project #	2734.04.51		Figure 1	

075150

Feet

N

W

E

S



SVE Extraction Well

SVE Conveyance Piping

SVE Catalytic Oxidizer Unit (housed in shed)

xxxx

Fence

Former Wilmington Assembly Plant Property (DE-1149)

Tax Parcels

BrightFields, Inc.

Environmental Evaluation
Investigation, and Remediation

801 Industrial Street, Suite 1
Wilmington, Delaware 19801

302-656-9600
302-656-9700 fax

SVE System Layout
Former General Motors Plant
Wilmington, Delaware

	By	Date	Scale:	File Name:
Drawn	KEP	8/18/2015	1:720	Fig2SVE_Sys.mxd
Checked	KLH	8/18/2015	Fig. No.	
Project #	2734.04.51	Figure 2		

03060

Feet

N

W

E

S

Source: DEMAC - Aerial 2013; Delaware DataMIL - Tax Parcels.
New Castle County Office of Administrative Services - GIS
and Mapping Services.

TABLE

TABLE 1
Soil Vapor Extraction System Monitoring Data
Former GM Plant
Wilmington, DE

Date	Vacuum ("H ₂ O)	Influent Air Velocity (FPM - 3" pipe)	Influent Air Flow Rate (CFM)	Influent Vapor Concentration		Effluent Vapor Concentration		Cat/Ox Operating Temperatures		
				PID (ppmv)	Lab (ppmv)	PID (ppmv)	Lab (ppmv)	T1 (°C)	T2 (°C)	T3 (°C)
10/5/16	-73.0	2,903.0	149	302.4	-	4.8	-	330	368	363
10/12/16	-73.0	3,272.0	168	333.9	-	5.9	-	330	366	364
10/20/16	-73.0	3,162.0	163	385.5	245	31.2	13.4	330	365	364
10/27/16	-75.0	3,159.0	162	311.8	-	8.0	-	330	368	366
11/4/16	-73.0	3,393.0	174	324.8	-	7.1	-	330	372	368
11/8/16	-71.0	3,153.0	162	365.6	-	8.3	-	330	375	370
11/15/16	-73.0	3,317.0	171	396.0	323	27.3	20.0	330	378	374
11/23/16	-74.0	3,542.0	182	364.8	-	11.4	-	330	384	378
12/2/16	-72.0	3,170.0	163	556.8	-	14.9	-	330	386	379
12/9/16	-76.0	3,933.0	202	436.2	-	18.7	-	330	381	379
12/13/16	-74.0	3,772.0	194	364.3	347	13.6	27.0	330	380	378
12/21/16	-75.0	3,568.0	183	366.3	-	12.6	-	330	374	375
12/30/16	-75.0	3,853.0	198	375.6	-	9.1	-	330	369	372

Notes :

FPM - feet per minute.

CFM - cubic feet per minute.

PID - photoionization detector.

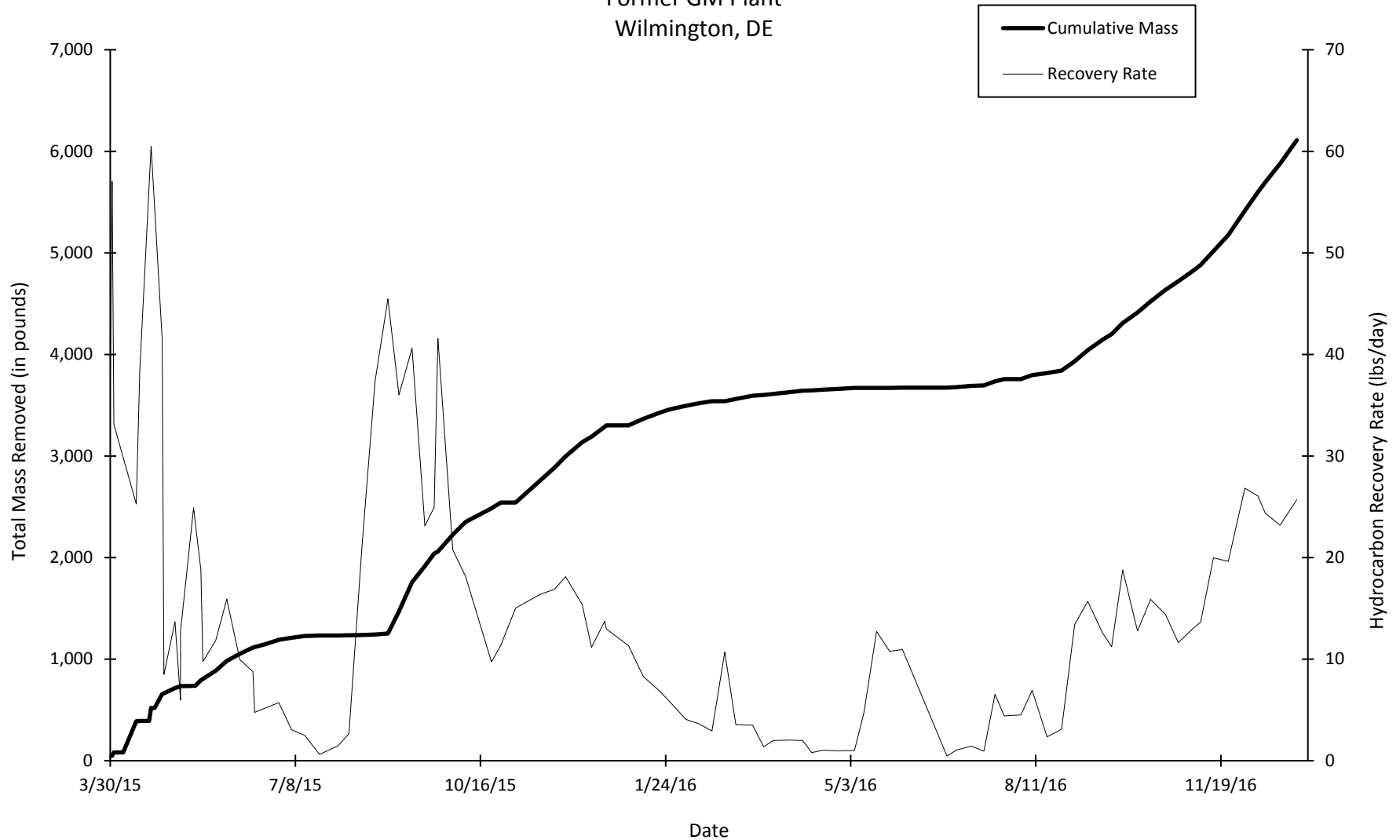
ppmv - parts per million by volume.

Bold indicates dates in which air bags were collected for laboratory analysis.

Lab vapor concentration is the total Volatile Organic Compounds (VOCs) (less methane) detected in the air bag laboratory analysis.

