

Bryan W. Shaw, Ph.D., P.E., *Chairman*
Toby Baker, *Commissioner*
Jon Niermann, *Commissioner*
Richard A. Hyde, P.E., *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

August 22, 2017

Mr. Mark Wahlstrom,
Wastewater Treatment Superintendent
Reflection Bay Collection System
3501 E Orange Street
Pearland, Texas 77581

Re: Investigation at:
Reflection Bay Wastewater Treatment Plant Collection System, Biscayne Bay
Boulevard Lift Station (Brazoria County), Texas 77584
Investigation No.: 1429251

Dear Mr. Wahlstrom:

The Texas Commission on Environmental Quality (TCEQ) Houston Region Office conducted a focused odor survey at the above-referenced facility. Ms. Nichole Batista Nunes and Mr. Isaiah Longoria of this office conducted an investigation on July 25, 2017. No violations are being alleged as a result of the investigation.

We appreciate your assistance in this matter and your interest in protecting the quality of our environment. If you have any questions concerning these findings, or if we can be of further assistance, please contact Ms. Nichole Batista Nunes at this office (713) 767-3638.

Sincerely,

A handwritten signature in dark ink, appearing to read "Westin Massey".

Westin Massey, Team Leader
Water Section
Houston Region Office

WM/NBN/dgl

MWD_WQ0010134008_CO_20170725_FINAL REPORT
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: City of Pearland
Customer Number: CN600595052

Regulated Entity Name: CITY OF PEARLAND

Regulated Entity Number: RN101920007

Investigation # 1429251

Investigator: NICHOLE NUNES

Conducted: 07/25/2017 -- 07/25/2017

Program(s): WASTEWATER

Investigation Type: Compliance Investigation

Additional ID(s): TX0117501
WQ0010134008

Address: ,
, ,

Incident Numbers

Site Classification DOMESTIC MAJOR

NAIC Code: 221320

SIC Code: 4952

Location: LOCATED APPROX 1000 FT N OF
MCHARD RD APPROX 1.25 MI W OF THE INTERX
OF MCHARD RD AND SH 288 IN BRAZORIA
COUNTY

Local Unit: REGION 12 - HOUSTON

Activity Type(s): WWLSTMAJFC - Lift Station
Maintenance/Major Focused
WWRECONMAJ - WW Major Recon

Principal(s):

Role	Name
RESPONDENT	CITY OF PEARLAND

Contact(s):

Role	Title	Name	Phone
REGULATED ENTITY MAIL CONTACT	MAYOR	HON TOM REED	Work (281) 652-1600
REGULATED ENTITY CONTACT	WASTEWATER TREATMENT SUPERINTENDENT	MR MARK WAHLSTROM	Work (281) 652-1778 Cell (713) 775-4082

Other Staff Member(s):

Role	Name
Investigator	ISALAH LONGORIA
QA Reviewer	ISALAH LONGORIA
Supervisor	WESTIN MASSEY

Associated Check List

Checklist Name

WQ FOCUSED INVESTIGATION - INTERIM -
LIFT STATION - revised 10/17/2011

Unit Name

Lift Station

Investigation Comments:

INTRODUCTION

On July 25, 2017, investigators Mrs. Nichole Batista Nunes and Mr. Isaiah Longoria of the Texas Commission on Environmental Quality (TCEQ) Houston Region Office conducted a focused odor survey investigation in the City of Pearland, and in Fort Bend, Brazoria, and Harris counties in the west Pearland area. The purpose of this investigation was to conduct odor surveys to determine if odors were present in the area and identify potential sources.

INVESTIGATION

The investigation took place on July 25, 2017. 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: Cloudy; Temperature: 86-90° Fahrenheit; Wind Direction: South-Southeast; Wind Speed: Approximately 6-8 miles per hour; Precipitation: 0.0 inches; Source of Meteorological Conditions: Weather Underground (KAXH) (Attachment One). The primary odor survey activities were conducted in zip code 77584, some portions of the odor survey activities may have also included portions of zip codes 77053, 77545, 77583 and 77047. A summary for all survey locations can be found in attachment one.

The investigators arrived at Sidonie Drive and McHard Road at 9:20 am and surveyed the northern side of the Blue Ridge Landfill. The investigators conducted a 15 minute odor survey. No unusual or objectionable odors were detected (Attachment Two). The investigators left at 9:35 am.

