

AIR CP_102610102_CP_20160523_INVESTIGATION_1336503_
Texas Commission on Environmental Quality
Investigation Report

The TCEQ is committed to accessibility. If you need assistance in accessing this document, please contact oce@tceq.texas.gov

Customer: Blue Ridge Landfill TX, LP
Customer Number: CN602820599

Regulated Entity Name: BLUE RIDGE LANDFILL

Regulated Entity Number: RN102610102

Investigation # 1336503

Investigator: GABRIELLE LAMOREAUX

Conducted: 05/23/2016 -- 05/23/2016

Program(s): AIR OPERATING PERMITS

Investigation Type: Site Assessment

Additional ID(s): FG0536E
1472

Address: 2200 FM 521 RD,
FRESNO, TX , 77545

Incident Numbers

Site Classification MAJOR SOURCE

NAIC Code: 562212

SIC Code: 1521

SIC Code: 4953

Location: LOCATED ON 2200 FM 521

Local Unit: REGION 12 - HOUSTON

Activity Type(s): FIAIRODOR - AIR FIAIRODOR - FOC
INV ODOR SURVEY

Principal(s):

Role	Name
RESPONDENT	BLUE RIDGE LANDFILL TX LP

Contact(s):

Role	Title	Name	Phone
REGULATED ENTITY CONTACT	LANDFILL OPERATION'S MANAGER	MR MATT MONTAGNA	Cell (832) 347-9496 Fax (281) 835-6146 Office (281) 668-9739
REGULATED ENTITY CONTACT	ENVIRONMENTAL MANAGER	MR BURGESS STENGL	Office (713) 676-7669 Cell (713) 851-0506

Other Staff Member(s):

Role	Name
Investigator	JUSTIN MAYWORN
QA Reviewer	CORBETT BRINLY
Supervisor	CORBETT BRINLY

Associated Check List

<u>Checklist Name</u>	<u>Unit Name</u>
AIR FOCUSED INVESTIGATION - ODOR SURVEY	site wide
AIR INVESTIGATION - EQUIPMENT	site wide
MONITORING AND SAMPLING revised 06/2013	

Investigation Comments:

INTRODUCTION/ INVESTIGATION SUMMARY

Introduction

On May 23, 2016, Ms. Gabrielle Lamoreaux and Mr. Justin Mayworn of the Texas Commission on Environmental Quality (TCEQ) Houston Region Office conducted a focused odor survey investigation in the Shadow Creek Ranch Subdivision, in Pearland, and in Fort Bend, Brazoria, and Harris counties in the vicinity of Shadow Creek Ranch. The purpose of this investigation (Investigation Typecode FI AIR ODOR) was to survey the area for odor sources. The TCEQ investigators conducted odor surveys from May 23, 2016 through May 26, 2016.

Investigation Narrative

The investigation took place on May 23, 2016. The surrounding land use is a mix of residential, industrial, and commercial areas. The terrain is flat with sporadic forest. Meteorological conditions were as follows: Cloud Cover: Partly Cloudy; Temperature: 70° Fahrenheit; Wind Direction: East; Wind Speed: Approximately 0.0 miles per hour; Precipitation: 0.0 inches; Source of Meteorological Conditions: Weather Underground (KAXH). Wind data for each odor log was collected from the City of Pearland's water treatment plant.

The investigators arrived at Shadow Creek Ranch Subdivision at 0006 and surveyed the western side of the subdivision which is adjacent to a landfill (See attachment 1 – Map 1). No odors were detected. The investigators left the subdivision at 0050.

The investigators arrived at Green Valley Estates at 0055 and surveyed the area (See attachment 1- Map 2). No odors were detected. The investigators left the area at 0110.

The investigators arrived at West Drive at 0113 and surveyed the area along West Drive and Bluebonnet Drive (See attachment 1 – Map 3). A very light oil field odor was detected for 10 seconds followed by a very light soap odor that lasted only a few seconds. No other odors were detected. The investigators left the area at 0118.

The investigators arrived at the entrance to the Greater Houston Gun Club at 0122. The investigators detected a light to very light landfill gas odor. The landfill gas odor is similar to a petrochemical odor. The investigators conducted a 20 minute odor survey (See attachment 1 - Map 4; attachment 2 - Log 1). The strongest one minute odor intensity was moderate and the 10 minute weighted average intensity was light. During the odor survey, the wind speed was approximately 3 miles per hour and wind direction was east-southeast (See attachment 3). The survey was conducted approximately 6,000 feet northwest of Blue Ridge Landfill, which is the closest upwind potential source. The investigators left at 0147.