CHART

Chart 1
Soil Vapor Extraction System
Hydrocarbon Mass Removal Estimate
Falco 300
Former GM Plant
Wilmington, DE



APPENDICES

APPENDIX A

SYSTEM INSPECTION FIELD SHEETS

**Former General Motors Plant
Wilmington, DE
System Check Sheet**

Name: Kelly Wilkinson & Mark Lower

Date/Time: 10/5/16; 11:02

SOIL VAPOR EXTRACTION SYSTEM				
Status			Arrival	Departure
SVE System			ON	ON
Alarms			NONE	NONE
Tag ID	Location	% Open	Velocity (fpm)	PID (ppm)
SVE-01	SVE-01	0	-	Not Measured
SVE-02	SVE-02	100	877.0	Not Measured
SVE-03	SVE-03	100	894.0	Not Measured
SVE-04	SVE-04	0	-	Not Measured
SVE-05	SVE-05	100	-	Not Measured
SVE-06	SVE-06	0	-	Not Measured
Tag ID	Additional Data			Reading
EFF	Cat/Ox Effluent Velocity (fpm)			Not Measured
EFF	Cat/Ox Effluent PID (ppm)			4.8
INF	Cat/Ox Influent Velocity (fpm)			2,903.0
INF	Cat/Ox Influent PID (ppm)			302.4
	Cat/Ox Run Time (hours)			9,899.0
T1	Cat/Ox Temperature - T1 (°C)			330
T2	Cat/Ox Temperature - T2 (°C)			368
T3	Cat/Ox Temperature - T3 (°C)			363
MV	Manual Valve Percentage Open			15%
	Recirculation Valve Percentage Open			0%
VCV	VCV Percentage Open			95%
	Filter Influent Pressure (inches WC)			-73
	Blower Influent Pressure (inches WC)			-73
BP	Blower Backpressure (inches WC)			19.0
	Water Level Check			ABSENT
Air Bag Sample Times:		Influent	Effluent	Laboratory
		11:09	11:08	FIELD SCRIN

Additional Comments/Work Performed:

Could not measure SVE-05 due to moisture; Turned off system at 11:18 to check water level; Blower filter, VCV filter, and low pressure port adequate; Gauged SVE wells, GM-MW49, and GM-MW50; System startup complete at 12:16

**Former General Motors Plant
Wilmington, DE
System Check Sheet**

Name: Kelly Wilkinson

Date/Time: 10/12/16; 11:20

SOIL VAPOR EXTRACTION SYSTEM				
Status			Arrival	Departure
SVE System			ON	ON
Alarms			NONE	NONE
Tag ID	Location	% Open	Velocity (fpm)	PID (ppm)
SVE-01	SVE-01	0	-	Not Measured
SVE-02	SVE-02	100	-	Not Measured
SVE-03	SVE-03	100	-	Not Measured
SVE-04	SVE-04	0	-	Not Measured
SVE-05	SVE-05	100	-	Not Measured
SVE-06	SVE-06	0	-	Not Measured
Tag ID	Additional Data			Reading
EFF	Cat/Ox Effluent Velocity (fpm)			Not Measured
EFF	Cat/Ox Effluent PID (ppm)			5.9
INF	Cat/Ox Influent Velocity (fpm)			3,272.0
INF	Cat/Ox Influent PID (ppm)			333.9
	Cat/Ox Run Time (hours)			10,066.3
T1	Cat/Ox Temperature - T1 (°C)			330
T2	Cat/Ox Temperature - T2 (°C)			366
T3	Cat/Ox Temperature - T3 (°C)			364
MV	Manual Valve Percentage Open			15%
	Recirculation Valve Percentage Open			0%
VCV	VCV Percentage Open			95%
	Filter Influent Pressure (inches WC)			-73
	Blower Influent Pressure (inches WC)			-73
BP	Blower Backpressure (inches WC)			18.5
	Water Level Check			PRESENT
Air Bag Sample Times:		Influent	Effluent	Laboratory
		11:23	11:21	FIELD SCRNM

Additional Comments/Work Performed:

Could not measure SVE-02, SVE-03, and SVE-05 due to moisture; Turned off system at 11:30 to check water level; Drained approximately 0.75 gallons from water knockout drum; System startup complete at 11:36

**Former General Motors Plant
Wilmington, DE
System Check Sheet**

Name: Kelly Wilkinson

Date/Time: 10/20/16; 08:45

SOIL VAPOR EXTRACTION SYSTEM				
Status			Arrival	Departure
SVE System			ON	ON
Alarms			NONE	NONE
Tag ID	Location	% Open	Velocity (fpm)	PID (ppm)
SVE-01	SVE-01	0	-	Not Measured
SVE-02	SVE-02	100	927.0	Not Measured
SVE-03	SVE-03	100	1,162.0	Not Measured
SVE-04	SVE-04	0	-	Not Measured
SVE-05	SVE-05	100	-	Not Measured
SVE-06	SVE-06	0	-	Not Measured
Tag ID	Additional Data			Reading
EFF	Cat/Ox Effluent Velocity (fpm)			Not Measured
EFF	Cat/Ox Effluent PID (ppm)			31.2
INF	Cat/Ox Influent Velocity (fpm)			3,162.0
INF	Cat/Ox Influent PID (ppm)			385.5
	Cat/Ox Run Time (hours)			10,255.7
T1	Cat/Ox Temperature - T1 (°C)			330
T2	Cat/Ox Temperature - T2 (°C)			365
T3	Cat/Ox Temperature - T3 (°C)			364
MV	Manual Valve Percentage Open			15%
	Recirculation Valve Percentage Open			0%
VCV	VCV Percentage Open			95%
	Filter Influent Pressure (inches WC)			-73
	Blower Influent Pressure (inches WC)			-73
BP	Blower Backpressure (inches WC)			18.0
	Water Level Check			PRESENT
Air Bag Sample Times:		Influent	Effluent	Laboratory
		8:58	8:48	EUROFINS

Additional Comments/Work Performed:

Effluent PID taken directly from sample port = 7.0 ppm; Influent PID taken directly from sample port = 396.0 ppm; Could not measure SVE-05 due to moisture;

Turned off system at 09:08 to check water level; Drained approximately 1 gallon from water knockout drum; System startup complete at 09:24

**Former General Motors Plant
Wilmington, DE
System Check Sheet**

Name: Kelly Wilkinson

Date/Time: 10/27/16; 13:34

SOIL VAPOR EXTRACTION SYSTEM				
Status			Arrival	Departure
SVE System			ON	ON
Alarms			NONE	NONE
Tag ID	Location	% Open	Velocity (fpm)	PID (ppm)
SVE-01	SVE-01	0	-	Not Measured
SVE-02	SVE-02	100	-	Not Measured
SVE-03	SVE-03	100	-	Not Measured
SVE-04	SVE-04	0	-	Not Measured
SVE-05	SVE-05	100	-	Not Measured
SVE-06	SVE-06	0	-	Not Measured
Tag ID	Additional Data			Reading
EFF	Cat/Ox Effluent Velocity (fpm)			Not Measured
EFF	Cat/Ox Effluent PID (ppm)			8.0
INF	Cat/Ox Influent Velocity (fpm)			3,159.0
INF	Cat/Ox Influent PID (ppm)			311.8
	Cat/Ox Run Time (hours)			10,428.2
T1	Cat/Ox Temperature - T1 (°C)			330
T2	Cat/Ox Temperature - T2 (°C)			368
T3	Cat/Ox Temperature - T3 (°C)			366
MV	Manual Valve Percentage Open			15%
	Recirculation Valve Percentage Open			0%
VCV	VCV Percentage Open			95%
	Filter Influent Pressure (inches WC)			-75
	Blower Influent Pressure (inches WC)			-75
BP	Blower Backpressure (inches WC)			18.5
	Water Level Check			PRESENT
Air Bag Sample Times:		Influent	Effluent	Laboratory
		13:37	13:36	FIELD SCRIN

