WASTE MANAGEMENT

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May 28, 2020

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SUBJECT: Combined Title V Semi-Annual and Partial 8-34 Annual Report 40 CFR 63 Subpart AAAA Semi-Annual Report
Redwood Landfill, Inc.
8950 Redwood Highway, Novato, CA 94948
Facility Number A1179

Dear Sir or Madam:

The Redwood Landfill, Inc. (RLI) is submitting this Combined Title V Semi-Annual and Partial 8-34 Annual Report for the period of November 1, 2019 to April 30, 2020, to the Bay Area Air Quality Management District (BAAQMD) and the United States Environmental Protection Agency (USEPA), Region IX. The Semi-Annual Startup, Shutdown and Malfunction (SSM) Report is also enclosed, as required by 40 Code of Federal Regulations (CFR) Part 63 Subpart AAAA. The Combined Title V Semi-Annual and Partial 8-34 Annual Report satisfies the requirements of the Title V Permit listed in Condition Number 19867 Part 32 and Standard Condition I.F.

Based on information and belief formed after reasonable inquiry, I certify under penalty of law that the statements included in this report are true, accurate, and complete.

Sincerely,
Redwood Landfill, Inc.

Ramin A. Khany

Ramin Khany
District Manager

Attachments:
Combined Title V Semi-Annual and Partial 8-34 Annual Report

Combined Title V Semi-Annual and Partial 8-34 Annual Report

For the Redwood Landfill
8950 Redwood Highway
Novato, California 94948
Facility Number A1179

November 1, 2019 to April 30, 2020

Prepared for
Redwood Landfill, Inc.
8950 Redwood Highway
Novato, CA

For Submittal to:
The Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

The United States Environmental Protection Agency
Region IX
75 Hawthorne Street
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Prepared by:
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8950 Redwood Highway
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1 INTRODUCTION

1.1 Purpose

This document is a Title V Combined Semi-Annual Report and Partial 8-34 Annual Report for Redwood Landfill, Inc. (RLI) pursuant to Title V Permit Standard Condition I.F and Condition Number 19867, Part 32. This Combined Report satisfies the requirements of Bay Area Air Quality Management District's (BAAQMD) Regulation 8, Rule 34, Section 411 and Title 40 Code of Federal Regulations (CFR) Part 60 Subpart WWW (40 CFR §60.757[f]), New Source Performance Standards (NSPS) for municipal solid waste (MSW) landfills, and the RLI Title V Standard Condition I.F. This report covers compliance activities conducted from November 1, 2019 to April 30, 2020. This Combined Report also includes the Semi-Annual Start-up, Shutdown, and Malfunction (SSM) Plan Report activities pursuant to National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 63, Subpart AAAA for Landfills.

Section 2 of this Report contains the elements required to satisfy both BAAQMD Regulation 8-34-411 and 40 CFR §60.757(f).

Section 3 of this Combined Report includes a discussion of the data from the most recent source tests, for the A-51 and A-60 Flares, in compliance with BAAQMD Regulation 8-34-412 and Title V Permit Condition Number 19867, Part 30.

Section 4 and Appendices B, D, and E of this Report contain the Semi-Annual Report of SSM Plan activities.

1.2 Record Keeping and Reporting

Records are maintained and available for inspection in accordance with BAAQMD Regulation 8-34-501.12 and 40 CFR §60.758. The primary location for records storage is Redwood Landfill. Records are maintained onsite at the Landfill for a minimum of five years.

2 SEMI-ANNUAL MONITORING REPORT

In accordance with RLI Title V Permit Standard Conditions I.F and 19867, Part 32; BAAQMD Regulation 8-34-411; and 40 CFR §60.757(f) of the NSPS for landfills, this report is a Title V Combined Semi-Annual Report and Partial 8-34 Annual Report that is required to be submitted by RLI. This Report contains monitoring data for the operation of the gas collection and control system (GCCS). The operational records have been reviewed and summarized. The timeframe included in this Report is November 1, 2019 to April 30, 2020. The following table lists the rules and regulations that are required to be included in this Combined Report:

Table 2-1 Semi-Annual Report Requirements

RULE	REQUIREMENT	LOCATION IN REPORT
8-34-501.1, §60.757(f)(4)	All collection system downtime, including individual well shutdown times and the reason for the shutdown.	Section 2.1, Appendices B & D
8-34-501.2, §60.757(f)(3)	All emission control system downtime and the reason for the shutdown.	Section 2.2, Appendix B
8-34-501.3, 8-34-507, §60.757(f)(1)	Continuous temperature for all operating flares and any enclosed combustor subject to Section 8-34-507.	Section 2.3, Appendices E & F
8-34-501.4, 8-34-505, 8-34-510	Testing performed to satisfy any of the requirements of this rule.	Sections 2.4 & 2.10, Appendices G & I
8-34-501.5	Monthly landfill gas (LFG) flow rates and well concentration readings for facilities subject to 8-34-404.	Sections 2.5 & 2.11, Appendix K
8-34-501.6, 8-34-503, 8-34-506, §60.757(f)(5)	For operations subject to Section 8-34-503 and 8-34-506, records of all monitoring dates, leaks in excess of the limits in Section 8-34-301.2 or 8-34-303 that are discovered by the operator, including the location of the leak, leak concentration in parts per million by volume (ppm_v), date of discovery, the action taken to repair the leak, date of the repair, date of any required re-monitoring, and the re-monitored concentration in ppm_v.	Sections 2.6 & 2.7, Appendix H
8-34-501.7	Annual waste acceptance rate and current amount of waste in-place.	Section 2.8
8-34-501.8	Records of the nature, location, amount, and date of deposition of non-degradable wastes, for any landfill areas excluded from the collection system requirement as documented in the GCCS Design Plan.	Section 2.9
8-34-501.9, 8-34-505, §60.757(f)(1)	For operations subject to Section 8-34-505, records of all monitoring dates and any excesses of the limits stated in Section 8-34-305 that are discovered by the operator, including well identification number, the measured excess, the action taken to repair the excess, and the date of repair.	Section 2.10, Appendices I & J
8-34-501.10, 8-34-508, §60.757(f)(1)	Continuous gas flow rate records for any site subject to Section 8-34-508.	Section 2.11, Appendix K

RULE	REQUIREMENT	LOCATION IN REPORT
8-34-501.11, 8-34-509	For operations subject to Section 8-34-509, records or key emission control system operating parameters.	Section 2.2.2
8-34-501.12	The records required above shall be made available and retained for a period of five years.	Section 1.2
§60.757(f)(2)	Description and duration of all periods when the gas stream is diverted from the control device through a bypass line or the indication of bypass flow as specified under §60.756.	Section 2.2.1
§60.757(f)(6)	The date of installation and the location of each well or collection system expansion added pursuant to paragraphs (a)(3), (b), (c)(4) of §60.755.	Section 2.12
§60.10 (d)(5)(i)	Start-up, Shutdown, Malfunction Events	Section 4, Appendices B, D, and E

2.1 COLLECTION SYSTEM OPERATION [BAAQMD 8-34-501.1& §60.757(f)(4)]

Appendix A contains a map of the GCCS at RLI. Section 2.1.1 includes all collection system downtimes. The information contained in Appendix B, A-51 and A-60 Flares SSM Logs, GCCS Downtime Summary, S-64 and S-65 Landfill Gas Engine SSM logs, and S-71 Gas Treatment System Downtime Log, includes the individual well shutdown times and the reason for each shutdown.

2.1.1 FLARE SYSTEM DOWNTIME

The A-51 Flare commenced operation in June 2005, and the A-60 Flare commenced operation on April 1, 2009. Table 2-2 summarizes the A-51 and A-60 Flares' downtimes for the reporting period.

