

CITGO Petroleum Corporation, Lemont Refinery

CITGO Petroleum Corporation, Lemont Refinery

Consent Decree Initial Semi-Annual Report

Reporting Period: July 1, 2018 through December 31, 2018

Attachment 6, Appendix A

Status of Supplemental Environmental Projects

Paragraphs 63.g., 55, Appendix C

<i>SEP</i>	<i>Item</i>	<i>Status</i>
Fence Line Monitoring System	Description	<p>The Fenceline Monitoring System (FLMS) under this Consent Decree consisted expending at least \$650,000 to do the following:</p> <ul style="list-style-type: none"> - A station to monitor meteorological parameters, and - Two stations consisting of a shelter and monitors for benzene, hexane, and hydrogen sulfide monitors ("Tank Farm" and "Mink Farm") - Meet shelter design, station location, and sampler inlet requirements - Use a Data Acquisition System to log numerical data - Apply QA/QC procedures - Post data to a website (http://www.citgorefining.com/lemont/environment) - Conduct Field Investigations based on Screening Conditions detected with the above monitoring equipment. - If necessary, implement corrective actions to address the Screening Condition.
	Status	<p>The above monitoring equipment was installed by January 31, 2017, at a total project cost of \$1,497,883. This does not include ongoing contractor support for data review and analyzer maintenance.</p> <p>The FLMS Plan was submitted to U.S. EPA on May 8, 2017.</p> <p>Validation of Equipment, Field Investigation Development, and Training were completed June 30, 2017.</p> <p>Field Investigations were able to be performed for any Screening Events occurring on or after July 1, 2017.</p> <p>Data was posted to the web-site beginning July 2, 2017.</p> <p>Per paragraph C16, this SEP will be deemed complete two years after Field Investigations were required (<i>i.e.</i> , two years after July 2, 2017, or July 2, 2019).</p>
	Number and dates of Screening Conditions observed during period	One Screening Condition was observed during the reporting period on July 28, 2018

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<i>SEP</i>	<i>Item</i>	<i>Status</i>
Fence Line Monitoring System	<p>Per Paragraph C24.b., For each observed Screening Condition, the following are provided:</p> <ul style="list-style-type: none"> - Detailed summary - Associated Field Investigation - Findings of Compliance Status Determination - Corrective Action - FLMS measurement data - Narrative description of IR Camera gas imaging - Portable PID data - Process and operational data - Actions taken 	<p>See Attachment 6A.1 See Attachment 6A.2 Screening Condition was attributed to a maintenance activity at the Solvent Truck Rack (Unit 338). The rack was idle at the time. Complete the maintenance. Review maintenance procedures.. See Attachment 6A.3. See Attachment 6A.4. See Attachment 6A.2. See Attachment 6A.3. The maintenance was completed the same day as the screening condition was observed. Review maintenance procedures.</p>

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Attachment 6, Appendix A.1
Detailed Summary of Screening Condition
Paragraphs 63.g., 55, Appendix C.24.b.

Date/Time Screening Condition observed	7/28/2018 09:01
Detailed Description	On 7/28/2018, at approximately 9:00 a.m., a Screening Condition was observed at the "Mink Farm" analyzer, when the 60-minute average hexane concentration exceeded 15 ppb, the wind direction was from 230 to 40 degrees azimuth, clockwise, and the direction azimuth was less than 40 degrees.
Associated Field Investigation	See Attachment 6, Appendix A.2.
Findings of Compliance Status Determination	The Field Investigation conducted on 7/29/2018 identified maintenance activities at the Solvent Truck Rack (Unit 338) as the most likely cause of the Screening Condition. Except for maintenance activity, the rack was idle on both 7/28 and 7/29.
Corrective Action	The maintenance activity was completed on the morning of 7/28. Concentrations dropped
FLMS Measurement Data	See Attachment 6, Appendix A.3.
Narrative Description of IR camera gas imaging	See Attachment 6, Appendix A.4.
Portable PID data	See Field Investigation in Attachment 6, Appendix A.2
Process and Operational Data	See Attachment 6, Appendix A.3
Actions taken	<p><u>Saturday 7/28/2018:</u></p> <ul style="list-style-type: none"> - Screening Condition Detected at Mink Farm analyzer. - Wind speed was noted as very low at the time of the condition. <p><u>Sunday 7/29/2018:</u></p> <ul style="list-style-type: none"> - Field Investigation conducted and Infrared Gas Imaging Camera gas imaging conducted - No on-going issues were detected. - No emissions observed during gas imaging - Reviewed prior day's activity at rack - Noted that brief maintenance activities were being conducted on Saturday and were completed then. No ongoing maintenance was occurring on Sunday and no further corrective actions were necessary.