Additional Comments/Work Performed:

Could not measure SVE-02, SVE-03, and SVE-05 due to moisture; Turned off system at 13:40 to check water level; Drained approximately 1 gallon from water knockout drum; System startup complete at 13:47

**Former General Motors Plant
Wilmington, DE
System Check Sheet**

Name: Kelly Wilkinson

Date/Time: 11/4/16; 13:42

SOIL VAPOR EXTRACTION SYSTEM				
Status			Arrival	Departure
SVE System			ON	ON
Alarms			NONE	NONE
Tag ID	Location	% Open	Velocity (fpm)	PID (ppm)
SVE-01	SVE-01	0	-	Not Measured
SVE-02	SVE-02	100	-	Not Measured
SVE-03	SVE-03	100	-	Not Measured
SVE-04	SVE-04	0	-	Not Measured
SVE-05	SVE-05	100	-	Not Measured
SVE-06	SVE-06	0	-	Not Measured
Tag ID	Additional Data			Reading
EFF	Cat/Ox Effluent Velocity (fpm)			Not Measured
EFF	Cat/Ox Effluent PID (ppm)			7.1
INF	Cat/Ox Influent Velocity (fpm)			3,393.0
INF	Cat/Ox Influent PID (ppm)			324.8
	Cat/Ox Run Time (hours)			10,620.2
T1	Cat/Ox Temperature - T1 (°C)			330
T2	Cat/Ox Temperature - T2 (°C)			372
T3	Cat/Ox Temperature - T3 (°C)			368
MV	Manual Valve Percentage Open			15%
	Recirculation Valve Percentage Open			0%
VCV	VCV Percentage Open			95%
	Filter Influent Pressure (inches WC)			-73
	Blower Influent Pressure (inches WC)			-73
BP	Blower Backpressure (inches WC)			19.0
	Water Level Check			PRESENT
Air Bag Sample Times:		Influent	Effluent	Laboratory
		13:44	13:43	FIELD SCRN

Additional Comments/Work Performed:

Could not measure SVE-02, SVE-03, or SVE-05 due to moisture; Turned off system at 13:48 to check water level; Drained approximately 5 gallons from water knockout drum; System startup complete at 14:03

**Former General Motors Plant
Wilmington, DE
System Check Sheet**

Name: Kelly Wilkinson

Date/Time: 11/8/16; 13:15

SOIL VAPOR EXTRACTION SYSTEM				
Status			Arrival	Departure
SVE System			ON	ON
Alarms			NONE	NONE
Tag ID	Location	% Open	Velocity (fpm)	PID (ppm)
SVE-01	SVE-01	0	-	Not Measured
SVE-02	SVE-02	100	-	Not Measured
SVE-03	SVE-03	100	-	Not Measured
SVE-04	SVE-04	0	-	Not Measured
SVE-05	SVE-05	100	-	Not Measured
SVE-06	SVE-06	0	-	Not Measured
Tag ID	Additional Data			Reading
EFF	Cat/Ox Effluent Velocity (fpm)			Not Measured
EFF	Cat/Ox Effluent PID (ppm)			8.3
INF	Cat/Ox Influent Velocity (fpm)			3,153.0
INF	Cat/Ox Influent PID (ppm)			365.6
	Cat/Ox Run Time (hours)			10,716.5
T1	Cat/Ox Temperature - T1 (°C)			330
T2	Cat/Ox Temperature - T2 (°C)			375
T3	Cat/Ox Temperature - T3 (°C)			370
MV	Manual Valve Percentage Open			15%
	Recirculation Valve Percentage Open			0%
VCV	VCV Percentage Open			95%
	Filter Influent Pressure (inches WC)			-71
	Blower Influent Pressure (inches WC)			-71
BP	Blower Backpressure (inches WC)			19.0
	Water Level Check			PRESENT
Air Bag Sample Times:		Influent	Effluent	Laboratory
		13:17	13:16	FIELD SCRIN

Additional Comments/Work Performed:

Could not measure SVE-02, SVE-03, and SVE-05 due to moisture; Turned off system at 13:24 to check water level; Drained approximately 5.5 gallons from water knockout drum; System startup complete at 13:42

**Former General Motors Plant
Wilmington, DE
System Check Sheet**

Name: Kelly Wilkinson

Date/Time: 11/15/16; 10:52

SOIL VAPOR EXTRACTION SYSTEM				
Status			Arrival	Departure
SVE System			ON	ON
Alarms			NONE	NONE
Tag ID	Location	% Open	Velocity (fpm)	PID (ppm)
SVE-01	SVE-01	0	-	Not Measured
SVE-02	SVE-02	100	-	Not Measured
SVE-03	SVE-03	100	-	Not Measured
SVE-04	SVE-04	0	-	Not Measured
SVE-05	SVE-05	100	-	Not Measured
SVE-06	SVE-06	0	-	Not Measured
Tag ID	Additional Data			Reading
EFF	Cat/Ox Effluent Velocity (fpm)			Not Measured
EFF	Cat/Ox Effluent PID (ppm)			27.3
INF	Cat/Ox Influent Velocity (fpm)			3,317.0
INF	Cat/Ox Influent PID (ppm)			396.0
	Cat/Ox Run Time (hours)			10,881.8
T1	Cat/Ox Temperature - T1 (°C)			330
T2	Cat/Ox Temperature - T2 (°C)			378
T3	Cat/Ox Temperature - T3 (°C)			374
MV	Manual Valve Percentage Open			15%
	Recirculation Valve Percentage Open			0%
VCV	VCV Percentage Open			95%
	Filter Influent Pressure (inches WC)			-73
	Blower Influent Pressure (inches WC)			-73
BP	Blower Backpressure (inches WC)			18.0
	Water Level Check			PRESENT
Air Bag Sample Times:		Influent	Effluent	Laboratory
		11:02	10:56	EUROFINS

Additional Comments/Work Performed:

Effluent PID taken directly from sample port = 12.5 ppm; Influent PID taken

directly from sample port = 410.7 ppm; Could not measure SVE-02, SVE-03, or

SVE-05 due to moisture; Turned off system at 11:10 to check water level;