The investigators arrived at Blue Bonnet Drive at 9:52 am and surveyed the northern side of the Akzo Noble Surface Chemistry. The investigators conducted a 15 minute odor survey. No unusual or objectionable odors were detected. The investigators detected no odors (Attachment Three). The investigators left the area at 10:07 am.

The investigators arrived at Feld Drive at 10:21 am and surveyed the northeastern side of the Lonestar Recycling and Disposal Facility. The investigators conducted a 15 minute odor survey. No unusual or objectionable odors were detected (Attachment Four). The investigators left the area at 11:01 am.

The investigators arrived at the intersection at Biscayne Bay Drive at 10:53 am and surveyed the northeastern side of the Biscayne Bay lift station. The investigators conducted a 20 minute odor survey. The investigators detected a very light to light unpleasant odor (Attachment Five). At the time of the odor survey, Environmental Improvements (contractors for the Reflection Bay Wastewater Treatment Facility's collection system) was fixing the lift station's on site deodorizing station. Environmental Improvements stated that the motor on the deodorizing station would be fixed within the hour. The investigators left at 11:23 am.

The investigators arrived at FM 521 at 11:26 am and surveyed the northwestern side of the Energy Transfer Pipeline Odorizing Station. The investigators conducted a 15 minute odor survey. No unusual or objectionable odors were detected (Attachment Six).

The investigators left the area at 11:31am.

The investigators arrived at Reflection Bay Drive at 11:56 am and surveyed the northwestern side of Reflection Bay Wastewater Treatment Plant (WWTP). The investigators conducted a 15 minute odor survey. No unusual or objectionable odors were detected (Attachment Seven). While onsite, the investigators observed the outfall for the WWTP. The outfall appeared to be clear, and aquatic life and water fowl were observed near the area.

The investigators arrived at the intersection of North Spectrum Boulevard and Hopper Road at 12:26 pm and surveyed the northern side of Syntech Chemicals and Brenntag Southwest. The investigators conducted a 37 minute odor survey. The investigators detected a light fishy amine odor intermittently (Attachment Eight). The investigators conducted an onsite survey at Syntech Chemicals. Although odors were determined to be coming from Syntech Chemicals, all processes appeared to be functioning normally. The investigators left the area at 1:15 pm.

An additional odor survey was completed onsite at Brenntag Southwest to determine if odors were emanating from the facility. No odors were detected onsite at the Brenntag Southwest facility .

Immediately after completion of the odor survey, investigators returned to the lift station on Biscayne Bay to verify the deodorizing station was working. It was functioning during the second visit and no odors were detected.

CONCLUSION

Two odors were detected during the odor surveys: a wastewater-related odor, and a sweet, fishy odor; emanating from the lift station located on Biscayne Bay, and from the Syntech Chemicals facility, respectively. According to the TCEQ Frequency, Intensity, Duration, and Offensiveness (FIDO) chart (Attachment Nine), the wastewater related odor is characterized as unpleasant . The intensity of odors emanating from the lift station varied from non-detectable to light . The intensity of odors emanating from Syntech Chemicals varied from non-detectable to light but is consider to be a not unpleasant odor.

ADDITIONAL INFORMATION

The Frequency, Intensity, Duration and Offensiveness (FIDO) chart categorizes the wastewater odor as unpleasant and the sweet, fishy odor as not unpleasant. In order to constitute a nuisance, a highly offensive odor has to last one hour with a very strong intensity as a single occurrence. An unpleasant odor has to last more than four hours on single occurrence to constitute a nuisance. The investigators documented an unpleasant very light odor present for 20 minutes from the lift station on Biscayne Bay.

COMPLAINTS

Based on a review of CCEDS and regional office files, 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 investigations were being conducted by the Region 12 Office.

ADDITIONAL ISSUES

No additional issues were noted during this investigation.