The investigators drove south on Alameda Road from Farm to Market (FM) 2234 Road to Broadway at 0155. A few whiffs of a light gas odor were detected. No other odors were detected. The investigators left Alameda Road at 0158.

The investigators arrived at Food Store parking lot at the intersection of FM 2234 Road and Park Manor Drive at 0200. The investigators detected a moderate landfill gas odor. The investigators conducted a 20 minute odor survey (See attachment 1 – Map 4; attachment 2 - Log 2). The strongest one minute odor intensity and the 10 minute weighted average intensity was moderate. During the odor survey, the wind speed was approximately 3 miles per hour and the wind direction was east-southeast (See attachment 3). The survey was conducted approximately 6,000 feet north-northwest of Blue Ridge Landfill, which is the closest upwind source. The investigators also detected whiffs of a sweet floral odor. The investigators left at 0223.

The investigators arrived at Reflection Bay Wastewater Treatment Plant at 0242. No odors were detected. The investigators left the site at 0243.

The investigators headed south on Trinity Bay Drive at 0244. The investigators continued south on Kingsley Drive to Broadway Street. No odors were detected. The investigators turned onto Broadway Street at 0251.

The investigators arrived at Ginger Cove Lane at 0329 and surveyed the area. No odors were detected. The investigators left the area at 0332.

The investigators arrived at the intersection of Cambridge Shores Lane and Cambridge Shores Court at 0338. The

BLUE RIDGE LANDFILL - FRESNO

5/23/2016 Inv. # - 1336503

Page 3 of 5

investigators conducted a 30 minute odor survey (See attachment 1 – Map 1; attachment 2 – Log 3). During the odor survey, the wind speed was approximately 2 miles per hour and the wind direction was east-southeast (See attachment 3). The survey was conducted approximately 6,000 feet east-northeast of Blue Ridge Landfill. No odors were detected. The investigators left the site at 0412.

The investigators arrived at the Food Store parking lot at the intersection of FM 2234 Road and Park Manor Drive at 0433. The investigators conducted a 30 minute odor survey (See attachment 1 – Map 4; attachment 2 – Log 4). During the odor survey, the wind speed was approximately 3 miles per hour and the wind direction was east-southeast (See attachment 3). The main odor detected was a sweet, floral, honeysuckle odor. The strongest one minute intensity and the 10 minute weighted average for the floral odor was moderate. The survey was conducted approximately 6,000 feet north-northwest of Blue Ridge Landfill, which is the closest upwind source. The investigators left the site at 0505.

The investigators arrived at the Greater Houston Gun Club parking lot at 0506. A strong to very strong landfill gas/ petrochemical odor was detected. The investigators conducted a 60 minute odor survey (See attachment 1 – Map 4; attachment 2 – Log 5). The strongest one minute intensity was very strong for one investigator and strong for the other. For one investigator the strongest 10 minute weighted average intensity was very strong and the 60 minute weighted average intensity was strong. For the other investigator the strongest 10 minute weighted average intensity was strong and the 60 minute weighted average intensity was moderate. At 0531, two 30 minute orifice flow controlled air samples were collected in stainless steel Summa canisters. During the odor survey, the wind speed was between 3 to 6 miles per hour and the wind direction was east-southeast (See attachment 3). The survey was conducted approximately 4,300 feet from Blue Ridge Landfill, which is the closest upwind source. The investigators left the site at 0610.

The investigators used a Multi-RAE gas monitor during the investigation. The Multi-RAE has alarms for high, low, short-term exposure limit (STEL), and the time-weighted average permissible exposure limit (TWA) levels. For H₂S, high level is 20 parts per million (ppm), low level is 10 ppm, STEL is 15 ppm, and TWA is 10 ppm. For VOC, high is 100 ppm, low is 50 ppm, STEL is 25 ppm, and TWA is 10 ppm. None of the alarms went off during the investigation.