Drained approximately 8 gallons from water knockout drum; System startup

complete at 11:24

**Former General Motors Plant
Wilmington, DE
System Check Sheet**

Name: Kelly Wilkinson

Date/Time: 11/23/16; 13:15

SOIL VAPOR EXTRACTION SYSTEM				
Status			Arrival	Departure
SVE System			ON	ON
Alarms			NONE	NONE
Tag ID	Location	% Open	Velocity (fpm)	PID (ppm)
SVE-01	SVE-01	0	-	Not Measured
SVE-02	SVE-02	100	-	Not Measured
SVE-03	SVE-03	100	-	Not Measured
SVE-04	SVE-04	0	-	Not Measured
SVE-05	SVE-05	100	-	Not Measured
SVE-06	SVE-06	0	-	Not Measured
Tag ID	Additional Data			Reading
EFF	Cat/Ox Effluent Velocity (fpm)			Not Measured
EFF	Cat/Ox Effluent PID (ppm)			11.4
INF	Cat/Ox Influent Velocity (fpm)			3,542.0
INF	Cat/Ox Influent PID (ppm)			364.8
	Cat/Ox Run Time (hours)			11,076.0
T1	Cat/Ox Temperature - T1 (°C)			330
T2	Cat/Ox Temperature - T2 (°C)			384
T3	Cat/Ox Temperature - T3 (°C)			378
MV	Manual Valve Percentage Open			15%
	Recirculation Valve Percentage Open			0%
VCV	VCV Percentage Open			95%
	Filter Influent Pressure (inches WC)			-74
	Blower Influent Pressure (inches WC)			-74
BP	Blower Backpressure (inches WC)			18.5
	Water Level Check			PRESENT
Air Bag Sample Times:		Influent	Effluent	Laboratory
		13:19	13:18	FIELD SCRNM

Additional Comments/Work Performed:

Could not measure SVE-02, SVE-03, and SVE-05 due to moisture; Turned off system at 13:24 to check water level; Drained approximately 12.5 gallons from water knockout drum; System startup complete at 13:41

**Former General Motors Plant
Wilmington, DE
System Check Sheet**

Name: Kelly Wilkinson & Mark Lower

Date/Time: 12/2/16; 11:20

SOIL VAPOR EXTRACTION SYSTEM				
Status			Arrival	Departure
SVE System			ON	ON
Alarms			NONE	NONE
Tag ID	Location	% Open	Velocity (fpm)	PID (ppm)
SVE-01	SVE-01	0	-	Not Measured
SVE-02	SVE-02	100	-	Not Measured
SVE-03	SVE-03	100	-	Not Measured
SVE-04	SVE-04	0	-	Not Measured
SVE-05	SVE-05	100	-	Not Measured
SVE-06	SVE-06	0	-	Not Measured
Tag ID	Additional Data			Reading
EFF	Cat/Ox Effluent Velocity (fpm)			Not Measured
EFF	Cat/Ox Effluent PID (ppm)			14.9
INF	Cat/Ox Influent Velocity (fpm)			3,170.0
INF	Cat/Ox Influent PID (ppm)			556.8
	Cat/Ox Run Time (hours)			11,289.8
T1	Cat/Ox Temperature - T1 (°C)			330
T2	Cat/Ox Temperature - T2 (°C)			386
T3	Cat/Ox Temperature - T3 (°C)			379
MV	Manual Valve Percentage Open			15%
	Recirculation Valve Percentage Open			0%
VCV	VCV Percentage Open			95%
	Filter Influent Pressure (inches WC)			-72
	Blower Influent Pressure (inches WC)			-73
BP	Blower Backpressure (inches WC)			18.0
	Water Level Check			PRESENT
Air Bag Sample Times:		Influent	Effluent	Laboratory
		11:26	11:24	FIELD SCRN

Additional Comments/Work Performed:

Could not measure SVE-02, SVE-03, or SVE-05 due to moisture; Turned off system at 11:30 to check water level; Drained approximately 16 gallons from water knockout drum; Blower filter adequate; Gauged SVE wells, GM-MW49, and GM-MW50; Drained emulsified product from SVE-03 passive bailer; System startup complete at 12:50

**Former General Motors Plant
Wilmington, DE
System Check Sheet**

Name: Kelly Wilkinson

Date/Time: 12/9/16; 12:15

SOIL VAPOR EXTRACTION SYSTEM				
Status			Arrival	Departure
SVE System			ON	ON
Alarms			NONE	NONE
Tag ID	Location	% Open	Velocity (fpm)	PID (ppm)
SVE-01	SVE-01	0	-	Not Measured
SVE-02	SVE-02	100	-	Not Measured
SVE-03	SVE-03	100	-	Not Measured
SVE-04	SVE-04	0	-	Not Measured
SVE-05	SVE-05	100	-	Not Measured
SVE-06	SVE-06	0	-	Not Measured
Tag ID	Additional Data			Reading
EFF	Cat/Ox Effluent Velocity (fpm)			Not Measured
EFF	Cat/Ox Effluent PID (ppm)			18.7
INF	Cat/Ox Influent Velocity (fpm)			3,933.0
INF	Cat/Ox Influent PID (ppm)			436.2
	Cat/Ox Run Time (hours)			11,457.4
T1	Cat/Ox Temperature - T1 (°C)			330
T2	Cat/Ox Temperature - T2 (°C)			381
T3	Cat/Ox Temperature - T3 (°C)			379
MV	Manual Valve Percentage Open			15%
	Recirculation Valve Percentage Open			0%
VCV	VCV Percentage Open			95%
	Filter Influent Pressure (inches WC)			-76
	Blower Influent Pressure (inches WC)			-78
BP	Blower Backpressure (inches WC)			18.5
	Water Level Check			PRESENT
Air Bag Sample Times:		Influent	Effluent	Laboratory
		12:19	12:18	FIELD SCRN

Additional Comments/Work Performed:

Could not measure SVE-02, SVE-03, and SVE-05 due to moisture; Turned off system at 12:25 to check water level; Drained approximately 15 gallons from water knockout drum; System startup complete at 12:48

**Former General Motors Plant
Wilmington, DE
System Check Sheet**

Name: Kelly Wilkinson

Date/Time: 12/13/16; 12:20

SOIL VAPOR EXTRACTION SYSTEM				
Status			Arrival	Departure
SVE System			ON	ON
Alarms			NONE	NONE
Tag ID	Location	% Open	Velocity (fpm)	PID (ppm)
SVE-01	SVE-01	0	-	Not Measured
SVE-02	SVE-02	100	-	Not Measured
SVE-03	SVE-03	100	-	Not Measured
SVE-04	SVE-04	0	-	Not Measured
SVE-05	SVE-05	100	-	Not Measured
SVE-06	SVE-06	0	-	Not Measured
Tag ID	Additional Data			Reading
EFF	Cat/Ox Effluent Velocity (fpm)			Not Measured
EFF	Cat/Ox Effluent PID (ppm)			13.6
INF	Cat/Ox Influent Velocity (fpm)			3,772.0
INF	Cat/Ox Influent PID (ppm)			364.3
	Cat/Ox Run Time (hours)			11,553.1
T1	Cat/Ox Temperature - T1 (°C)			330
T2	Cat/Ox Temperature - T2 (°C)			380
T3	Cat/Ox Temperature - T3 (°C)			378
MV	Manual Valve Percentage Open			15%
	Recirculation Valve Percentage Open			0%
VCV	VCV Percentage Open			95%
	Filter Influent Pressure (inches WC)			-74
	Blower Influent Pressure (inches WC)			-75
BP	Blower Backpressure (inches WC)			18.0
	Water Level Check			PRESENT
Air Bag Sample Times:		Influent	Effluent	Laboratory
		12:30	12:24	EUROFINS