No Violations Associated to this Investigation

Signed



Environmental Investigator

Date

8/21/17

Signed



Supervisor

Date

8-21-17

Attachments: (in order of final report submittal)

___ Enforcement Action Request (EAR)

☒ Letter to Facility (specify type) : OC

___ Investigation Report

___ Sample Analysis Results

___ Manifests

___ Notice of Registration

___ Maps, Plans, Sketches

___ Photographs

___ Correspondence from the facility

☒ Other (specify) :

1. Odor Survey Summary and Meteorological Data

2. Investigators' Odor Logs and Location Maps for Survey Point 1

3. Investigators' Odor Logs and Location Maps for Survey Point 2

4. Investigators' Odor Logs and Location Maps for Survey Point 3

5. Investigators' Odor Logs and Location Maps for Survey Point 4

6. Investigators' Odor Logs and Location Maps for Survey Point 5

7. Investigators' Odor Logs and Location Maps for Survey Point 6

8. Investigators' Odor Logs and Location Maps for Survey Point 7

9. TCEQ Frequency, Intensity, Duration, and Offensiveness (FIDO) chart

Attachment 1

GFS Forecast for KHOU

Time zone: CST

Day	25-Jul									
Hour	MID	3a	6a	9a	12p	3p	6p	9p		
Temp	77	77	77	83	88	92	87	80		
Wind	7	4	2	4	7	9	9	7		
Dir										
Skies										
Precip	0	0	0	0	0	0	0	0		
RH	87	89	91	81	68	59	73	86		
Tmax	86	77	78	83	88	92	92	86		
Tmin	77	77	77	77	77	88	86	80		

RUN TIME: 07/24/2017 06Z

Houston- Houston Hobby Airport, TX, United

States

18	Je 07/25 00	86°	92°	86°	70°	SSW 9	SSW 18	SSW 18	590	-6°	21°	25°	1014	81%	3°	30	25	5
21	Je 07/25 03	79°	86°	79°	69°	S 7	SSW 22	SSW 18	591	-6°	22°	26°	1015	76%	-2°	26	26	0
24	Je 07/25 06	77°	86°	77°	69°	S 7	SSW 25	SSW 20	592	-7°	22°	26°	1017	79%	-2°	25	26	-1
27	Je 07/25 09	77°	77°	77°	70°	S 4	SSW 25	SSW 20	591	-7°	22°	26°	1017	98%	-1°	25	26	-1
30	Je 07/25 12	77°	78°	77°	70°	SSW 2	SSW 22	SSW 20	591	-7°	21°	24°	1017	96%	1°	25	24	1
33	Je 07/25 15	83°	83°	77°	72°	S 4	SSW 18	S 20	593	-8°	21°	22°	1019	100%	2°	28	22	6
36	Je 07/25 18	88°	88°	77°	72°	S 7	S 11	S 20	593	-7°	21°	23°	1019	100%	2°	31	23	8
39	Je 07/25 21	92°	92°	88°	71°	S 9	S 11	S 16	593	-7°	20°	24°	1018	82%	8°	33	24	9

Figure 1. Schematic representation of the experimental design. The subjects were divided into two groups: a control group and an experimental group. The control group received a standard training program, while the experimental group received a training program with a focus on the specific skills required for the task. The results of the training program were compared between the two groups.

1. Characterize the odor to determine which Offensiveness table to use (Not Unpleasant to Highly Offensive)

[illegible]

Attachment 2

Supplemental Investigator's Odor Intensity Time Log

Date of Investigation: 07/24/2017

Start Time: 9:20am

(Sidonie Dr and McHard Rd)

(29.581468, -95.447425)

85°F
0.00 in
78% Hum
6 mph S
cloudy

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

Minutes	Odor Intensity VL, L, M, S, VS
31 min	
32	
33	
34	
35	
36	
37	
38	
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42	
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59	
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Offensiveness: Highly _____ Offensive _____ Unpleasant _____ Not Unpleasant _____

Weighted Average Intensity:

	VS	S	M	L	VL	No Odor
1 Min						
10 Min						✓ 15 mins
1 Hour						

Odor Survey Point 1
07/25/2017
Nichole Batista Nunes and Isaiah Longoria



Attachment 3

Supplemental Investigator's Odor Intensity Time Log

Date of Investigation: 07/24/2017

Start Time:

9:52am

Blue bonnet Dr

(29.588149, -95.433556)

Minutes	Odor Intensity VL, L, M, S, VS
1 min	ND
2	ND
3	ND
4	ND
5	ND
6	ND
7	ND
8	ND
9	ND
10	ND
11	ND
12	ND
13	ND
14	ND
15	ND
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	
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39	
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41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
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52	
53	
54	
55	
56	
57	
58	
59	
60	

85°F
0.00 in
78% Hum
6 mph S
cloudy

Offensiveness: Highly _____ Offensive _____ Unpleasant _____ Not Unpleasant _____

Weighted Average Intensity:

	VS	S	M	L	VL	No Odor
1 Min						
10 Min						
1 Hour						✓ 15 mins

Odor Survey Point 2
07/25/2017
Nichole Batista Nunes and Isaiah Longoria



Attachment 4

Supplemental Investigator's Odor Intensity Time Log

Date of Investigation: 07/24/2017

Start Time: 10:17 am

(29.595126, -95.441751)

Minutes	Odor Intensity VL, L, M, S, VS
1 min	ND
2	ND
3	ND
4	ND
5	ND
6	ND
7	ND
8	ND
9	ND
10	ND
11	ND
12	ND
13	ND
14	ND
15	ND
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	
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42	
43	
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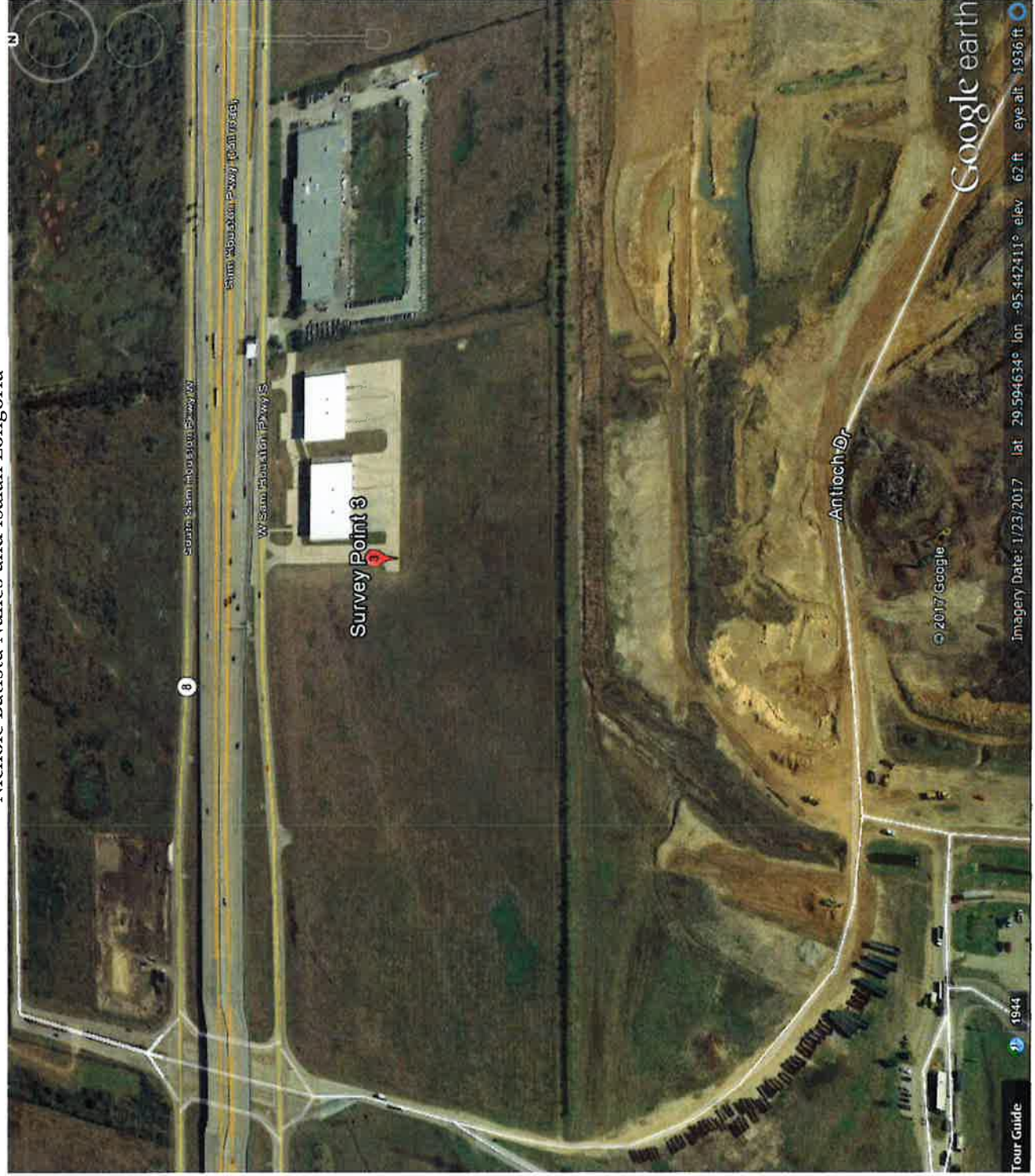
86°F
0.00 in
74% Hum
7 mph SE
cloudy