Table 2-2 A-51 and A-60 Downtimes

Month	A-51 Downtime (Hours)	A-60 Downtime (Hours)
November 2019	720.20	2.00
December 2019	665.67	78.47
January 2020	730.20	14.10
February 2020	696.00	0.00
March 2020	743.00	0.00
April 2020	717.60	1.87
Total Hours:	**4,272.67**	**96.43**

During the period covered in this report, the GCCS was not shut down for more than five days on any one occasion. Appendix B contains the A-51 and A-60 Flare SSM logs, and GCCS Downtime Summary which lists dates, times, and lengths of shutdowns for the reporting period and year-to-date.

2.1.2 LANDFILL GAS ENGINE SYSTEM DOWNTIME

The S-64 and S-65 Landfill Gas Engines (with accompanying S-71 Landfill Gas Treatment System) commenced operation in April 27, 2017. Table 2-3 summarizes the S-64 and S-65 Engines' downtimes for the reporting period.

Table 2-3 S-64 and S-65 Downtimes

Month	S-64 Downtime (Hours)	S-65 Downtime (Hours)
November 2019	13.75	1.83
December 2019	245.08	318.17
January 2020	22.75	37.17
February 2020	43.50	20.92
March 2020	42.17	10.17
April 2020	159.50	26.50
Total Hours:	**526.75**	**414.75**

Appendix B contains the S-64 and S-65 Engine SSM logs, and S-71 Downtime Log which lists dates, times, and lengths of shutdowns for the reporting period.

2.1.3 WELL DISCONNECTION LOG

A Wellfield SSM Log that lists dates, times, and lengths of disconnections for the reporting period is included in Appendix D. In addition, 1 well (out of a possible 5) remains disconnected at the end of the reporting period, pursuant to BAAQMD Regulation 8-32-116.2 (Limited Exemption, Well Raising).

2.2 EMISSION CONTROL DEVICE DOWNTIME [BAAQMD 8-34-501.2 & §60.757(f)(3)]

No bypassing of the control system or emissions of raw LFG occurred. The Flare SSM Logs that include all downtimes and reasons for each shutdown for the A-51 and A-60 Flares are contained in Appendix B. Device downtime is summarized in Table 2-4.

Table 2-4 GCCS Downtime Summary

Total 2019 Downtime:	64.63
November 1, 2019 through April 30, 2020 Downtime:	2.00
January 1, 2020 through April 30, 2020 Total Downtime:	0.50
Total 2020 Downtime:	0.50

2.2.1 LFG BYPASS OPERATIONS (§60.757(f)(2))

Title 40 CFR §60.757(f)(2*)* is not applicable at RLI because no bypass line is installed. LFG cannot be diverted around the control equipment.

2.2.2 KEY EMISSION CONTROL OPERATING PARAMETERS (BAAQMD 8-34-501.11 & 8-34-509)

The A-51 and A-60 Flares are subject to continuous temperature monitoring as required in BAAQMD Regulation 8-34-507 and 40 CFR §60.757(f)(1).

2.3 TEMPERATURE MONITORING RESULTS [(BAAQMD 8-34-501.3, 8-34-507, & §60.757(f)(1)]

The RLI has two flares used to destroy LFG collected by the GCCS (A-51 and A-60). Combustion zone temperatures of the flares are monitored with thermocouples and recorded with Yokogawa DX100 paperless chart recorders. There were no continuous recorder device SSM events during the reporting period. As shown in Appendix F, there were no periods of missing temperature data for the flares during the reporting period.

Title V Permit Condition Number 19867 Part 22 states that the minimum combustion zone temperature shall be equal to the average combustion zone temperature determined during the most recent complying source test minus 50°F, provided that the minimum combustion zone temperature is not less than 1,400°F. Pursuant to Part 22, the following temperature limits applied during the reporting period:

Table 2-5 Applicable Temperature Limits

Device	Test Date	Report Submitted	Average Temperature During Test (°F)	3-hr Minimum Temperature (°F)
A-51	1/30/2019	3/28/2019	1,411	1,400
A-51	1/22/2020	3/16/2020	1,419	1,400
A-60 Zone A	7/25/2019	9/20/2019	1,585	1,535
A-60 Zone B	7/17/2018	9/14/2018	1,605	1,555

The three-hour minimum temperature applies upon submittal of the source test report. Operating records for the flares indicate all flares operated in compliance with the applicable three-hour average minimum temperatures from November 1, 2019 to April 30, 2020.

Pursuant to Title V Permit Condition Number 19867, Part 30g, the annual source test at A-60 may be conducted while A-60 is operating in either zone, provided that each operating zone is tested at least once every five years. The most recent source test for Zone A was completed in July 2019. Zone B was tested in July 2018, meeting the obligation to test each zone every five years.

2.4 MONTHLY COVER INTEGRITY MONITORING [BAAQMD 8-34-501.3, 8-34-507, & §60.757(f)(1)]

The Monthly Cover Integrity Monitoring Reports are included in Appendix G. The cover integrity monitoring was performed on the following dates:

- November 26, 2019
- December 24, 2019
- January 29, 2020
- February 25, 2020
- March 24, 2020
- April 30, 2020

No breaches of cover integrity (e.g., cover cracks or exposed garbage) were found during the reporting period. If areas of concern were observed, repairs were documented as required.

2.5 LESS THAN CONTINUOUS OPERATION (BAAQMD 8-34-501.5)

The RLI does not operate under BAAQMD Regulation 8-34-404 (Less Than Continuous Operation) and therefore is not required to submit monthly LFG flow rates.

2.6 SURFACE EMISSIONS MONITORING [BAAQMD 8-34-501.6, 8-34-506, & §60.757(f)(5)]

Quarterly Surface Emissions Monitoring (SEM), pursuant to BAAQMD Regulation 8-34-506, was conducted during the reporting period. A flame ionization detector (FID) was used during the SEM events to monitor the path along the landfill surface according to the Landfill SEM Map. Any areas suspected of having emission problems by visible observations also were monitored. Immediately prior to both monitoring events, the FID was zeroed and calibrated using zero air and a 500-ppm$_v$ methane calibration gas.

The Fourth Quarter 2019 SEM event was conducted by Roberts Environmental Services (RES) personnel on November 5, 2019. Three exceedances were identified. Corrective action and re-monitoring are described below:

- 10-day re-monitoring was completed on November 14, 2019 with all locations cleared.

- 1-month remonitoring was completed on December 4, 2019. All locations cleared.

The First Quarter 2020 SEM was conducted by RES on January 30, 2020. Two exceedances were identified. Corrective action and re-monitoring are described below:

- 10-day re-monitoring was completed on February 7, 2020. All locations cleared.
- 1-month remonitoring was completed February 27, 2020. All locations cleared.

Per the Compliance Agreement between RLI and BAAQMD, the SEM frequency was increased to bi-monthly. In the First Quarter 2020, the bi-monthly Instantaneous SEM was performed on March 11 and 12, 2020. There were no exceedances of 500-ppm$_v$ methane detected. No re-monitoring was required.

SEM Reports are included in Appendix H.

2.7 COMPONENT LEAK TESTING [BAAQMD 8-34-501.6, 8-34-503)

Quarterly component leak testing, pursuant to BAAQMD Regulation 8-34-503, occurred during the reporting period on the following dates:

Fourth Quarter 2019 – November 5, 2019
First Quarter 2020 – January 30, 2020

No exceedances were identified during either monitoring event. The Component Leak Testing results are included with the SEM reports in Appendix H.

2.8 SOLID WASTE PLACEMENT RECORDS (BAAQMD 8-34-501.7)

The solid waste placement total was calculated for the period of November 1, 2019 to April 30, 2020. The current waste in place figure includes solid waste placed in the landfill through the end of the reporting period. Table 2-6 summarizes the RLI solid waste placement records for the reporting period.