Two odors were detected during the odor surveys: the landfill gas and honeysuckle odors. According to the TCEQ Frequency, Intensity, Duration, and Offensiveness (FIDO) chart, the landfill gas odor is characterized as highly offensive. During the 60 minute odor survey, the strongest one minute intensity was very strong for one investigator and strong for the other. For one investigator the strongest 10 minute weighted average intensity was very strong and the 60 minute weighted average intensity was strong. For the other investigator the 10 minute weighted average intensity was strong and the 60 minute weighted average intensity was moderate. The landfill gas odor was constant for the majority of the odor survey, but at the end the intensity varied from moderate to very light. The strongest sweet, floral, honeysuckle odor was moderate for one minute and for 10 minute weighted average. The honeysuckle odor was constant throughout the survey. Mr. Mayworn experienced mild nausea when the landfill gas odor was strong to very strong.

The presence and concentrations of Volatile Organic Compounds (VOCs) were analyzed in the 30 minute orifice flow controlled air samples. The VOCs were either not detected or were detected below their respective short-term air monitoring comparison values. These levels of VOCs are not expected to cause short-term adverse health effects. However, the characteristics of the odor suggest that sulfur-based chemicals may be present. Sulfides cannot be measured from the canister samples.

Exit Interview

An exit interview was not conducted.

GENERAL FACILITY AND PROCESS INFORMATION

Process Description

Blue Ridge Landfill is a municipal solid waste landfill with a landfill gas collection and control system.

BACKGROUND

BLUE RIDGE LANDFILL - FRESNO

5/23/2016 Inv. # - 1336503

Page 4 of 5

Agreed Orders Court Orders, and Other Compliance Agreements

Based on review of CCEDS and the regional office files, there were no agreed orders, court orders, or other compliance agreements related to air quality violations for the site.

Prior Enforcement Issues

Based on a review of CCEDS and the regional office files, no violations related to air quality were issued by the TCEQ to the alleged source during the past five years.

Complaints

Based on a review of CCEDS and regional office records, there have been hundreds of odor complaints received from within the survey area and numerous investigations related to odors. At the time of the review, multiple related odor investigations were being conducted by the Region 12 office.

ADDITIONAL INFORMATION

Conclusions, Recommendations, and Current Enforcement Actions

Two odors were detected throughout the investigation. The Frequency, Intensity, Duration and Offensiveness (FIDO) chart categorizes the landfill gas odor as highly offensive and the sweet, floral, honeysuckle odor could be categorized as not unpleasant. A landfill gas/ petrochemical odor was detected during a 60 minute odor survey. During the survey, the strongest one minute intensity was very strong for one investigator and strong for the other. For one investigator the strongest 10 minute weighted average intensity was very strong and the 60 minute weighted average intensity was strong. For the other investigator the strongest 10 minute weighted average intensity was strong and the 60 minute weighted average intensity was moderate. Based on the odors and weather conditions (See attachment 3), the source of the odors was determined to be Blue Ridge Landfill.

Additional Issues

No additional issues were noted during this investigation.

REPORT ATTACHMENTS

1. Odor Survey Route Maps
2. Investigators' Odor Logs
3. Meteorological Data from City of Pearland

No Violations Associated to this Investigation

Signed


Environmental Investigator

Date

10/19/2016

Signed


Supervisor

Date

10-21-2016

Attachments: (in order of final report submittal)

___ Enforcement Action Request (EAR)

___ Letter to Facility (specify type) : _____

Investigation Report

___ Sample Analysis Results

___ Manifests

___ Notice of Registration

1 Maps, Plans, Sketches

___ Photographs

___ Correspondence from the facility

✓ Other (specify) :

2. Investigators' Odor logs

3. Meteorological Data

Investigation # 1336503

Blue Ridge Landfill

FG-0536-E

CN 602820599

RN 102610102

May 23, 2016

Attachment 1: Odor Survey Route Maps



Shadow Creek Ranch
Yellow line: Survey Route
Yellow dot: Third odor log

Investigation Type: FI AIR ODOR
Air Account NO: PG-0536-E
Attachment: 1
Page: 1 of 4



Green Valley Estates
Yellow line: Survey Route

Investigation Type: FI AIR ODR
Air Account NO: FG-0536-E
Attachment: 1
Page: 2 of 4



Farm to Market Road 2234

Yellow line: Survey Route

Red dot: canister sample

Yellow dots: Odor logs

Investigation Type: FI AIR ODOR

Air Account NO: FG-0536-E

Attachment: 1

Page: 4 of 4



West Drive and Bluebonnet Drive
Yellow line: Survey Route

Investigation Type: FI AIR ODOR
Air Account NO: FG-0536-E
Attachment: 1
Page: 3 of 4