Offensiveness: Highly _____ Offensive _____ Unpleasant _____ Not Unpleasant _____

Weighted Average Intensity:

	VS	S	M	L	VL	No Odor
1 Min						
10 Min						✓ 15 mins
1 Hour						

Odor Survey Point 3
07/25/2017
Nichole Batista Nunes and Isaiah Longoria



Attachment 5

Supplemental Investigator's Odor Intensity Time Log

Date of Investigation: 7/24/2017
Biscayne Bay Dr

Start Time: 10:53 am
(29.560604, -95.424888)

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

Minutes	Odor Intensity VL, L, M, S, VS
31 min	
32	
33	
34	
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42	
43	
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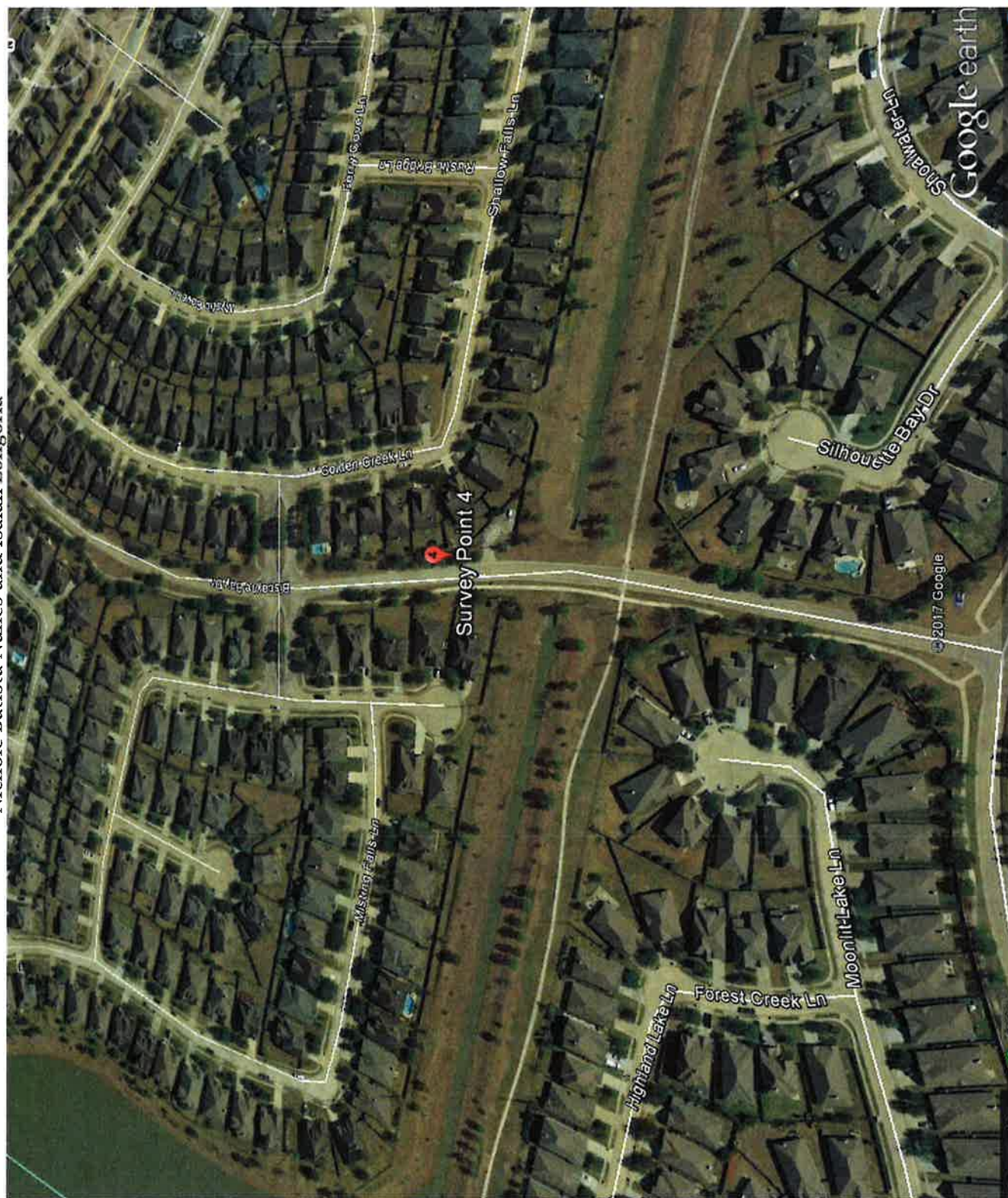
86°F
 0.00 in
 74% Hum
 7 mph SE
 cloudy