Table 2-6 Solid Waste Placement

Waste Placement (November 1, 2019 to April 30, 2020)	112,109 tons
Current Waste In Place as of May 1, 2020	14.42 million tons

2.9 NON-DEGRADABLE WASTE ACCEPTANCE RECORDS (BAAQMD 8-34-501.8)

RLI does not have non-degradable waste areas that are excluded from the collection system. Therefore, BAAQMD Regulation 8-34-501.8 is not applicable.

2.10 WELLHEAD MONITORING DATA (BAAQMD 8-34-501.4 & 8-34-505)

Wellhead monitoring was performed monthly pursuant to BAAQMD Regulation 8-34-505. The well data for November 1, 2019 to April 30, 2020 are included in Appendix I. Each well was monitored in accordance with the following requirements:

- 8-34-305.1 – Each wellhead shall operate under a vacuum.
- 8-34-305.2 – The LFG temperature in each wellhead shall be less than 55 degrees Celsius (131 °F).
- 8-34-305.4 – The oxygen concentration in each wellhead shall be less than 5 percent by volume.

The wellhead monitoring was performed on the following dates:

- November 5, 6, 7, 11, 12, 15, and 27, 2019
- December 2, 3, 4, 5, 10, 16, 17, 19, 20, 23, and 30, 2019
- January 2, 6, 7, 8, and 14, 2020
- February 5, 6, 11, 12, 13, 14, and 17, 2020
- March 2, 3, 9, 10, 11, and 13, 2020
- April 1, 2, 3, 6, 7, 8, and 9, 2020

WELLHEAD DEVIATIONS [BAAQMD 8-34-501.9 & §60.757(f)(1)]

A total of four (4) deviations from the wellhead standards in 8-34-305 occurred during the reporting period. All exceedances were addressed prior to issuance of this report.

The Wellfield Deviation Log is included in Appendix J.

2.11 GAS FLOW MONITORING RESULTS [BAAQMD 8-34-501.10, 8-34-508 & §60.757(f)(1)]

The LFG flow rates from both the A-51 and A-60 flares are measured with Veris flow meters. The S-64 and S65 LFG engines are measured with ABB flow meters. The flow meters meet the requirements of BAAQMD Regulation 8-34-508 by recording fuel flow at least every 15 minutes.

Appendix K contains a summary of the daily and monthly LFG flow rates and heat input for the flares and engine plant. The A-51 flare is utilized as a backup for the A-60 flares. These flow rates are summarized in Table 2-7:

Table 2-7 Total LFG Flow

Emission Control Device	Total Runtime (hours)	Average Flow Rate (scfm)	Average Methane (%)[1]	Total LFG Flow (scf)	12-Month Total LFG Flow (scf) Corrected to 500 BTU/scf	Max Daily Flow (scf) Corrected to 500 BTU/scf
A-51	95	1,902	50.6	10,879,622	34,287,730	2,961,989
A-60	4,272	1,581	47.3	405,327,784	823,054,029	3,243,391
S-64	3,841	615	47.7	141,688,188	294,968,466	944,944
S-65	3,953	612	47.8	145,133,827	308,309,993	925,070
Total	4,366	2,684	47.5	703,029,421	1,460,620,218	--

[1] Methane content was determined from the 7/17/18, 1/30/19, 7/25/29, and 1/22/20 Source Tests. Heating value of methane used in heat input calculations is 1,013 BTU/scf
scfm = standard cubic feet per minute
scf= standard cubic feet
MMBTU = million British thermal units

Pursuant to Title V Condition Number 19867, Part 20, the total LFG throughput to the either flare did not exceed 4,320,000 scf during any one day. The A-51 and A-60 Flares combined total LFG throughput did not exceed 2,207,520,000 scf during any consecutive 12-month period.

Appendix K contains a summary of the combined daily LFG flow rates for the A-51 and A-60 Flares and the consecutive 12-month summaries.

There were no periods of missing data or chart recorder non-operation for the A-51 and A-60 Flares or the landfill gas engine plant (S-64 and S-65 engines) during the reporting period. The Flare Missing Data Report Forms are included in Appendix F.

2.12 COMPLIANCE WITH §60.757(f)(6)

"The date of installation and the location of each well or collection system expansion added pursuant to (a)(3), (b), (c)(4) of §60.755."

Routine GCCS maintenance occurred during the reporting period. The Wellfield SSM Log is included in Appendix D, Wellfield SSM Log.

Zero (0) wells were added to and four (4) wells were removed from the collection system during the reporting period (November 1, 2019 to April 30, 2020).

As of the end of this reporting period, 115 total collectors (106 vertical wells and 9 horizontal collectors) were in service at RLI. A map of the LFG collection system showing the positioning of all vertical wells, horizontal collectors, and other LFG extraction devices is included in Appendix A.

2.13 COMPLIANCE WITH TITLE V PERMIT CONDITION 13123 (S-34 & S-39)

The S-34 Compost Facility Operations and S-39 Screening Operations were utilized during the reporting period. The total amount of material processed did not exceed 160,368 tons during any consecutive 12-month period during the reporting period of November 1, 2019 to April 30, 2020. Monthly and 12-month rolling throughputs are summarized in Table 2-8.

Table 2-8 Composting and Screening Operations Throughput

Month	Total Throughput (tons)	Rolling 12-Month Throughput (tons)
November-2019	11,607	131,867
December-2019	12,019	132,265
January-2020	11,347	132,537
February-2020	9,866	133,918
March-2020	10,302	134,267
April-2020	12,167	134,412

Pursuant to Title V Permit Condition Number 13123 Part 7, all yard waste material was processed within 72 hours of receipt. In addition, pursuant to Title V Permit Condition Number 13123 Part 8, the plant received no public nuisance notices of violation during the reporting period of November 1, 2019 to April 30, 2020.

2.14 COMPLIANCE WITH TITLE V PERMIT CONDITIONS 14098 AND 16516 (S-55)

Pursuant to Title V Permit Condition Number 14098, the annual gasoline throughput for the S-55 Non-Retail Gasoline Dispensing Facility Number 8573 did not exceed 940,000 gallons in any consecutive 12-month period during the timeframe of this report. Monthly gasoline throughput totals for the reporting period are listed in Table 2-9:

Table 2-9 Unleaded Gasoline Throughput

Month	Total Throughput (gallons)	Rolling 12-Month Fuel Usage (gallons)
November-2019	126	2,590
December-2019	136	2,474
January-2020	69	2,290
February-2020	182	2,219
March-2020	154	2,106
April-2020	100	1,994

Pursuant to Title V Permit Condition Number 16516, the Static Pressure Performance Test (Leak Test) for S-55 was performed on April 8, 2019. S-55 also passed the 2018 Leak Test. The Static Pressure Performance Test results are included in Appendix O.

2.15 COMPLIANCE WITH TITLE V PERMIT CONDITIONS 22820 (S-49)

The permit for S-49 was surrendered to BAAQMD on November 4, 2013. The equipment is on longer on site.

2.16 COMPLIANCE WITH TITLE V PERMIT CONDITION 19865 (S-41)

Pursuant to Title V Permit Condition 19865, the total of waste processed at the S-41 Yard and Green Waste Shredding Operation did not exceed 820 tons per day or 200,000 tons per year. Table 2-10 summarizes the amount of waste processed at S-41 during the reporting period:

Table 2-10 Waste Processed at S-41

Month	Total Throughput (tons)	Rolling 12-Month Throughput (tons)
November-2019	11,607	131,867
December-2019	12,019	132,265
January-2020	11,347	132,537
February-2020	9,866	133,918
March-2020	10,302	134,267
April-2020	12,167	134,412

2.17 COMPLIANCE WITH TITLE V PERMIT CONDITION 19866 (S-42)

The total amount of material received at the S-42 Soil and Cover Stockpiles did not exceed 1,160 tons per day and 105,500 tons per year.