Additional Comments/Work Performed:

Effluent PID taken directly from sample port = 11.6 ppm; Influent PID taken

directly from sample port = 388.6 ppm; Could not measure SVE-02, SVE-03, or

SVE-05 due to moisture; Turned off system at 12:38 to check water level;

Drained approximately 8.5 gallons from water knockout drum; System startup

complete at 12:51

**Former General Motors Plant
Wilmington, DE
System Check Sheet**

Name: Kelly Wilkinson

Date/Time: 12/21/16; 10:36

SOIL VAPOR EXTRACTION SYSTEM				
Status			Arrival	Departure
SVE System			ON	ON
Alarms			NONE	NONE
Tag ID	Location	% Open	Velocity (fpm)	PID (ppm)
SVE-01	SVE-01	0	-	Not Measured
SVE-02	SVE-02	100	-	Not Measured
SVE-03	SVE-03	100	-	Not Measured
SVE-04	SVE-04	0	-	Not Measured
SVE-05	SVE-05	100	-	Not Measured
SVE-06	SVE-06	0	-	Not Measured
Tag ID	Additional Data			Reading
EFF	Cat/Ox Effluent Velocity (fpm)			Not Measured
EFF	Cat/Ox Effluent PID (ppm)			12.6
INF	Cat/Ox Influent Velocity (fpm)			3,568.0
INF	Cat/Ox Influent PID (ppm)			366.3
	Cat/Ox Run Time (hours)			11,743.2
T1	Cat/Ox Temperature - T1 (°C)			330
T2	Cat/Ox Temperature - T2 (°C)			374
T3	Cat/Ox Temperature - T3 (°C)			375
MV	Manual Valve Percentage Open			15%
	Recirculation Valve Percentage Open			0%
VCV	VCV Percentage Open			95%
	Filter Influent Pressure (inches WC)			-75
	Blower Influent Pressure (inches WC)			-76
BP	Blower Backpressure (inches WC)			18.0
	Water Level Check			PRESENT
Air Bag Sample Times:		Influent	Effluent	Laboratory
		10:41	10:40	FIELD SCRN

Additional Comments/Work Performed:

Could not measure SVE-02, SVE-03, and SVE-05 due to moisture; Turned off system at 10:46 to check water level; Drained approximately 17 gallons from water knockout drum; Gauged SVE wells, GM-MW49, and GM-MW50; Drained emulsified product from SVE-03 passive bailer; System startup complete at 12:19

**Former General Motors Plant
Wilmington, DE
System Check Sheet**

Name: Kelly Wilkinson

Date/Time: 12/30/16; 11:15

SOIL VAPOR EXTRACTION SYSTEM				
Status			Arrival	Departure
SVE System			ON	ON
Alarms			NONE	NONE
Tag ID	Location	% Open	Velocity (fpm)	PID (ppm)
SVE-01	SVE-01	0	-	Not Measured
SVE-02	SVE-02	100	-	Not Measured
SVE-03	SVE-03	100	-	Not Measured
SVE-04	SVE-04	0	-	Not Measured
SVE-05	SVE-05	100	-	Not Measured
SVE-06	SVE-06	0	-	Not Measured
Tag ID	Additional Data			Reading
EFF	Cat/Ox Effluent Velocity (fpm)			Not Measured
EFF	Cat/Ox Effluent PID (ppm)			9.1
INF	Cat/Ox Influent Velocity (fpm)			3,853.0
INF	Cat/Ox Influent PID (ppm)			375.6
	Cat/Ox Run Time (hours)			11,958.3
T1	Cat/Ox Temperature - T1 (°C)			330
T2	Cat/Ox Temperature - T2 (°C)			369
T3	Cat/Ox Temperature - T3 (°C)			372
MV	Manual Valve Percentage Open			15%
	Recirculation Valve Percentage Open			0%
VCV	VCV Percentage Open			95%
	Filter Influent Pressure (inches WC)			-75
	Blower Influent Pressure (inches WC)			-76
BP	Blower Backpressure (inches WC)			17.5
	Water Level Check			PRESENT
Air Bag Sample Times:		Influent	Effluent	Laboratory
		11:18	11:16	FIELD SCRN

Additional Comments/Work Performed:

Soil and groundwater drums staged onsite being removed for disposal; Could not measure SVE-02, SVE-03, and SVE-05 due to moisture; Turned off system at 11:32 to check water level; Drained approximately 16 gallons from water knockout drum; System startup complete at 11:52

APPENDIX B

PERMIT WAIVER



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF AIR & WASTE MANAGEMENT
715 GRANTHAM LANE
NEW CASTLE, DELAWARE 19720

AIR QUALITY MANAGEMENT
SECTION

TELEPHONE: (302) 323 - 4542
FAX NO.: (302) 323 - 4598

March 23, 2015

Brightfields Inc.
801 Industrial Street
Wilmington, Delaware 19801

ATTENTION: Ken Hannon
Engineering Program Manager

UST Facility ID#: 3-000541
LUST Project ID #: N8708035

SUBJECT: Former GM Plant
801 Boxwood Road, Wilmington, DE 19804
SVE System, Dodson Avenue

Dear Mr. Hannon:

This is in reference to the information in your submission dated December 29, 2014, in which you requested, on behalf of Brightfields Inc., the Department's permission to operate a Soil Vapor Extraction system for the owner, Racer Trust, controlled by thermal incineration with controlled rate located at the Former GM Plant at 801 Boxwood Road, Newport, Delaware 19804.

In the Department's opinion, the air contaminant emissions from this proposed source have little or no potential to cause a condition of air pollution; therefore, since this equipment will emit less than 0.1 pounds per hour and 2.4 pounds per day, permits for installation and operation are not required as long as the said equipment is operating as described on Form AQM-12 dated December 29, 2014 and signed by Pamela Barnett.

When the system is placed in operation, the owner or operator shall immediately fine-tune the system components based upon inlet Volatile Organic Compound (VOC) concentrations to ensure that VOC emissions do not exceed the emission limit of 0.1 pounds per hour and 2.4 pounds per day.

The owner or operator shall, at a minimum, perform system monitoring as follows:

- Field samples from the influent and effluent shall be collected and field screened using a PID at least twice a month.
- Influent and effluent samples shall be collected for laboratory analysis on a monthly basis. These samples shall be tested for benzene, toluene, ethylbenzene, and xylenes (BTEX), Total Petroleum Hydrocarbons (TPH) C₁-C₄, and TPH C₅-C₁₀ using Reference Method 18.

The following information shall be recorded, initialed, and maintained in a log book:

- Monthly VOC concentrations and inlet gas flow rate;

RECEIVED
MAR 30 2015

BY:

Delaware's good nature depends on you!