Offensiveness: Highly _____ Offensive _____ Unpleasant ☒ Not Unpleasant _____

Weighted Average Intensity:

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

Odor Survey Point 4
07/25/2017
Nichole Batista Nunes and Isaiah Longoria



ATTACHMENT 6

Supplemental Investigator's Odor Intensity Time Log

Date of Investigation: 07/24/2017

Start Time: 11:26am

(29.562743, -95.439842)

Minutes	Odor Intensity VL, L, M, S, VS
1 min	ND
2	ND
3	ND
4	ND
5	ND
6	ND
7	ND
8	ND
9	ND
10	ND
11	ND
12	ND
13	ND
14	ND
15	ND
16	
17	
18	
19	
20	
21	
22	
23	
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Minutes	Odor Intensity VL, L, M, S, VS
31 min	
32	
33	
34	
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42	
43	
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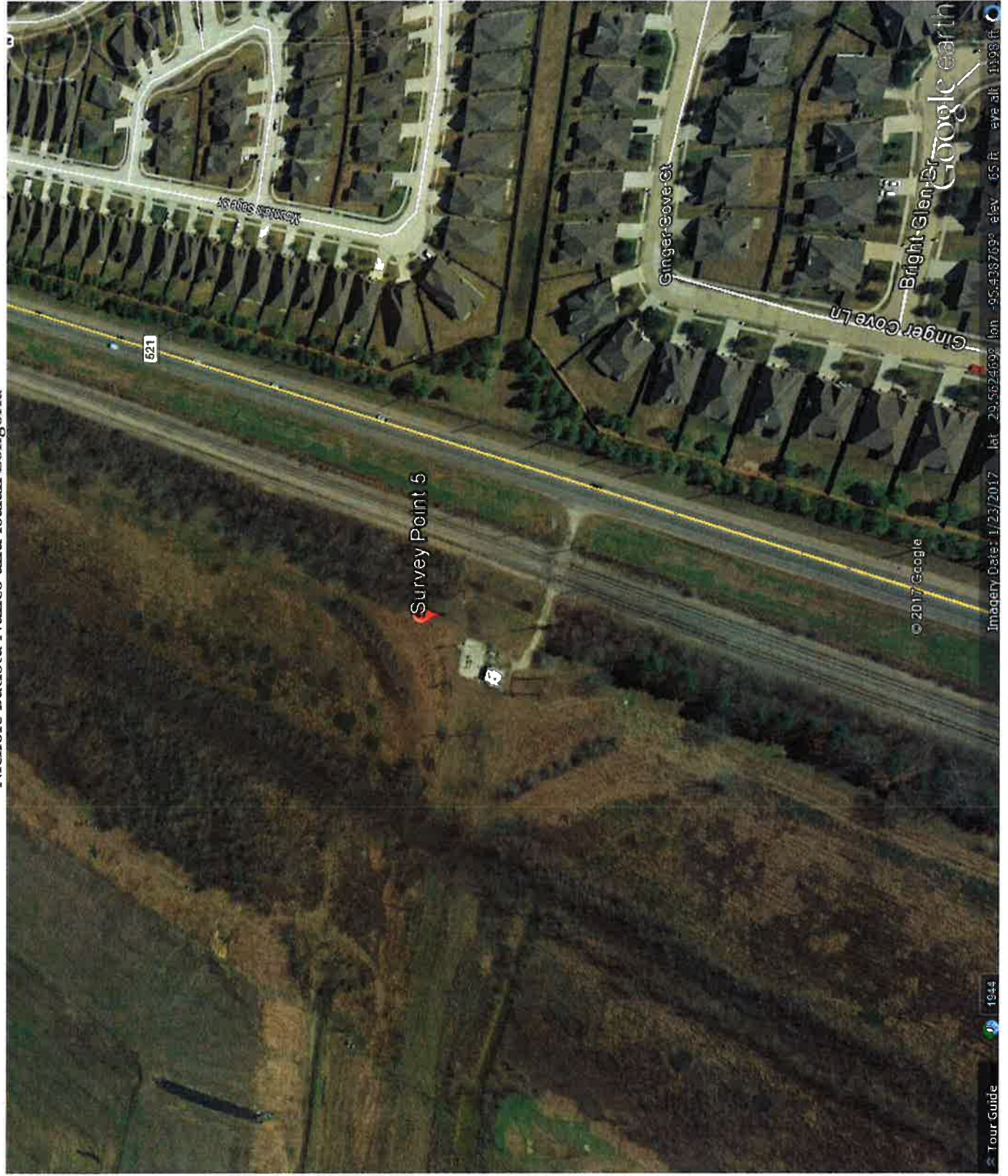
86°F
0.00 in
70% Hum
7 mph SE
cloudy