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Attachment 6, Appendix A.2
Field Investigation
Paragraphs 63.g., 55, Appendix C.24.b.

Field Investigation for Screening Event Hexane at Mink Farm 7-28-2018

Screening event is listed below; one hour exceeded the 15ppb 1-hour average limit. The hour of exceedance was 9AM.

				Screening Event			
	60-Minute	60-Minute	60-Minute	Mink Farm	Mink Farm	Tank Farm	Tank Farm
	Wind Speed	Wind Direction	Sigma Theta	60-Minute	60-Minute	60-Minute	60-Minute
				Benzene (ppb)	Hexane (ppb)	Benzene (ppb)	Hexane (ppb)
7/28/18 6:01	0.9	276.6	20.2	ND	ND	Not Relevant Data	Not Relevant Data
7/28/18 7:01	1.0	281.0	18.2	ND	ND	Not Relevant Data	Not Relevant Data
7/28/18 8:01	0.8	328.5	18.9	1.0	10.8	Not Relevant Data	Not Relevant Data
7/28/18 9:01	0.6	249.1	24.7	1.2	21.9	2.3	3.3
7/28/18 10:01	1.2	337.0	53.1	Not Relevant Data	Not Relevant Data	Not Relevant Data	Not Relevant Data
7/28/18 11:01	2.3	291.3	38.0	ND	ND	Not Relevant Data	Not Relevant Data
7/28/18 12:01	2.2	300.1	44.5	Not Relevant Data	Not Relevant Data	Not Relevant Data	Not Relevant Data
7/28/18 13:01	2.5	327.1	38.9	ND	ND	Not Relevant Data	Not Relevant Data
7/28/18 14:01	2.3	291.9	39.4	ND	ND	Not Relevant Data	Not Relevant Data
7/28/18 15:01	1.8	255.9	68.7	Not Relevant Data	Not Relevant Data	Not Relevant Data	Not Relevant Data
7/28/18 16:01	2.3	261.6	33.9	ND	ND	ND	ND
7/28/18 17:01	2.9	263.7	30.2	ND	ND	ND	ND
7/28/18 18:01	3.4	251.4	24.3	ND	ND	1.0	1.5
7/28/18 19:01	3.8	246.6	20.9	ND	ND	ND	1.8

Shift Superintendent made notification 9AM on 7/28/18 that there was an exceedance of this limit. The Field Investigation was delayed until the following morning, based on the following:

- The elevated readings of hexane lasted 1 hour and returned to normal levels when the maintenance activity ceased
- Suspected maintenance activity had been completed
- On-site personnel closely monitored FLMS data to ensure the issue had been mitigated

Based on the wind direction at the time of the spike and the known maintenance activity occurring at the Solvent Truck Rack, the Field Investigation focused on that location.

- Elevated PID readings were found at several components (549 ppb max) and those components were checked for leaks by Method 21.
 - Method 21 monitoring did not discover any leaks above the threshold as defined in the applicable regulations.
 - Reading of 3553 ppm on a heavy liquid component found and attributed to the use of a lubricant (Pb Blaster) in order to operate the valves during the maintenance activity
 - Monitoring captured in LeakDAS
- IR camera scans of the truck rack components were completed.
 - The IR camera did not show any visible emissions.
 - Recordings saved.

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Attachment 6, Appendix A.3.
Screening Event FLMS Data and Process and Operational Data
Paragraphs 63.g., 55, Appendix C.24.b.i., b..iv.