PRINTED ON
RECYCLED PAPER

Brightfields Inc.
801 Industrial Street
Wilmington, Delaware 19801
Former GM Plant, 801 Boxwood Road
Permit Waiver
March 23, 2015
Page 2

- The date, time and results of each field analysis;
- The date, time collected, and results of each laboratory analysis;
- The date, type of work, and reason for any maintenance performed on the equipment;
- Calculated thermal destruction efficiencies based upon the monitoring results; and
- Inlet gas flow proportioning adjustments required to avoid exceedance of the 0.1 pound per hour and 2.4 pounds per day VOC emission limit.

All air monitoring results from the process shall be forwarded to the Department's Underground Storage Tank Branch and the Site Investigation and Restoration Branch (SIRB) on a quarterly basis as part of the normal report to that Branch. Reference UST Facility ID # **3-000541** and LUST Project ID# **N8708035** when submitting these results.

If any change in operation is necessary (i.e. emission rates, flow rates, etc.) to the above equipment, the Department's Air Quality Management, Site Investigation And Restoration and Underground Storage Tank Branches shall be notified, in writing, two (2) weeks prior to commencement of operation of this equipment.

If, at any time, the above equipment fails to meet the requirements of Regulation No. 2, Section 2.1(a), either by exceeding the emission limitation of 2.4 pounds per day on a site-wide basis or by causing a condition of air pollution, then operation of said equipment shall be immediately discontinued and shall be reported to the Department via the Emergency Notification and Complaint Hotline (1-800-662-8802). The equipment shall remain inactive until the necessary permits have been issued or the problem has been resolved to the satisfaction of the Department.

Sincerely,



Everett L. DeWhitt, Jr., PhD.
Environmental Engineer
Engineering & Compliance Branch

PEF
F:\EngAndCompliance\eld15013

pc: Dover File
Paul E. Foster, P.E.
Rick Galloway, P.G.

APPENDIX C

MASS LOADING / EMISSIONS ESTIMATES FROM AIR BAG SAMPLES

APPENDIX C
Mass Loading / Emissions Estimates from Air Bag Samples
Former GM Plant
Wilmington, DE

Date	PID Readings					Laboratory Data				
	Mass Loading Rate		Mass Emissions Rate		Destruction Efficiency	Mass Loading Rate		Mass Emissions Rate		Destruction Efficiency
	(lbs/hr)	(lbs/day)	(lbs/hr)	(lbs/day)	(%)	(lbs/hr)	(lbs/day)	(lbs/hr)	(lbs/day)	(%)
10/5/16	0.53	12.8	0.0026	0.062	99.5%	-	-	-	-	-
10/12/16	0.66	15.9	0.0036	0.086	99.5%	-	-	-	-	-
10/20/16	0.60	14.4	0.033	0.79	94.5%	0.53	12.8	0.029	0.71	94.5%
10/27/16	0.49	11.6	0.0084	0.20	98.3%	-	-	-	-	-
11/4/16	0.54	13.0	0.0080	0.19	98.5%	-	-	-	-	-
11/8/16	0.57	13.6	0.0087	0.21	98.5%	-	-	-	-	-
11/15/16	0.83	20.0	0.052	1.2	93.8%	0.74	17.8	0.046	1.1	93.8%
11/23/16	0.82	19.6	0.023	0.55	97.2%	-	-	-	-	-
12/2/16	1.1	26.8	0.027	0.64	97.6%	-	-	-	-	-
12/9/16	1.1	26.1	0.042	1.0	96.1%	-	-	-	-	-
12/13/16	1.0	24.4	0.079	1.9	92.2%	0.90	21.6	0.064	1.5	92.9%
12/21/16	0.97	23.2	0.069	1.7	92.8%	-	-	-	-	-
12/30/16	1.1	25.7	0.054	1.3	95.0%	-	-	-	-	-

Notes :

PID - photoionization detector.

Bold indicates dates in which air bags were collected for laboratory analysis.

APPENDIX D

AIR BAG ANALYTICAL DATA

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Brightfields, Inc.
801 Industrial St.
Suite 1
Wilmington DE 19801

Report Date: October 25, 2016

Project: Dodson Ave/2734.05.51

Submittal Date: 10/21/2016

Group Number: 1724200

PO Number: 13942

Release Number: 2734.05.51

State of Sample Origin: DE

Client Sample Description

DA-EFF-102016 Grab Air

DA-INF-102016 Grab Air

Lancaster Labs

(LL) #

8658104

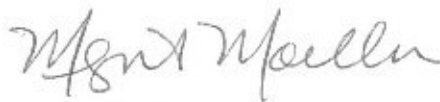
8658105

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>. To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To Brightfields, Inc.
Electronic Copy To Brightfields, Inc.Attn: Kelly Power
Attn: Ken Hannon

Respectfully Submitted,

Megan A. Moeller
Senior Specialist

(717) 556-7261

Sample Description: DA-EFF-102016 Grab Air
Dodson Ave/2734.05.51

LL Sample # AQ 8658104
LL Group # 1724200
Account # 04549

Project Name: Dodson Ave/2734.05.51

Collected: 10/20/2016 08:48 by KW

Brightfields, Inc.

Submitted: 10/21/2016 17:30

801 Industrial St.

Reported: 10/25/2016 14:37

Suite 1

Wilmington DE 19801

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Volatiles in Air		EPA 18 mod/EPA 25 mod	ppm(v)	ppm(v)	
07090	Benzene	71-43-2	N.D.	0.5	1
07090	C2-C4 Hydrocarbons as hexane	n.a.	N.D.	5	1
07090	>C4-C10 Hydrocarbons hexane	n.a.	13	5	1
07090	Ethylbenzene	100-41-4	0.4 J	0.4	1
07090	Methane	74-82-8	190	2	1
07090	Toluene	108-88-3	N.D.	0.8	1
07090	Xylene (total)	1330-20-7	N.D.	0.7	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07090	BTEX/MTBE/Hydrocarbons by GC	EPA 18 mod/EPA 25 mod	1	M1629830AA	10/24/2016 14:42	Alexander D Sechrist	1

Sample Description: DA-INF-102016 Grab Air
Dodson Ave/2734.05.51

LL Sample # AQ 8658105
LL Group # 1724200
Account # 04549

Project Name: Dodson Ave/2734.05.51

Collected: 10/20/2016 08:58 by KW

Brightfields, Inc.