Offensiveness: Highly _____ Offensive _____ Unpleasant _____ Not Unpleasant _____

Weighted Average Intensity:

	VS	S	M	L	VL	No Odor
1 Min						
10 Min						X 15mins
1 Hour						

Odor Survey Point 5
07/25/2017
Nichole Batista Nunes and Isaiah Longoria



Attachment 7

Supplemental Investigator's Odor Intensity Time Log

Date of Investigation: 07/24/2017

Start Time: 11:56am
(29.580218, -95.409220)

Minutes	Odor Intensity VL, L, M, S, VS
1 min	ND
2	ND
3	ND
4	ND
5	ND
6	ND
7	ND
8	ND
9	ND
10	ND
11	ND
12	ND
13	ND
14	ND
15	ND
16	
17	
18	
19	
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21	
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Minutes	Odor Intensity VL, L, M, S, VS
31 min	
32	
33	
34	
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42	
43	
44	
45	
46	
47	
48	
49	
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86°F
0.00 in
70% Hum
7 mph SE
cloudy

Offensiveness: Highly _____ Offensive _____ Unpleasant _____ Not Unpleasant _____

Weighted Average Intensity:

	VS	S	M	L	VL	No Odor
1 Min						
10 Min						✓ 15 mins
1 Hour						

Odor Survey Point 6
07/25/2017
Nichole Batista Nunes and Isaiah Longoria



Attachment 8

Supplemental Investigator's Odor Intensity Time Log

Date of Investigation: 7/24/2017
(N. spectrum Blvd & Hepper)

Start Time: 12:26 pm
(29.592103, -95.404709)

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

Minutes	Odor Intensity VL, L, M, S, VS
31 min	ND
32	ND
33	VL
34	VL
35	VL
36	ND
37	ND
38	
39	
40	
41	
42	
43	
44	
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59	
60	

Offensiveness: Highly _____ Offensive _____ Unpleasant _____ Not Unpleasant _____

Weighted Average Intensity:

	VS	S	M	L	VL	No Odor
1 Min						
10 Min 32 min					✓	
1 Hour						

Odor Survey Point 7
07/25/2017
Nichole Batista Nunes and Isaiah Longoria



Attachment 9

FIDO CHART

ODORS CHARACTERIZED AS HIGHLY OFFENSIVE

DURATION	FREQUENCY				
	Single Occurrence	Quarterly	Monthly	Weekly	Daily
1 minute	NA	NA	VS	S	M
10 minutes	NA	VS	S	M	L
1 hour	VS	S	M	L	VL
4 hours	S	M	L	VL	VL
12 hours+	M	L	VL	VL	VL

ODORS CHARACTERIZED AS OFFENSIVE

DURATION	FREQUENCY				
	Single Occurrence	Quarterly	Monthly	Weekly	Daily
1 minute	NA	NA	NA	VS	S
10 minutes	NA	NA	VS	S	M
1 hour	NA	VS	S	M	L
4 hours	VS	S	M	L	VL
12 hours+	S	M	L	VL	VL

ODORS CHARACTERIZED AS UNPLEASANT

DURATION	FREQUENCY				
	Single Occurrence	Quarterly	Monthly	Weekly	Daily
1 minute	NA	NA	NA	NA	VS
10 minutes	NA	NA	NA	VS	S
1 hour	NA	NA	VS	S	M
4 hours	NA	VS	S	M	L
12 hours+	VS	S	M	L	VL