Investigation # 1336503

Blue Ridge Landfill

FG-0536-E

CN 602820599

RN 102610102

May 23, 2016

Attachment 2: Investigators' Odor Logs

Investigator's Odor Intensity Time Log

Date of Investigation: 5/23/2016 Start Time: 1:26am
 Name and Address of Alleged Source: Blue Ridge Landfill
 Investigator's Name: Print: Gabrielle Lamoreaux Sign: [Signature]

Minutes	Odor Intensity VL, L, M, S, VS
1 min	—
2	VL
3	L
4	L
5	VL
6	VL
7	VL
8	—
9	VL
10	L
11	VL
12	—
13	VL
14	—
15	—
16	—
17	VL
18	—
19	—
20	—
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	

Minutes	Odor Intensity VL, L, M, S, VS
31 min	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	Investigation Type: <u>FE AIR ODOR</u>
57	Air Account NO: <u>FG-0536</u>
58	Attachment: <u>2</u>
59	Page: <u>1</u> of <u>10</u>
60	

Offensiveness: Highly ☒ Offensive ☐ Unpleasant ☐ Not Unpleasant ☐
 Dominant Odor Intensity For:

	VS	S	M	L	VL	No Odor
1 Min				<input checked="" type="checkbox"/>		
10 Min					<input checked="" type="checkbox"/>	
1 Hour	NA					

Odor: eei/landfill gas

GPS
 lat. 29° 34' 41.46" N (1:41)
 long. 95° 28' 33.2" W

location
 Gun
 Range
 entrance

wind
 0 mph
 73°F

$$(0 \times 3) + (1 \times 4) + (2 \times 3) = 10$$

$\frac{10}{10} = 1$
 weighted
 average
 intensity
 =
 very
 light

Odor log

1

Investigator's Odor Intensity Time Log

Date of Investigation: 5/23/16 Start Time 0126
 Name and Address of Alleged Source: Blue Ridge
 Investigator's Name: Print: Mayhew Sign: [Signature]

Minutes	Odor Intensity VL, L, M, S, VS
1 min	L
2	L
3	L
4	L
5	L
6	L
7	L
8	L
9	L
10	M
11	M
12	L
13	L
14	L
15	L
16	L
17	L
18	L
19	L
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	

Minutes	Odor Intensity VL, L, M, S, VS
31 min	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	
57	
58	
59	
60	

Investigation Type: FE AIR ODOR
 Air Account NO: FE-0536-E
 Attachment: 2
 Page: 2 of 10

Offensiveness: Highly X Offensive _____ Unpleasant _____ Not Unpleasant _____

Dominant Odor Intensity For:

	VS	S	M	L	VL	No Odor
1 Min			✓			
10 Min				✓		
1 Hour	NA					

Landfill Gas

no odor light moderate
 $(0 \times 2) + (2 \times 6) + (3 \times 2) = 18$

$\frac{18}{10} = 1.8$

weighted average intensity for 10 min is light

weighted average

Investigator's Odor Intensity Time Log

Odor log # 2A

Date of Investigation: 5/23/2016 Start Time 2:01

Name and Address of Alleged Source: Blue Ridge Landfill

Investigator's Name: Print: Gabrielle Lamoreaux

Sign: [Signature]

Minutes	Odor Intensity VL, L, M, S, VS
1 min	M
2	M
3	M
4	M
5	L
6	M
7	M
8	M
9	VL
10	VL
11	—
12	VL
13	—
14	—
15	VL
16	—
17	—
18	—
19	—
20	—
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	

Minutes	Odor Intensity VL, L, M, S, VS
31 min	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	
57	
58	
59	
60	

Ford Store
Parking
lot at
intersection
of
McHard
Rd &
Park
Manor
Dr.