2.18 COMPLIANCE WITH TITLE V PERMIT CONDITION 19867, PARTS 6-10

The following is a summary of vehicle activity at the RLI:

- The mean vehicle fleet weight for all off-site vehicles traveling on paved roads was 13.93 tons, which is less than the permit limit of 15.31 tons.
- Mean vehicle fleet weight for all off-site vehicles traveling on gravel or dirt roads was 14.90 tons, which is less than the permit limit of 16.63 tons.
- The mean vehicle fleet weight for all on-site landfilling and construction related vehicles was 11.7 tons, which is below the permit limit of 28.37 tons.
- During the reporting period, the vehicle miles travelled (VMT) per day on gravel roads did not exceed the permit limit of 280 VMT per day. 2019 calendar year VMT on gravel roads was 25,447 VMT, below the limit of 87,080 VMT. 2020 partial calendar year VMT on gravel roads was 7,983 VMT, below the limit of 87,080 VMT.

- During the reporting period, the VMT per day on dirt roads did not exceed the permit limit of 639 VMT per day. 2019 calendar year VMT on dirt roads was 119,750 VMT, below the limit of 198,650 VMT. 2020 partial calendar year VMT on dirt roads was 37,568 VMT, below the limit of 198,650 VMT.
- During the reporting period, the VMT per day on paved roads did not exceed the permit limit of 622 VMT per day. 2019 calendar year VMT on paved roads was 80,479 VMT, below the limit of 205,880 VMT. 2020 partial calendar year VMT on paved roads was 23,480 VMT, below the limit of 205,880 VMT.
- During the reporting period, the VMT per day on dirt roads for the on-site vehicle fleet did not exceed the permit limit of 61 VMT per day. 2019 calendar year VMT on dirt roads is 15,905 VMT, below the limit of 19,080 VMT. 2020 partial calendar year VMT on dirt roads is 4,703 VMT, below the 19,080 VMT.

The records for VMT and average vehicle fleet weights are available for review at RLI.

2.19 COMPLIANCE WITH TITLE V PERMIT CONDITION 19867, PARTS 14 AND 15

No contaminated soil containing volatile organic compound (VOC) concentrations greater than 50 parts per million (ppm) was received during this reporting period. The total VOC emission rate for the reporting period (November 1, 2019 to April 30, 2020) is 0.00 lbs. The VOC soil log is included in Appendix L.

2.20 COMPLIANCE WITH TITLE V PERMIT CONDITION 19867, PARTS 31 AND 33

WEEKLY H_2S MONITORING

Pursuant to Title V Permit Condition Number 19867, Part 31b, weekly hydrogen sulfide (H_2S) readings were taken using Draeger/RAE tubes. This sampling frequency was increased to twice weekly starting November 22, 2016 per the Compliance Agreement between RLI and BAAQMD. This agreement is in effect and all terms of the agreement have been complied with.

The twice weekly H_2S readings and quarterly averages are summarized in Appendix M, H_2S Twice Weekly and Quarterly Monitoring.

QUARTERLY H_2S CHARACTERIZATION

Pursuant to Title V Permit Condition Number 19867, Part 31a, RLI collected the quarterly characterization of the LFG for analysis of sulfur compounds. The results are included in Tables 2-11 (LFG), 2-12 (Engine Inlet before pre-treatment), and Appendix M. As previously discussed, RLI has obtained a Compliance Agreement with BAAQMD covering the concentration limits of H_2S in the landfill gas. This agreement is in effect and all terms of the agreement have been complied with.

Table 2-11 LFG Characterization Results

Compound	Fourth Quarter 2019 Result (ppm_v)	First Quarter 2020 Result (ppm_v)
Hydrogen Sulfide	1,100	920
Carbonyl Sulfide	1.10	0.41
Methyl Mercaptan	1.50	0.67
Ethyl Mercaptan	0.39	ND
Dimethyl Sulfide	0.56	ND
Carbon Disulfide	0.13	ND
Total Reduced Sulfur	**1,113**	**924**

ND = not detected
N/A = not applicable

Table 2-12 Engine Inlet (pre-treatment) Characterization Results

Compound	Fourth Quarter 2019 Result (ppm_v)	First Quarter 2020 Result (ppm_v)
Hydrogen Sulfide	2,000	1,800
Carbonyl Sulfide	1.10	0.74
Methyl Mercaptan	3.60	0.95
Ethyl Mercaptan	0.63	0.25
Dimethyl Sulfide	0.59	0.25
Carbon Disulfide	0.29	0.15
Total Reduced Sulfur	**2,030**	**1,815**

ND = not detected
N/A = not applicable

ROLLING 4-QUARTER TRS LIMIT

The rolling 4-quarter average TRS concentration was calculated at the end of each quarter using data collected from twice weekly tube samples and quarterly analytical samples per Condition 19867, Part 31b. Results are shown in Table 2-13. As shown in the table, at the end of all the Quarters, the calculated TRS concentration was in excess of the 350 ppm_v limit. The Compliance Agreement also covers this limit. Follow-up actions are discussed later in this section.

Table 2-13 Rolling 4-Quarter TRS Concentration

Quarter	Calculated TRS (ppmv)	Rolling Quarterly Average Annual TRS (ppmv)
2019 Q2	1,187	898
2019 Q3	936	946
2019 Q4	778	963
2020 Q1	753	914

ANNUAL LFG CHARACTERIZATION

LFG characterization sampling was conducted concurrently with the A-51 annual source test as required by Title V Permit Condition Number 19867, Part 31 on January 22, 2020. The LFG sample was collected from the main LFG header and analyzed for the organic and sulfur compounds listed in Part 31. The results were included in the Annual Source Test report submitted on March 16, 2020.

Results for Toxic Air Contaminants (TACs) are presented in Table 2-14 and indicate that the LFG collected by S-5 did not exceed the limits listed in Title V Permit Condition 19867, Part 18.b.

Table 2-14 Annual LFG Characterization: Toxic Air Contaminants

Compound	Result (ppb_v)	Concentration Limit* (ppb_v)
Acrylonitrile	<SRL	300
Benzene	459	1,500
Benzyl Chloride	<SRL	500
Carbon Tetrachloride	<SRL	200
Chlorobenzene	<SRL	200
Chloroethane	92	500
Chloroform	<SRL	200
1,4-Dichlorobenzene	<SRL	1,000
Ethylbenzene	778	4,000
Ethylene Dibromide	<SRL	200
Ethylene Dichloride	89	200
Ethylidene Dichloride	10	500
Hexane	339	2,000
Isopropyl Alcohol	3,840	10,000
Methyl Alcohol	8,380	300,000
Methyl Ethyl Ketone	5,250	15,000
Methylene Chloride	32	1,000
Methyl tert-Butyl Ether	9	500
Perchloroethylene	46	1,000
Styrene	29	500
1,1,2,2-Tetrachloroethane	<SRL	200
Toluene	3,400	20,000
1,1,1-Trichloroethane	<SRL	200
Trichloroethylene	55	500
Vinyl Chloride	91	2,000
Vinylidene Chloride	<SRL	500
Xylenes	1,416	20,000

ppb_v = parts per billion by volume
<SRL = less than the sample reporting limit

Per the Compliance Agreement, quarterly samples were collected and analyzed for ethylbenzene and 1,4-Dichlorobenzene on November 14, 2019 and February 18, 2020 at the Flare and the Engine Inlet (pre-treatment). Laboratory analyses were performed by ALS Environmental (ALS). Results from this sampling are presented in Table 2-15 below.