Submitted: 10/21/2016 17:30

801 Industrial St.

Reported: 10/25/2016 14:37

Suite 1

Wilmington DE 19801

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Volatiles in Air		EPA 18 mod/EPA 25 mod	ppm(v)	ppm(v)	
07090	Benzene	71-43-2	1	0.5	1
07090	C2-C4 Hydrocarbons as hexane	n.a.	N.D.	5	1
07090	>C4-C10 Hydrocarbons hexane	n.a.	240	5	1
07090	Ethylbenzene	100-41-4	0.6 J	0.4	1
07090	Methane	74-82-8	200	2	1
07090	Toluene	108-88-3	1	0.8	1
07090	Xylene (total)	1330-20-7	2 J	0.7	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07090	BTEX/MTBE/Hydrocarbons by GC	EPA 18 mod/EPA 25 mod	1	M1629830AA	10/24/2016 15:11	Alexander D Sechrist	1

Quality Control Summary

Client Name: Brightfields, Inc.
Reported: 10/25/2016 14:37

Group Number: 1724200

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL
	ppm (v)	ppm (v)
Batch number: M1629830AA	Sample number(s): 8658104-8658105	
Benzene	N.D.	0.5
C2-C4 Hydrocarbons as hexane	N.D.	5
>C4-C10 Hydrocarbons hexane	N.D.	5
Ethylbenzene	N.D.	0.4
Methane	N.D.	2
Toluene	N.D.	0.8
Xylene (total)	N.D.	0.7

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ppm (v)	ppm (v)	ppm (v)	ppm (v)					
Batch number: M1629830AA	Sample number(s): 8658104-8658105								
Benzene	10	7.91	10	7.58	79	76	71-116	4	30
Ethylbenzene	10	7.58	10	7.11	76	71	59-144	6	30
Toluene	10	9.77	10	9.28	98	93	77-143	5	30
Xylene (total)	30	21.7	30	20.44	72	68	58-148	6	30

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.



**Lancaster Laboratories
Environmental**

For Eurofins Lancaster Laboratories Environmental use only

Acct. # 04549 Group # 1724200 Sample # 8658104-5

COC # 513330

[illegible]

Eurofins Lancaster Laboratories Environmental, LLC • 2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300

The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client.

7044 0216

Client: Bright Fields

Delivery and Receipt Information

Delivery Method:	<u>ELLE Courier</u>	Arrival Timestamp:	<u>10/21/2016 17:30</u>
Number of Packages:	<u>1</u>	Number of Projects:	<u>1</u>
State/Province of Origin:	<u>DE</u>		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace $\geq$ 6mm:	N/A
Samples Chilled:	N/A	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	Yes
Samples Intact:	Yes	Air Quality Flow Controllers Present:	No
Missing Samples:	No	Air Quality Returns:	No
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Melvin Sanchez (8943) at 18:46 on 10/21/2016

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
C	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
µg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m3	cubic meter(s)	µL	microliter(s)
		pg/L	picogram/liter
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/L), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Laboratory Data Qualifiers:

- B - Analyte detected in the blank
- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value $\geq$ the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
- P - Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference...

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Brightfields, Inc.
801 Industrial St.
Suite 1
Wilmington DE 19801

Report Date: November 21, 2016

Project: Dodson Ave/2734.05.51

Submittal Date: 11/16/2016

Group Number: 1734256

PO Number: 14006

Release Number: 2734.05.51

State of Sample Origin: DE

Client Sample Description

DA-EFF-111516 Grab Air

DA-INF-111516 Grab Air

Lancaster Labs

(LL) #

8701294

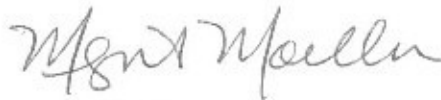
8701295

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>. To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To Brightfields, Inc.
Electronic Copy To Brightfields, Inc.Attn: Kelly Wilkinson
Attn: Ken Hannon

Respectfully Submitted,

Megan A. Moeller
Senior Specialist

(717) 556-7261

Sample Description: DA-EFF-111516 Grab Air
Dodson Ave/2734.05.51

LL Sample # AQ 8701294
LL Group # 1734256
Account # 04549

Project Name: Dodson Ave/2734.05.51

Collected: 11/15/2016 10:56 by KW

Brightfields, Inc.
801 Industrial St.
Suite 1
Wilmington DE 19801

Submitted: 11/16/2016 16:55

Reported: 11/21/2016 14:32

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Volatiles in Air		EPA 18 mod/EPA 25 mod	ppm(v)	ppm(v)	
07090	Benzene	71-43-2	N.D.	0.5	1
07090	C2-C4 Hydrocarbons as hexane	n.a.	N.D.	5	1
07090	>C4-C10 Hydrocarbons hexane	n.a.	20	5	1
07090	Ethylbenzene	100-41-4	N.D.	0.4	1
07090	Methane	74-82-8	160	2	1
07090	Toluene	108-88-3	N.D.	0.8	1
07090	Xylene (total)	1330-20-7	N.D.	0.7	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07090	BTEX/MTBE/Hydrocarbons by GC	EPA 18 mod/EPA 25 mod	1	M1632230AA	11/17/2016 23:41	Alexander D Sechrist	1

Sample Description: DA-INF-111516 Grab Air
Dodson Ave/2734.05.51

LL Sample # AQ 8701295
LL Group # 1734256
Account # 04549

Project Name: Dodson Ave/2734.05.51

Collected: 11/15/2016 11:02 by KW

Brightfields, Inc.
801 Industrial St.
Suite 1
Wilmington DE 19801

Submitted: 11/16/2016 16:55

Reported: 11/21/2016 14:32

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Volatiles in Air		EPA 18 mod/EPA 25 mod	ppm(v)	ppm(v)	
07090	Benzene	71-43-2	3	0.5	1
07090	C2-C4 Hydrocarbons as hexane	n.a.	N.D.	5	1
07090	>C4-C10 Hydrocarbons hexane	n.a.	310	5	1
07090	Ethylbenzene	100-41-4	1	0.4	1
07090	Methane	74-82-8	180	2	1
07090	Toluene	108-88-3	4	0.8	1
07090	Xylene (total)	1330-20-7	5	0.7	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07090	BTEX/MTBE/Hydrocarbons by GC	EPA 18 mod/EPA 25 mod	1	M1632230AA	11/18/2016 00:11	Alexander D Sechrist	1

Quality Control Summary

Client Name: Brightfields, Inc.
Reported: 11/21/2016 14:32

Group Number: 1734256

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL
	ppm (v)	ppm (v)
Batch number: M1632230AA	Sample number(s): 8701294-8701295	
Benzene	N.D.	0.5
C2-C4 Hydrocarbons as hexane	N.D.	5
>C4-C10 Hydrocarbons hexane	N.D.	5
Ethylbenzene	N.D.	0.4
Methane	N.D.	2
Toluene	N.D.	0.8
Xylene (total)	N.D.	0.7

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ppm (v)	ppm (v)	ppm (v)	ppm (v)					
Batch number: M1632230AA	Sample number(s): 8701294-8701295								
Benzene	10	9.99	10	9.91	100	99	71-116	1	30
Ethylbenzene	10	10.05	10	11.18	101	112	59-144	11	30
Toluene	10	12.65	10	12.71	126	127	77-143	1	30
Xylene (total)	30	29.92	30	33.91	100	113	58-148	13	30

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

For Eurofins Lancaster Laboratories Environmental use only

Acct. # 4549 Group # 1734256 Sample # 8701294-95

COC #514951

Eurofins Lancaster Laboratories Environmental, LLC • 2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300

The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client.