Date/time	Appendix C.24.b.i.							Appendix C.24.b.iv.
	Measurement Data Collected by FLMS							Process and Operational Data
	MET Wind Speed AVG 60MIN	MET Wind Direction AVG 60MIN	MET Sigma Theta AVG 60MIN	MINK FM Benz AVG 60MIN	MINK FM Hex AVG 60MIN	TANK FM Benz AVG 60MIN	TANK FM Hex AVG 60MIN	Solvent Truck Rack throughput bbl
	m/s	degrees	n/a	ppb	ppb	ppb	ppb	
44A-7976A-PV	44A-7977A-PV	44A-7970A-PV	44A-7913A-PV	44A-7914A-PV	44A-7974A-PV	44A-7975A-PV		
7/28/2018 0:01	2.03	312.2	21.6	ND	ND	Not Relevant Data	Not Relevant Data	Idle
7/28/2018 1:01	0.83	282.1	26.1	ND	ND	Not Relevant Data	Not Relevant Data	Idle
7/28/2018 2:01	0.79	248.7	16.6	ND	ND	ND	1.1	Idle
7/28/2018 3:01	0.62	251.7	12.0	ND	ND	1.0	1.7	Idle
7/28/2018 4:01	1.47	246.5	11.3	ND	ND	1.0	2.4	Idle
7/28/2018 5:01	1.17	281.0	16.6	ND	ND	Not Relevant Data	Not Relevant Data	Idle
7/28/2018 6:01	0.92	276.6	20.2	ND	ND	Not Relevant Data	Not Relevant Data	Idle
7/28/2018 7:01	1.04	281.0	18.2	ND	ND	Not Relevant Data	Not Relevant Data	Idle
7/28/2018 8:01	0.85	328.5	18.9	1.0	10.8	Not Relevant Data	Not Relevant Data	Idle, maintenance
7/28/2018 9:01	0.57	249.1	24.7	1.2	21.9	2.3	3.3	Idle, maintenance
7/28/2018 10:01	1.20	337.0	53.1	Not Relevant Data	Not Relevant Data	Not Relevant Data	Not Relevant Data	Idle
7/28/2018 11:01	2.25	291.3	38.0	ND	ND	Not Relevant Data	Not Relevant Data	Idle
7/28/2018 12:01	2.22	300.1	44.5	Not Relevant Data	Not Relevant Data	Not Relevant Data	Not Relevant Data	Idle
7/28/2018 13:01	2.48	327.1	38.9	ND	ND	Not Relevant Data	Not Relevant Data	Idle
7/28/2018 14:01	2.33	291.9	39.4	ND	ND	Not Relevant Data	Not Relevant Data	Idle
7/28/2018 15:01	1.75	255.9	68.7	Not Relevant Data	Not Relevant Data	Not Relevant Data	Not Relevant Data	Idle
7/28/2018 16:01	2.32	261.6	33.9	ND	ND	ND	ND	Idle
7/28/2018 17:01	2.93	263.7	30.2	ND	ND	ND	ND	Idle
7/28/2018 18:01	3.39	251.4	24.3	ND	ND	1.0	1.5	Idle
7/28/2018 19:01	3.83	246.6	20.9	ND	ND	ND	1.8	Idle
7/28/2018 20:01	3.14	248.7	20.9	ND	ND	ND	1.2	Idle
7/28/2018 21:01	2.38	264.9	22.5	ND	ND	1.0	2.0	Idle
7/28/2018 22:01	1.94	263.7	18.1	ND	ND	1.2	2.4	Idle
7/28/2018 23:01	1.22	276.6	22.4	ND	ND	Not Relevant Data	Not Relevant Data	Idle
7/29/2018 0:01	0.29	252.7	15.5	ND	ND	1.3	2.2	Idle
7/29/2018 1:01	0.86	293.9	17.9	ND	ND	Not Relevant Data	Not Relevant Data	Idle
7/29/2018 2:01	0.27	312.2	10.3	ND	ND	Not Relevant Data	Not Relevant Data	Idle
7/29/2018 3:01	0.02	327.0	0.8	ND	ND	Not Relevant Data	Not Relevant Data	Idle
7/29/2018 4:01	0.00	0.0	0.0	ND	ND	Not Relevant Data	Not Relevant Data	Idle
7/29/2018 5:01	0.51	162.1	9.9	Not Relevant Data	Not Relevant Data	Not Relevant Data	Not Relevant Data	Idle
7/29/2018 6:01	1.00	171.0	14.5	Not Relevant Data	Not Relevant Data	ND	1.3	Idle
7/29/2018 7:01	0.48	203.3	15.2	Not Relevant Data	Not Relevant Data	ND	1.0	Idle
7/29/2018 8:01	0.75	207.7	14.8	Not Relevant Data	Not Relevant Data	ND	1.5	Idle
7/29/2018 9:01	0.64	205.7	22.0	Not Relevant Data	Not Relevant Data	ND	2.0	Idle
7/29/2018 10:01	1.04	182.9	44.1	Not Relevant Data	Not Relevant Data	Not Relevant Data	Not Relevant Data	Idle
7/29/2018 11:01	1.58	184.3	52.4	Not Relevant Data	Not Relevant Data	Not Relevant Data	Not Relevant Data	Idle
7/29/2018 12:01	1.72	173.1	28.7	Not Relevant Data	Not Relevant Data	ND	1.0	Idle
7/29/2018 13:01	1.94	175.5	47.7	Not Relevant Data	Not Relevant Data	Not Relevant Data	Not Relevant Data	Idle
7/29/2018 14:01	2.65	188.7	33.4	Not Relevant Data	Not Relevant Data	ND	ND	Idle
7/29/2018 15:01	3.87	196.0	22.4	Not Relevant Data	Not Relevant Data	ND	ND	Idle
7/29/2018 16:01	3.52	189.7	25.5	Not Relevant Data	Not Relevant Data	ND	ND	Idle
7/29/2018 17:01	3.77	188.9	19.7	Not Relevant Data	Not Relevant Data	ND	ND	Idle
7/29/2018 18:01	3.44	171.0	21.1	Not Relevant Data	Not Relevant Data	ND	ND	Idle
7/29/2018 19:01	3.14	187.3	21.1	Not Relevant Data	Not Relevant Data	ND	ND	Idle
7/29/2018 20:01	2.49	171.6	13.4	Not Relevant Data	Not Relevant Data	ND	ND	Idle
7/29/2018 21:01	2.51	166.3	10.7	Not Relevant Data	Not Relevant Data	Not Relevant Data	Not Relevant Data	Idle
7/29/2018 22:01	2.51	166.3	10.7	Not Relevant Data	Not Relevant Data	Not Relevant Data	Not Relevant Data	Idle
7/29/2018 23:01	1.29	187.9	24.1	Not Relevant Data	Not Relevant Data	ND	ND	Idle