Table 2-15 Toxic Air Contaminants Sampling

Species	**4th Quarter 2019 Flare** (ppb$_v$)	**4th Quarter 2019 Engine Inlet** (ppb$_v$)	**1st Quarter 2020 Flare** (ppb$_v$)	**1st Quarter 2020 Engine Inlet** (ppb$_v$)	**Limit** (ppb$_v$)
Ethylbenzene	1,400	1,300	1,800	1,600	4,000
1,4-Dichlorobenzene	150	150	100	110	1,000

GROUND LEVEL H_2S MONITORING

RLI began conducting fenceline monitoring for ground level H_2S concentrations in accordance with the May 2011 Proposed Hydrogen Sulfide Monitoring Plan in November 2016. Monitoring was conducted on the following days:

- November 7, 2019
- December 10, 2019
- January 15, 2020
- February 13, 2020
- March 13, 2020
- April 14, 2020

There were no H_2S concentrations observed above 30 ppb averaged over 60 minutes or 60 ppb averaged over 3 minutes.

2.21 COMPLIANCE WITH TITLE V PERMIT CONDITION 22940 (S-56)

Conditions from the California Air Resources Board (CARB) Permit Number 117378 for the S-56 Portable Horizontal Grinder have been incorporated by reference into the RLI Title V Permit. Therefore, the compliance records for this equipment have been included in this Combined Report. Pursuant to BAAQMD Condition Number 22940, the emissions of particulate matter less than 10 microns in diameter (PM_{10}) did not exceed 10 tons per year. The maximum daily throughput for the portable horizontal grinder (S-56) did not exceed 820 tons per day or 200,000 tons per year. Monitoring is performed daily when operations are conducted, the recording of total throughput of all registered equipment units operating. Table 2-16 lists the PM_{10} emissions and total throughput of waste processed at S-56 for the reporting period:

Table 2-16 Waste Processed at S-56

Month	PM_{10} Emissions (tons)	Estimated Total Throughput (tons)
November-2019	0.00	0
December-2019	0.00	0
January-2020	0.00	0
February-2020	0.00	0
March-2020	0.00	0
April-2020	0.00	0

2.22 COMPLIANCE WITH TITLE V PERMIT CONDITION 22941 (S-57)

Conditions from the California Air Resources Board (CARB) Permit Number 117376 for the S-57 Portable Diesel Engine have been incorporated by reference into the RLI Title V Permit. Therefore, the compliance records for this equipment have been included in this Combined Report. Pursuant to BAAQMD Condition Number 22941, the diesel fuel usage has not exceeded 72,295 gallons during any consecutive 12-month period. The Daily fuel and operating records are maintained and summarized on a monthly basis. Table 2-17 lists the monthly and rolling 12-month fuel usage for the S-57 Portable Diesel Engine for the reporting period:

Table 2-17 Fuel Usage at S-57

Month	Diesel Fuel Usage (gallons)	Rolling 12-Month Fuel Usage (gallons)
November-2019	0	3
December-2019	0	2
January-2020	0	0
February-2020	0	0
March-2020	0	0
April-2020	0	0

2.23 COMPLIANCE WITH TITLE V PERMIT CONDITION 23052 (S-58)

Pursuant to Permit Condition 23052 Part 1, the total leachate influent rate to the Aerated Leachate Pond (S-58), excluding non-contact storm runoff, did not exceed 39.42 million gallons during any consecutive 12-month period. Table 2-18 displays the leachate flow information for S-58.

Table 2-18 Leachate Flow Information for S-58

Month	Total Leachate Influent Rate to S-58 (gallons)	Total Rolling 12-Month Flow Rate to S-58 (millions of gallons)
November 2019	1,031,700	19,218,580
December 2019	2,707,760	20,319,060
January 2020	2,447,120	20,293,720
February 2020	2,070,640	17,108,120
March 2020	2,392,820	16,362,400
April 2020	1,480,580	16,742,500

As shown in Table 2-19, the average concentration of precursor organic compounds (POCs) in the leachate influent to S-58 did not exceed the limits specified by Title V Permit Condition Number 23052 Parts 2 and 3:

Table 2-19 POC Concentrations for S-58

Sample Date	Benzene (ppb)		1,4-Dichlorobenzene (ppb)		Vinyl Chloride (ppb)		Total POC Concentration (ppb)	
	GR-7R	GR-8R	GR-7R	GR-8R	GR-7R	GR-8R	GR-7R	GR-8R
6/5/2019	1.6	3.7	5.3	2.8	ND<0.50	ND<0.50	11	18
Average	2.7		4.1		ND<0.5		16	
Limit	19		48		7		500	

2.24 COMPLIANCE WITH TITLE V PERMIT CONDITION 24527 (S-61 AND S-62)

The S-61 Portable Diesel Engine for Waste Tipper and S-62 Portable Diesel Engine for Power Screens operated less than 4,992 hours combined during any 12-month period ending in the November 1, 2019 to April 30, 2020 reporting period. Table 2-20 displays runtime hours for S-61 and S-62 during the reporting period.

Table 2-20 S-61 and S-62 Portable Diesel Engines

Month	S-61 Total Runtime (Hours)	S-62 Total Runtime (Hours)	Combined Rolling 12-Month Total (Hours)
November 2019	0	0	145
December 2019	0	0	127
January 2020	0	0	109
February 2020	0	0	100
March 2020	0	0	81
April 2020	0	0	50

2.25 COMPLIANCE WITH TITLE V PERMIT CONDITION 25634

Permit Condition 25634 requires the calculation of monthly LFG Input to all LFG-Fired Combustion Equipment and calculation of monthly emissions of CO and SO_2. The calculations are summarized on a quarterly basis to show compliance with rolling 4-quarter limits. These calculations are summarized below. Complete calculations are presented in Appendix P.

Table 2-21 Rolling 4-Quarter LFG Input and CO and SO_2 Emissions

		Rolling 4-Quarter Totals		
Year	**Quarter**	**LFG Input (MMscf)**	**CO Emissions (tons)**	**SO_2 Emissions (tons)**
2019	2	1,449	42.65	60.44
2019	3	1,498	48.26	68.39
2019	4	1,499	45.30	71.96
2020	1	1,499	41.80	69.47
Limits		2,625	237.5	99

3 PERFORMANCE TEST REPORT

In accordance with BAAQMD Regulation 8-34-413 and 40 CFR §60.757(g) in NSPS, a Performance Test Report is required to be submitted from subject facilities containing performance and monitoring data for the operation of the GCCS. The operational records listed in Table 3-1 have been reviewed, summarized, and are included herein.

Table 3-1 Performance Test Requirements

Rule	Requirement	Location in Report
8-34-412, §60.8, §60.752(b)(2)(iii)(B), §60.754(d)	Compliance Demonstration Test	Section 3.1,
§60.757(g)(1)	A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded from collection and the proposed sites for future collection system expansion.	Section 3.2, Appendix A
§60.757(g)(2)	The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based.	Section 3.3
§60.757(g)(3)	The documentation of the presence of asbestos or non-degradable material for each area from which collection wells have been excluded based on the presence of asbestos or non-degradable material.	Section 3.4
§60.757(g)(4)	The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on non-productivity and the calculations of gas generation flow rate for each excluded area.	Section 3.5
§60.757(g)(5)	The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill.	Section 3.6
§60.757(g)(6)	The provisions for the control of off-site migration.	Section 3.7

3.1 SOURCE TEST RESULTS (BAAQMD 8-34-412)

3.1.1 FLARE (A-51) SOURCE TEST RESULTS

The 2020 Annual Compliance Demonstration Test (Source Test) was conducted on January 22, 2020. The Test Report was submitted to BAAQMD on March 16, 2020. A summary of the source test report is presented in Appendix N.

The results for the A-51 Flare indicated that the flare is in compliance with BAAQMD Regulation 8-34-301.3 and Title V Condition Number 19867, Parts 23 and 26. Inlet LFG samples were collected from the discharge side of the blower during the test to show compliance with the NMOC limits from Title V Permit Condition Number 18.a. Table 3-2 below shows the results of the source test, averaged from three test runs.