Wind:
strong
west
0 mph
74.29
getting
whiffs
of
honey
suckle

Investigation Type: FI AIR ODOR
Air Account NO: FG-0536-E
Attachment: 2
Page: 3 of 10

Offensiveness: Highly ☒ Offensive ☐ Unpleasant ☐ Not Unpleasant ☐

Dominant Odor Intensity For:

	VS	S	M	L	VL	No Odor
1 Min			✓			
10 Min			✓			
1 Hour	N/A					

Odor: Landfill gas

GPS: 29°34'52.19"N
95°27'43.56"W
(2.13)

$$\frac{(1 \times 2) + (2 \times 1) + (3 \times 7)}{10} = 2.5$$

Weighted
average
intensity
is
Moderate

weighted
average

(23)

Investigator's Odor Intensity Time Log

Date of Investigation: 5/23/16 Start Time 0201
Name and Address of Alleged Source: BR Lonsdale
Investigator's Name: Print: Maynor Sign: [Signature]

light
moderate
 $(2 \times 2) + (3 \times 8) = 28$
 $\frac{28}{10} = 2.8$
weighted
average
intensity
is
moderate

Minutes	Odor Intensity VL, L, M, S, VS
1 min	L
2	M
3	M
4	M
5	M
6	M
7	M
8	M
9	M
10	L
11	L
12	L
13	VL
14	VL
15	VL
16	VL
17	VL
18	—
19	—
20	—
21	
22	
23	
24	
25	
26	Investigation Type
27	Air Account NO
28	Attachment
29	Page
30	

Minutes	Odor Intensity VL, L, M, S, VS
31 min	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	Investigation Type: <u>FI AIR ODOR</u>
57	Air Account NO: <u>FG-0536-E</u>
58	Attachment: <u>2</u>
59	Page: <u>4</u> of <u>10</u>
60	

Offensiveness: Highly X Offensive _____ Unpleasant _____ Not Unpleasant _____

Dominant Odor Intensity For:

	VS	S	M	L	VL	No Odor
1 Min			✓			
10 Min			✓			
1 Hour	NA					

Landfill Gas, honeysuckle

Intersection of McHard &
Rave Manor Dr

Investigator's Odor Intensity Time Log

odor log 3A

Date of Investigation: 5/23/2016 Start Time 3:39
 Name and Address of Alleged Source: Blue Ridge Landfill
 Investigator's Name: Print: Gabrielle LaMoreaux Sign: [Signature]

Minutes	Odor Intensity VL, L, M, S, VS
40 1 min	
2	
3	
4	
5	
45 6	
7	
8	
9	
50 10	
11	
12	
13	
14	
15	
55 16	
17	
18	
19	
20	
4:05 21	
22	
23	
24	
25	
55 26	
27	
28	
29	
4:09 30	

Wind
Coming
from
N.
0 mph
74°F

Minutes	Odor Intensity VL, L, M, S, VS
31 min	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	
57	
58	
59	
60	

close to
Cambridge
Shores
lane
+
Cambridge
Shores
Court
intersection

MWH
Prel
on

Investigation Type: FE AIR ODOR
 Air Account NO: FG-0536-E
 Attachment: 2
 Page: 5 of 10

Offensiveness: Highly ✓ Offensive _____ Unpleasant _____ Not Unpleasant _____
 Dominant Odor Intensity For:

weighted
average

	VS	S	M	L	VL	No Odor
1 Min						✓
10 Min						✓
1 Hour						✓

★ NO odors
detected

29° 34' 16.661" N
 95° 25' 24.770" W C343

Investigator's Odor Intensity Time Log

Date of Investigation: 5/23/16 Start Time 0339
 Name and Address of Alleged Source: BA Land Hill
 Investigator's Name: Print: Mayworn Sign: [Signature]

Minutes	Odor Intensity VL, L, M, S, VS
1 min	1
2	1
3	1
4	1
5	1
6	1
7	1
8	1
9	1
10	1
11	1
12	1
13	1
14	1
15	1
16	1
17	1
18	1
19	1
20	1
21	1
22	1
23	1
24	1
25	1
26	1
27	1
28	1
29	1
30	1

Minutes	Odor Intensity VL, L, M, S, VS
31 min	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	
57	
58	
59	
60	

Investigation Type: FE AIR ODOA
 Air Account NO: FG-0536-E
 Attachment: 2
 Page: 6 of 10

Offensiveness: Highly _____ Offensive _____ Unpleasant _____ Not Unpleasant _____

weighted
average

Dominant Odor Intensity For:

	VS	S	M	L	VL	No Odor
1 Min						✓
10 Min						✓
1 Hour	NA					

Cambridge Shores Land Cambridge Shores Ct.