ODORS CHARACTERIZED AS NOT UNPLEASANT

DURATION	FREQUENCY				
	Single Occurrence	Quarterly	Monthly	Weekly	Daily
1 minute	NA	NA	NA	NA	NA
10 minutes	NA	NA	NA	NA	NA
1 hour	NA	NA	NA	NA	VS
4 hours	NA	NA	NA	VS	S
12 hours+	NA	NA	VS	S	M

Intensity Legend
VS
Very Strong
S
Strong
M
Moderate
L
Light
VL
Very Light



February 2015

ODOR CHARACTERIZATION EXAMPLES

The character of an odor is a unique, innate quality of an odor that does not vary with intensity. Under normal circumstances the following types/sources/processes may be characterized as indicated below, however, these examples should only be used as a guide; characterization should be based on the investigator's experience and training.

Highly Offensive

- Blood drying operations
- Sewage treatment primary sludge
- Putrefying animals/fish
- Hide processing
- Rancid grease
- Landfill gas, leachate, sour gas, paper mill black liquor, etc.-H₂S (smells like rotten eggs)
- Mercaptans (natural gas odorant)

Offensive

- Landfill garbage/waste
- Cattle lagoon cleanout
- Confined hog/poultry operations under bmp
- Decaying silage/composting
- Unprocessed rendering plant material and wastewater
- Typical grease trap odor
- Waste burning (rubber, plastic, tires, or other non-wood materials)
- Failing or improperly operated septic systems
- Organic products like auto body paint & styrene¹

Unpleasant

- Well digested or chemically-treated sludge
- Cattle operation under best management practices
- Waste-activated sludge processes
- Water-based painting
- Gasoline, diesel fuel
- Combustion exhaust
- Asphalt odors
- Burned coffee/food
- Brush/wood burning
- Petroleum products
- Ammonia
- Chlorine

Not Unpleasant

- Ketones, esters, alcohols
- Fresh-cut grass or hay
- Normal coffee roasting
- Normal food preparation
- Bakery
- Perfume
- Spice packaging
- Winery

¹At low concentrations, organic products such as auto body paint and styrene used in fiberglass and cultured marble operations would not normally be considered to have offensive odors. However, because of a person's potential physical response to these products at higher concentrations (where most complaints concerning these products occur), we generally consider them to have offensive characteristics.

DETERMINING FREQUENCY/DURATION

You are attempting to determine the frequency and duration that the complainant experiences over time. The frequency and duration observed during a single investigation may not accurately represent what the complainant is experiencing. You may have to use information gathered from multiple investigations (investigator observations as well as any information gathered on plant processes, weather, terrain, or complainant information) to make this determination. Consider the following:

- **Daily:** The odor has been documented during an investigator's odor survey at least three consecutive times in a 14-day rolling period at the complainant's site.
- **Weekly:** The odor has been documented during an investigator's odor survey at least three times at the complainant's site or equal distance in any 30-day period.
- **Monthly:** The odor has been documented during an investigator's odor survey at least two times at the complainant's site or equal distance in any 60-day period.
- **Quarterly:** The odor has been documented during an investigator's odor survey at least two times at the complainant's site or equal distance in any 90-day period.
- **Single Occurrence:** The odor has been documented during an investigator's odor survey at the complainant's site or equal distance.

Plant Processes

- Constant, seasonal, intermittent processes/activities (e.g., reactor top opened)
- Upset conditions, maintenance, startup & shutdown, etc.
- Plant records, sampling data, CEM data, etc.

Complainant Information

- Statements as to frequency and duration
- Odor Logs
- Knowledge of source operations - times, processes
- Other information as provided

Weather

- Wind rose from source to receptor
- Temperature or other meteorological data that could affect intensity or duration.
- Wind speed, day, night, summer, winter
- CAMS Station/NWS/ personal weather meter data

HOW TO USE THE FIDO CHART

Each of the four tables on this FIDO Chart represents a different level of offensiveness (Highly Offensive, Offensive, Unpleasant, and Not Unpleasant). The intensity of the observed odor is documented using the legend on the right side of the chart--with "VS" for Very Strong odors, "S" for Strong, "M" for Moderate, "L" for Light, and "VL" for Very Light. Once the overall frequency and duration have been determined (based on one or more investigations), they are then plotted on the horizontal and vertical axes of the appropriate table. If the odor situation is at least as intense as the colored block in which it is plotted for the corresponding duration and frequency, it is considered a nuisance odor. If the plot falls outside the colored area of the table (NA), the odor does not represent a nuisance.