Table 3-2 A-51 Flare Source Test Results

Condition	Flare (A-51) Average Results	Permit Limit	8-34-301.3 limit	Compliance Status
NO_x (ppm_v @ 15% O_2)	14.2	15	---	In Compliance
CO (ppm_v @ 15% O_2)	8.2	82	---	In Compliance
NMOC Outlet (ppm_v @ 3% O_2)	3.3	---	30	In Compliance
NMOC Inlet (ppm_v)	243	360	---	In Compliance

3.1.2 FLARE (A-60) SOURCE TEST RESULTS

The A-60 Flare has two operating Zones (A and B). Title V Permit Condition 19867, Part 30 states that source testing can be conducted while the flare is operating in either zone, provided that each operating zone is tested at least once every five years.

The 2019 Source Test was performed on by Blue Sky Environmental, LLC on July 25, 2019 with the flare operating in Zone A. The Test Report was submitted to BAAQMD on September 20, 2019. A summary of the report is presented in Appendix N.

The results for Zone A of the A-60 Flare indicate that the flare is in compliance with BAAQMD Regulation 8-34-301.3 and Title V Condition Number 19867, Parts 23 and 26. Inlet LFG samples were collected from the discharge side of the blower during the test to show compliance with the NMOC limits from Title V Permit Condition Number 18.a. Table 3-3 below shows the results of the source test, averaged from three test runs.

Table 3-3 A-60 Zone A Flare Source Test Results

Condition	Flare (A-60 Zone A) Average Results	Permit Limit	8-34-301.3 limit	Compliance Status
NO_x (ppm_v @ 15% O_2)	11.8	15	---	In Compliance
CO (ppm_v @ 15% O_2)	40.2	82	---	In Compliance
NMOC Outlet (ppm_v @ 3% O_2)	11.9	---	30	In Compliance
NMOC Inlet (ppm_v)	191	360	---	In Compliance

The 2018 Source Test was performed on by Blue Sky Environmental, LLC on July 17, 2018 with the flare operating in Zone B. The Test Report was submitted to BAAQMD on September 14, 2018 and was included in the November 2018 semi-annual report. The revised Test Report was submitted on March 15, 2019 and was included in the May 2019 semi-annual report.

The results for Zone B of the A-60 Flare indicate that the flare is in compliance with BAAQMD Regulation 8-34-301.3 and Title V Condition Number 19867, Parts 23 and 26. Inlet LFG samples were collected from the discharge side of the blower during the test to show compliance with the NMOC limits from Title V Permit Condition Number 18.a. Table 3-4 below shows the results of the source test.

Table 3-4 A-60 Zone B Flare Source Test Results

Condition	Flare (A-60 Zone B) Average Results	Permit Limit	8-34-301.3 limit	Compliance Status
NO_x (ppm_v @ 15% O_2)	12.6	15	---	In Compliance
CO (ppm_v @ 15% O_2)	78.2	82	---	In Compliance
NMOC Outlet (ppm_v @ 3% O_2)	<9.1	---	30	In Compliance
NMOC Inlet (ppm_v)	233	360		In Compliance

3.3 COMPLIANCE WITH §60.757(G)(1)

"A diagram of the collection system showing collection system positioning including wells, horizontal collectors…"

A map of the LFG collection system showing the positioning of all vertical wells, horizontal collectors, and other LFG extraction devices is included in Appendix A.

3.4 COMPLIANCE WITH §60.757(g)(2)

"The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based."

RLI's GCCS has historically provided LFG wells and collectors spaced in accordance with standard industry practices. The A-51 and A-60 flares, LFG extraction wells, and piping are more than adequate to move the current LFG flow rate. RLI will continue to add additional LFG control capacity as necessary with the approval of the BAAQMD. The installed collector density appears more than adequate for controlling surface emissions, based on continuous compliance and operational experience.

The total capacity of the LFG mover equipment was designed and will be designed to meet the current United States Environmental Protection Agency (EPA) Model AP-42 projections of LFG generation and the historic LFG extraction rates determined to be continuously available from the facility.

DEMONSTRATING COMPLIANCE WITH §60.757(g)(2)

"The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based."

Compliance with 40 CFR §60.757(g)(2) is maintained by performing quarterly SEM. Refer to Section 2.6, Surface Emissions Monitoring for information pertaining to the SEM results. These results show that the GCCS has sufficient coverage over the waste footprint. The current flaring system has the capacity to destroy more than twice the actual recovery. Well monitoring data shows that adequate vacuum is available at all points in the wellfield, demonstrating that the piping network is sufficient to handle all extracted LFG.

3.6 COMPLIANCE WITH §60.757(g)(3)

"The documentation of the presence of asbestos or non-degradable material for each area from which collection wells have been excluded based on the presence of asbestos or non-degradable material."

No segregated areas or accumulations of asbestos material are documented for the site in the GCCS Design Plan. Therefore, 40 CFR §60.757(g)(3) is not applicable.

3.7 COMPLIANCE WITH §60.757(g)(4)

"The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on non-productivity and the calculations of gas generation flow rate for each excluded area."

No non-productive areas have been excluded from the coverage of the GCCS. Therefore, 40 CFR §60.757(g)(4) is not applicable.

3.8 COMPLIANCE WITH §60.757(g)(5)

"The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill."

The present LFG mover equipment capacity is adequate to move the current LFG flow rate. RLI will continue to add additional LFG control capacity as necessary with the approval of the BAAQMD.

Zero (0) wells were added to and four (4) wells were removed to the collection system during the reporting period (November 1, 2019 to April 30, 2020).

As of the end of this reporting period, 115 total collectors (106 vertical wells and 9 horizontal collectors) were in service at RLI.

3.9 COMPLIANCE WITH §60.757(g)(6)

"The provisions for the control of off-site migration."

RLI is a diked area that is completely surrounded by permanent surface water features (San Antonio Creek, Hans Slough, West Slough, and South Slough) which present a barrier to gas migration. The waste footprint is also surrounded by an engineered leachate collection trench that provides a further barrier to LFG migration. Based on the location of RLI and on existing LFG monitoring data, the existing GCCS has been adequate in preventing subsurface lateral migration of LFG to off-site locations.

DEMONSTRATING COMPLIANCE WITH §60.757(g)(6)

"The provisions for the control of off-site migration."

The landfill operator will continue surface monitoring in accordance with the approved monitoring plans. If the GCCS at RLI does not meet the measures of performance set forth in the NSPS/Emissions Guidelines (EG), the GCCS will be adjusted or modified in accordance with the NSPS/EG requirements.

3.10 COMPLIANCE AGREEMENT SUMMARY

In response to increased concentrations of H_2S, 1,4-dichlorobenzene and ethylbenzene observed both during routine sampling events and the 2016 Source Test. RLI entered into a Compliance Agreement with BAAQMD on November 22, 2016. The agreement includes enhanced monitoring and reporting activities for RLI:

- The frequency for H_2S monitoring using Draeger/RAE tubes was increased from weekly to twice per week.
- Monthly fenceline monitoring for ground-level H_2S is now required.
- The frequency for TO-15 sampling for 1,4-dichlorobenzene and ethylbenzene was increased to quarterly.
- The frequency for instantaneous SEM was increased from quarterly to bi-monthly.

Reports summarizing this monitoring are required to be submitted to BAAQMD by the 20th day of each month.