Investigator's Odor Intensity Time Log

Date of Investigation: 5/25/16

Start Time

Investigator's Name: Print: Gabrielle

Sign:

Minutes	Odor Intensity VL, L, M, S, VS
31 min	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	
57	Investigation Type
58	Air Account NO:
59	Attachment:
60	Page: 7

Muthi
Pal
on

H =
money
suisse

Air Account NO: FG-0536-E

Attachment: 2

Page: 7 of 10

Dominant-Odor Intensity For:

	VS	S	M	L	VL	No Odor
1 Min					✓	
10 Min						✓
1 Hour	NA					

Landfill gas

Investigator's Odor Intensity Time Log

Date of Investigation: 5/23/16 Start Time 0434
 Name and Address of Alleged Source: BR Landfill
 Investigator's Name: Print: Mayron Sign: [Signature]

Minutes	Odor Intensity VL, L, M, S, VS
1 min	M
2	M
3	M
4	M
5	M
6	M
7	M
8	L
9	M
10	L
11	M
12	L
13	M
14	L
15	M
16	M
17	M
18	M
19	M
20	L
21	L
22	M
23	M
24	M
25	M
26	M
27	M
28	L
29	M
30	M

Minutes	Odor Intensity VL, L, M, S, VS
31 min	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	
57	
58	
59	
60	

Investigation Type: FI AIR ODOR
 Air Account NO: FG-0536-E
 Attachment: 2
 Page: 8 of 10

Offensiveness: Highly Offensive Unpleasant Not Unpleasant
 Dominant Odor Intensity For: weighted average

	VS	S	M	L	VL	No Odor
1 Min			✓			
10 Min			✓			
1 Hour	NA					

Honey subtle smell.

Investigation at McHard & Park Manor Dr.

V/L2
From
East

$$(2 \times 2) + (3 \times 8) = 28$$

$$\frac{28}{10} = 2.8$$

weighted
average
intensity
is
moderate

Odor Log #5A

Investigator's Odor Intensity Time Log

Date of Investigation: 5/23/2016 Start Time 5:08
 Name and Address of Alleged Source: Blue Ridge Landfill
 Investigator's Name: Print: Gabrielle Amoroso Sign: [Signature]

Strong
 Moderate
 Light
 Very Light
 The weighted average intensity for 1 hour is moderate
 $(1 \times 2) + (2 \times 9) + (3 \times 24) + (4 \times 25) = 192$
 $\frac{192}{60} = 3.2$

Strong
 Moderate
 Light
 Very Light
 10 min calc
 $(3 \times 1) + (4 \times 9) = 39$
 $\frac{39}{10} = 3.9$

Minutes	Odor Intensity VL, L, M, S, VS
1 min	S
2	M
3	S
4	S
5	M
6	S
7	M
8	M M
9	M
10	M
11	M
12	M
13	S
14	S
15	S
16	S
17	S
18	M
19	M
20	S
21	S
22	S
23	S
24	M
25	S
26	S
27	S
28	S
29	S
30	M

wind going west
 0 mph
 72°F
 samples taken at 5:31 am
 end at 6:01

Minutes	Odor Intensity VL, L, M, S, VS
31 min	S
32	M
33	S
34	S
35	M
36	S
37	M
38	M
39	M
40	M
41	S
42	M
43	S
44	M
45	M
46	M
47	M
48	L
49	L
50	L
51	M
52	L
53	L
54	L
55	L
56	M
57	L
58	VL
59	VL
60	L

Muti Rae on
 Field Blank
 N1077
 Samples
 N3892
 N1086
 At Gun Range
 left at 6:10 am

Offensiveness: Highly ☒ Offensive ☒ Unpleasant ☐ Not Unpleasant ☐

Dominant Odor Intensity For:

	VS	S	M	L	VL	No Odor
1 Min		✓				
10 Min		✓				
1 Hour			✓			

Investigation Type: FI AIR ODOR

Air Account NO: FG-0586-E

Attachment: 2

Page: 9 of 10

Landfill gas

29° 34' 28.417 N
 95° 27' 56.658 W

Investigator's Odor Intensity Time Log

Date of Investigation: 5/23/16 Start Time 0507
 Name and Address of Alleged Source: Bd Landfill
 Investigator's Name: Print: Maynard Sign: [Signature]

The weighted average intensity for 10 min is 5
 $(5 \times 10) = \frac{50}{10} = 5$
 Very strong
 The weighted average intensity for 1 hour is 3.96
 $(2 \times 2) + (3 \times 7) + (4 \times 18) + (5 \times 27) = 238$
 $\frac{238}{60} \approx 3.96$
 strong