"Relevant Data" defined at C.19.a. as:

- Mink Farm: wind direction from 230 to 40 degrees azimuth, clockwise, and direction sigma theta 40 degrees azimuth or less.
- Tank Farm: wind direction from 170 to 275 degrees azimuth, clockwise, and direction sigma theta 40 degrees azimuth or less.

ND = less than 1.0 ppb (minimum range of analyzer)

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Attachment 6, Appendix A.4

Narrative Description of Infrared Gas-Imaging Camera Gas-Imaging

Paragraphs 63.g., 55, Appendix C.24.b.ii.

Narrative Description (C.24.b.ii.1)

Camera operator	Desmond Keller
Date	7/29/2018
Time	10:28
Weather Conditions	Wind: S, 1.7 mph Temperature: 75 °F Relative Humidity: 6% Precipitation: Negligible
Process Units tanks imaged	Unit 338 (Solvent Truck Rack)
Summary of results	No emissions were observed during Infrared (IR) Gas-Imaging Camera gas imaging. As no emissions were observed during the gas imaging, no infrared recordings are included (pursuant to Appendix C.24.b.ii.2)

Field Investigation provided in Attachment 6, Appendix A.2

Infrared Recordings (C.24.b.ii.2)

Per Consent Decree Appendix C, Paragraph C.24.b.ii.2, infrared recordings of any emissions observed during gas imaging conducted pursuant to the Fence Line Monitoring Plan are to be included.

As no emissions were detected at the solvent truck rack by the gas imaging, no recordings are included.

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Attachment 6, Appendix A.5
Portable PID Data
 Paragraphs 63.g., 55, Appendix C.24.b.iii.

Source	Type	Material	Can emit hexane?	PID reading date/time	PID reading (ppb)
Unit 338 Solvent Truck Rack	Components (valves)	lubricant used for maintenance	Possibly >>>	7/29/2018 9:00	549 ppb (max)