All terms of the Agreement were complied with during the reporting period. The monthly compliance reports were submitted to BAAQMD on the following days:

- December 6, 2019
- January 9, 2020
- February 10, 2020
- March 16, 2020
- April 10, 2020
- May 4, 2020

4 START-UP, SHUTDOWN, MALFUNCTION REPORT

Start-up, Shutdown, Malfunction (SSM) Report for the Collection and Control Systems at the Redwood Landfill

The NESHAP contained in 40 CFR Part 63, AAAA for MSW landfills to control hazardous air pollutants include the regulatory requirements for submittal of a semi-annual report (under 40 CFR §63.10(d)(5) of the general provisions) if an SSM event occurred during the reporting period. The reports required by 40 CFR §63.1980(a) of the NESHAP and §60.757(f) of the NSPS summarize the GCCS exceedances. These two semi-annual reports contain similar information and have been combined as allowed by 40 CFR §63.10(d)(5)(i) of the General Provisions.

NESHAP 40 CFR Part 63, AAAA became effective on January 16, 2004. SSM events that occurred during the semi-annual reporting period (November 1, 2019 to April 30, 2020) are noted in this section and included in Appendix B. The following information is included as required:

- During the reporting period, 13 A-51 Flare SSM events, 14 A-60 Flare Zone A SSM events, and 4 A-60 Flare Zone B SSM events occurred. The time, duration, and cause of each event are included in Appendix B, Flare and Engine SSM Logs.

- During the reporting period, 13 wellfield SSM events occurred. The time and duration of these events are included in Appendix D, Wellfield SSM Log.

- During the reporting period, 77 S-64 Engine (#1) SSM events, 70 S-65 Engine (#2) SSM events occurred. The time, duration, and cause of each event are included in Appendix B, Flare & Engine SSM Logs

- During the reporting period, 0 monitoring/recorder equipment SSM event occurred.

- In all 191 flare, wellfield, and engine SSM events, automatic systems and operator actions were consistent with the standard operating procedures contained in the SSM Plan.

- Revisions of the SSM Plan to correct deficiencies in the landfill operations or procedures were neither required nor prepared (§63.6(e)(3)(viii)).

I certify the following:

> ***Based on information and belief formed after reasonable inquiry, information on the startup, shutdown, malfunction forms, all accompanying reports, and other required certifications are true, accurate, and complete.***

Ramin A. Khany

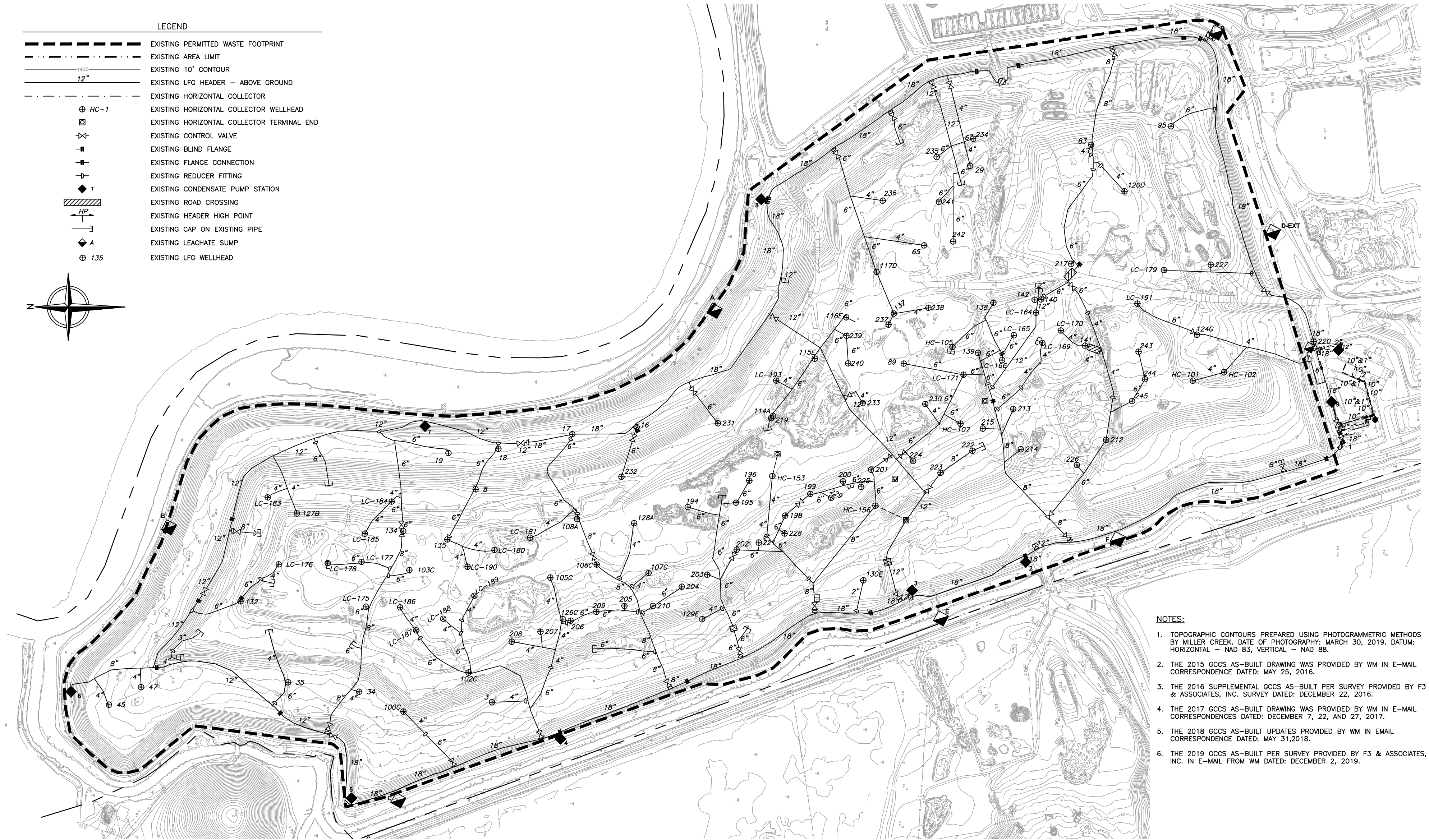
Signature of Responsible Official

May 28, 2020
Date

Ramin Khany
Name of Responsible Official

APPENDIX A

SITE MAP



LEGEND

▬ ▬ ▬	EXISTING PERMITTED WASTE FOOTPRINT
▬ · · ▬	EXISTING AREA LIMIT
1400	EXISTING 10' CONTOUR
12"	EXISTING LFG HEADER – ABOVE GROUND
— · —	EXISTING HORIZONTAL COLLECTOR
⊕ HC–1	EXISTING HORIZONTAL COLLECTOR WELLHEAD
⊡	EXISTING HORIZONTAL COLLECTOR TERMINAL END
⋈	EXISTING CONTROL VALVE
▮	EXISTING BLIND FLANGE
▮	EXISTING FLANGE CONNECTION
▷	EXISTING REDUCER FITTING
◆ 1	EXISTING CONDENSATE PUMP STATION
▨	EXISTING ROAD CROSSING
HP	EXISTING HEADER HIGH POINT
⊐	EXISTING CAP ON EXISTING PIPE
◆ A	EXISTING LEACHATE SUMP
⊕ 135	EXISTING LFG WELLHEAD

NOTES:

1. TOPOGRAPHIC CONTOURS PREPARED USING PHOTOGRAMMETRIC METHODS BY MILLER CREEK. DATE OF PHOTOGRAPHY: MARCH 30, 2019. DATUM: HORIZONTAL – NAD 83, VERTICAL – NAD 88.
2. THE 2015 GCCS AS–BUILT DRAWING WAS PROVIDED BY WM IN E–MAIL CORRESPONDENCE DATED: MAY 25, 2016.
3. THE 2016 SUPPLEMENTAL GCCS AS–BUILT PER SURVEY PROVIDED BY F3 & ASSOCIATES, INC. SURVEY DATED: DECEMBER 22, 2016.
4. THE 2017 GCCS AS–BUILT DRAWING WAS PROVIDED BY WM IN E–MAIL CORRESPONDENCES DATED: DECEMBER 7, 22, AND 27, 2017.
5. THE 2018 GCCS AS–BUILT UPDATES PROVIDED BY WM IN EMAIL CORRESPONDENCE DATED: MAY 31,2018.
6. THE 2019 GCCS AS–BUILT PER SURVEY PROVIDED BY F3 & ASSOCIATES, INC. IN E–MAIL FROM WM DATED: DECEMBER 2, 2019.