retained by the client. 7044 0216
E. Sanchez 11-16-16 1655

Client: BrighFields

1734256

Delivery and Receipt Information

Delivery Method:	<u>ELLE Courier</u>	Arrival Timestamp:	<u>11/16/2016 16:55</u>
Number of Packages:	<u>1</u>	Number of Projects:	<u>1</u>
State/Province of Origin:	<u>DE</u>		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace $\geq$ 6mm:	N/A
Samples Chilled:	N/A	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	Yes
Samples Intact:	Yes	Air Quality Flow Controllers Present:	No
Missing Samples:	No	Air Quality Returns:	No
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Melvin Sanchez (8943) at 17:08 on 11/16/2016

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mg	milligram(s)
C	degrees Celsius	mL	milliliter(s)
cfu	colony forming units	MPN	Most Probable Number
CP Units	cobalt-chloroplatinate units	N.D.	none detected
F	degrees Fahrenheit	ng	nanogram(s)
g	gram(s)	NTU	nephelometric turbidity units
IU	International Units	pg/L	picogram/liter
kg	kilogram(s)	RL	Reporting Limit
L	liter(s)	TNTC	Too Numerous To Count
lb.	pound(s)	µg	microgram(s)
m3	cubic meter(s)	µL	microliter(s)
meq	milliequivalents	umhos/cm	micromhos/cm
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Laboratory Data Qualifiers:

- B - Analyte detected in the blank
- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value $\geq$ the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
- P - Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference...
- W - The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Brightfields, Inc.
801 Industrial St.
Suite 1
Wilmington DE 19801

Report Date: December 28, 2016

Project: Dodson Ave/2734.05.51

Submittal Date: 12/14/2016

Group Number: 1744639

PO Number: 14048

Release Number: 2734.05.51

State of Sample Origin: DE

Client Sample Description

DA-EFF-121316 Grab Air

DA-INF-121316 Grab Air

Lancaster Labs

(LL) #

8745277

8745278

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>. To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To Brightfields, Inc.
Electronic Copy To Brightfields, Inc.

Attn: Kelly Wilkinson
Attn: Ken Hannon

Respectfully Submitted,



Megan A. Moeller
Senior Specialist

(717) 556-7261

Sample Description: DA-EFF-121316 Grab Air
Dodson Ave/2734.05.51

LL Sample # AQ 8745277
LL Group # 1744639
Account # 04549

Project Name: Dodson Ave/2734.05.51

Collected: 12/13/2016 12:24 by KW

Brightfields, Inc.

801 Industrial St.

Submitted: 12/14/2016 17:55

Suite 1

Reported: 12/28/2016 14:02

Wilmington DE 19801

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Volatiles in Air		EPA 18 mod/EPA 25 mod	ppm(v)	ppm(v)	
07090	Benzene	71-43-2	N.D.	0.5	1
07090	C2-C4 Hydrocarbons as hexane	n.a.	5 J	5	1
07090	>C4-C10 Hydrocarbons hexane	n.a.	22	5	1
07090	Ethylbenzene	100-41-4	N.D.	0.4	1
07090	Methane	74-82-8	280	2	1
07090	Toluene	108-88-3	N.D.	0.8	1
07090	Xylene (total)	1330-20-7	N.D.	0.7	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07090	BTEX/MTBE/Hydrocarbons by GC	EPA 18 mod/EPA 25 mod	1	M1635130AA	12/16/2016 18:23	Alexander D Sechrist	1

Sample Description: DA-INF-121316 Grab Air
Dodson Ave/2734.05.51

LL Sample # AQ 8745278
LL Group # 1744639
Account # 04549

Project Name: Dodson Ave/2734.05.51

Collected: 12/13/2016 12:30 by KW

Brightfields, Inc.

801 Industrial St.

Submitted: 12/14/2016 17:55

Suite 1

Reported: 12/28/2016 14:02

Wilmington DE 19801

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
Volatiles in Air		EPA 18 mod/EPA 25 mod	ppm(v)	ppm(v)	
07090	Benzene	71-43-2	2	0.5	1
07090	C2-C4 Hydrocarbons as hexane	n.a.	6 J	5	1
07090	>C4-C10 Hydrocarbons hexane	n.a.	330	5	1
07090	Ethylbenzene	100-41-4	1	0.4	1
07090	Methane	74-82-8	270	2	1
07090	Toluene	108-88-3	4	0.8	1
07090	Xylene (total)	1330-20-7	4	0.7	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
07090	BTEX/MTBE/Hydrocarbons by GC	EPA 18 mod/EPA 25 mod	1	M1635130AA	12/16/2016 18:51	Alexander D Sechrist	1

Quality Control Summary

Client Name: Brightfields, Inc.
Reported: 12/28/2016 14:02

Group Number: 1744639

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL
	ppm (v)	ppm (v)
Batch number: M1635130AA	Sample number(s): 8745277-8745278	
Benzene	N.D.	0.5
C2-C4 Hydrocarbons as hexane	N.D.	5
>C4-C10 Hydrocarbons hexane	N.D.	5
Ethylbenzene	N.D.	0.4
Methane	N.D.	2
Toluene	N.D.	0.8
Xylene (total)	N.D.	0.7

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ppm (v)	ppm (v)	ppm (v)	ppm (v)					
Batch number: M1635130AA	Sample number(s): 8745277-8745278								
Benzene	10	8.79	10	9.78	88	98	71-116	11	30
Ethylbenzene	10	7.97	10	10.44	80	104	59-144	27	30
Toluene	10	10.82	10	12.85	108	129	77-143	17	30
Xylene (total)	30	23.29	30	31.96	78	107	58-148	31*	30

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Acct. #

4549

Group #

1744e39

9 Sample # 8745277-78

COC #517159

Page 5 of 7

Client: Brightfields

Delivery and Receipt Information

Delivery Method:	<u>ELLE Courier</u>	Arrival Timestamp:	<u>12/14/2016 17:55</u>
Number of Packages:	<u>1</u>	Number of Projects:	<u>1</u>
State/Province of Origin:	<u>DE</u>		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace $\geq$ 6mm:	N/A
Samples Chilled:	N/A	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	Yes
Samples Intact:	Yes	Air Quality Flow Controllers Present:	No
Missing Samples:	No	Air Quality Returns:	No
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Melvin Sanchez (8943) at 18:18 on 12/14/2016

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mg	milligram(s)
C	degrees Celsius	mL	milliliter(s)
cfu	colony forming units	MPN	Most Probable Number
CP Units	cobalt-chloroplatinate units	N.D.	none detected
F	degrees Fahrenheit	ng	nanogram(s)
g	gram(s)	NTU	nephelometric turbidity units
IU	International Units	pg/L	picogram/liter
kg	kilogram(s)	RL	Reporting Limit
L	liter(s)	TNTC	Too Numerous To Count
lb.	pound(s)	µg	microgram(s)
m3	cubic meter(s)	µL	microliter(s)
meq	milliequivalents	umhos/cm	micromhos/cm
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Laboratory Data Qualifiers:

- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value $\geq$ the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
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- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference...
- W - The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

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Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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