Minutes	Odor Intensity VL, L, M, S, VS
1 min	VS
2	VS
3	VS
4	VS
5	VS
6	VS
7	VS
8	VS
9	VS
10	VS
11	VS
12	VS
13	VS
14	VS
15	S
16	S
17	S
18	VS
19	VS
20	VS
21	S
22	S
23	VS
24	VS
25	S
26	VS
27	VS
28	VS
29	S
30	S

Minutes	Odor Intensity VL, L, M, S, VS
31 min	S
32	S
33	S
34	VS
35	VS
36	VS
37	VS
38	S
39	S
40	S
41	M
42	M
43	M
44	S
45	S
46	VS
47	M
48	M
49	VL
50	VL
51	M
52	S
53	S
54	L
55	L
56	VL
57	VL
58	VL
59	VL
60	M

Investigation Type: FI AIR ODOR
 Air Account NO: FG-0536-E
 Attachment: 2
 Page: 10 of 10

Offensiveness: Highly X Offensive _____ Unpleasant _____ Not Unpleasant _____
 Dominant Odor Intensity For: weighted average

	VS	S	M	L	VL	No Odor
1 Min	✓					
10 Min	✓					
1 Hour		✓				

Slouting range

Landfill gas

Investigation # 1336503

Blue Ridge Landfill

FG-0536-E

CN 602820599

RN 102610102

May 23, 2016

Attachment 3: Meteorological Data from City of Pearland

Date	Time	Temp Out	Hi Temp	Low Temp	Out Hum	Dew Pt.	Wind Speed	Wind Dir
5/23/2016	12:00 AM	74.9	75	74.9	92	72.4	3 E	
5/23/2016	12:15 AM	74.7	74.9	74.7	92	72.2	3 E	
5/23/2016	12:30 AM	74.5	74.7	74.5	93	72.3	2 E	
5/23/2016	12:45 AM	74.4	74.5	74.3	93	72.2	4 E	
5/23/2016	1:00 AM	74.4	74.4	74.3	92	71.9	5 E	
5/23/2016	1:15 AM	74.3	74.4	74.3	92	71.8	4 E	
5/23/2016	1:30 AM	74.1	74.3	74.1	92	71.6	3 ESE	
5/23/2016	1:45 AM	73.9	74.1	73.9	92	71.4	3 ESE	
5/23/2016	2:00 AM	73.5	73.9	73.5	93	71.4	3 ESE	
5/23/2016	2:15 AM	73.3	73.5	73.3	94	71.5	3 ESE	
5/23/2016	2:30 AM	73.2	73.3	73.2	94	71.4	4 ESE	
5/23/2016	2:45 AM	73.1	73.2	73.1	94	71.3	4 ESE	
5/23/2016	3:00 AM	72.9	73.1	72.9	95	71.4	3 ESE	
5/23/2016	3:15 AM	72.7	72.9	72.7	95	71.2	3 ESE	
5/23/2016	3:30 AM	72.7	72.7	72.6	95	71.2	2 ESE	
5/23/2016	3:45 AM	72.8	72.8	72.7	95	71.3	3 E	
5/23/2016	4:00 AM	72.9	72.9	72.8	95	71.4	2 ESE	
5/23/2016	4:15 AM	72.8	73	72.8	95	71.3	2 ESE	
5/23/2016	4:30 AM	72.8	72.8	72.7	96	71.6	3 ESE	
5/23/2016	4:45 AM	72.7	72.8	72.7	96	71.5	3 ESE	
5/23/2016	5:00 AM	72.6	72.7	72.6	96	71.4	3 E	
5/23/2016	5:15 AM	72.5	72.7	72.5	96	71.3	3 E	
5/23/2016	5:30 AM	72.3	72.5	72.3	96	71.1	4 E	
5/23/2016	5:45 AM	72.5	72.5	72.3	96	71.3	4 ESE	
5/23/2016	6:00 AM	72.7	72.7	72.5	95	71.2	6 ESE	
5/23/2016	6:15 AM	72.7	72.8	72.7	95	71.2	5 ESE	
5/23/2016	6:30 AM	72.6	72.7	72.6	95	71.1	5 ESE	

Investigation Type: FI AIR OPOR

Air Account NO: FG-0536-E

Attachment: 3

Page: 1 of 1