FINAL AS-BUILT

WASTE MANAGEMENT

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE DEC. 2019
DRAWN BY SEY
DESIGNED BY AMN
CHECKED BY HLV
APPROVED BY PJS

TETRA TECH

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA
GCCS PHASING PLANS
AS-BUILT SITE PLAN

SHEET NO.
1
PROJECT NO.
190533

APPENDIX B

FLARE (A-51 & A-60) SSM LOGS,
ENGINE (S-64 & S65) SSM LOGS,
AND GCCS DOWNTIME SUMMARY

REDWOOD LANDFILL, INC.

A-51 CONTROL DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
1		A-51 Flare	10/30/19 4:30	10/30/19 4:32	0.03	668.50	Rental Generator shutdown. Remained Off due to A60 starting on PG&E power. Generator startup 11/27/19 during facility power outage.	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	11/27/2019
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		11/27/19 1:00	11/27/19 1:02	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
2		A-51 Flare	11/27/19 1:48	11/27/19 1:50	0.03	295.27	Generator shutdown when A60 back on with PG&E power. Generator startup 12/9/19 A60 maintenance.	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	12/9/2019
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		12/9/19 9:04	12/9/19 9:06	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
3		A-51 Flare	12/12/19 14:22	12/12/19 14:24	0.03	94.00	Generator shutdown when A60 back on with PG&E power.	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	12/16/2019
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		12/16/19 12:22	12/16/19 12:24	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
4		A-51 Flare	12/16/19 12:50	12/16/19 12:52	0.03	20.07	Operate system with A60 only.	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	12/17/2019
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		12/17/19 8:54	12/17/19 8:56	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
5		A-51 Flare	12/17/19 9:28	12/17/19 9:30	0.03	406.97	Operate system with A60 only.	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	1/3/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		1/3/20 8:26	1/3/20 8:28	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
6		A-51 Flare	1/3/20 9:28	1/3/20 9:30	0.03	289.87	Operate system with A60 only.	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	1/15/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		1/15/20 11:20	1/15/20 11:22	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
7		A-51 Flare	1/15/20 12:18	1/15/20 12:20	0.03	116.03	Operate system with A60 only.	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	1/20/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		1/20/20 8:20	1/20/20 8:22	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
8		A-51 Flare	1/20/20 9:58	1/20/20 10:00	0.03	21.30	Operate system with A60 only.	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	1/21/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		1/21/20 7:16	1/21/20 7:18	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
9		A-51 Flare	1/21/20 12:00	1/21/20 12:02	0.03	18.67	Operate system with A60 only. A51 Source Testing on January 22, 2020	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	1/22/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		1/22/20 6:40	1/22/20 6:42	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
10		A-51 Flare	1/22/20 12:06	1/22/20 12:08	0.03	1987.87	A51 Source Testing on January 22, 2020. After test, operate system with A60 only.	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	4/14/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		4/14/20 7:58	4/14/20 8:00	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
11		A-51 Flare	4/14/20 8:36	4/14/20 8:38	0.03	165.93	After both engines come back online, operate system with A60 only.	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	4/21/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		4/21/20 6:32	4/21/20 6:34	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			

REDWOOD LANDFILL, INC.

A-51 CONTROL DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
12		A-51 Flare	4/21/20 6:46	4/21/20 6:48	0.03	217.40	After swapping blowers on A60, operate system with A60 only.	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	4/30/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		4/30/20 8:10	4/30/20 8:12	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
13	☐	A-51 Flare	4/30/20 9:42	4/30/20 9:44	0.03	14.30	After Yokogawa maintenance, operate system with A60 only.	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	5/1/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☐ Startup		A-51 shut down as of May 1, 2020					☐ 117: Gas Collection	☐ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☐ No	☐ No			

REDWOOD LANDFILL, INC.

A-60 ZONE A CONTROL DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
1	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	11/7/19 10:48 11/7/19 11:26	11/7/19 10:50 11/7/19 11:28	0.03 0.03	0.63	Manual Shutdown to disconnect generator from compressor.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☒ Manual (Go to 7) ☐ Automatic (Go to 9) ☒ Manual (Go to 7) ☐ Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	☐ Yes (Go to 9) ☒ No ☐ Yes (Go to 9) ☒ No	☐ Yes (Go to 10) ☐ No ☐ Yes (Go to 10) ☐ No		Mike Chan	11/7/2019
2	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	11/27/19 0:28 11/27/19 1:50	11/27/19 0:30 11/27/19 1:52	0.03 0.03	1.37	All control devices were shutdown due to a site-wide power outage. Inspected upon restart of the control devices. Visual inspections and PLC	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☐ Manual (Go to 7) ☒ Automatic (Go to 9) ☒ Manual (Go to 7) ☒ Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	☐ Yes (Go to 9) ☐ No ☐ Yes (Go to 9) ☒ No	☐ Yes (Go to 10) ☒ No ☐ Yes (Go to 10) ☐ No		Mike Chan	11/27/2019
3	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	12/9/19 9:00 12/12/19 14:16	12/9/19 9:02 12/12/19 14:18	0.03 0.03	77.27	Manual Shutdown for piping Willexa to A60A side.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☒ Manual (Go to 7) ☐ Automatic (Go to 9) ☒ Manual (Go to 7) ☐ Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	☐ Yes (Go to 9) ☒ No ☐ Yes (Go to 9) ☒ No	☐ Yes (Go to 10) ☐ No ☐ Yes (Go to 10) ☐ No		Mike Chan	12/12/2019
4	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	12/16/19 12:20 12/16/19 12:52	12/16/19 12:22 12/16/19 12:54	0.03 0.03	0.53	Manual Shutdown for maintenance & programing.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☒ Manual (Go to 7) ☐ Automatic (Go to 9) ☒ Manual (Go to 7) ☐ Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	☐ Yes (Go to 9) ☒ No ☐ Yes (Go to 9) ☒ No	☐ Yes (Go to 10) ☐ No ☐ Yes (Go to 10) ☐ No		Mike Chan	12/16/2019
5	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	12/17/19 8:50 12/17/19 9:22	12/17/19 8:52 12/17/19 9:24	0.03 0.03	0.53	Manual Shutdown for maintenance.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☒ Manual (Go to 7) ☐ Automatic (Go to 9) ☒ Manual (Go to 7) ☐ Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	☐ Yes (Go to 9) ☒ No ☐ Yes (Go to 9) ☒ No	☐ Yes (Go to 10) ☐ No ☐ Yes (Go to 10) ☐ No		Mike Chan	12/17/2019
6	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	12/17/19 10:06 12/17/19 10:10	12/17/19 10:08 12/17/19 10:12	0.03 0.03	0.07	Flame alarm shutdown. System inspected after restart.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☐ Manual (Go to 7) ☒ Automatic (Go to 9) ☒ Manual (Go to 7) ☒ Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	☐ Yes (Go to 9) ☐ No ☐ Yes (Go to 9) ☒ No	☐ Yes (Go to 10) ☒ No ☐ Yes (Go to 10) ☐ No		Mike Chan	12/17/2019
7	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	12/18/19 15:58 12/18/19 16:02	12/18/19 16:00 12/18/19 16:04	0.03 0.03	0.07	Flame alarm shutdown. System inspected after restart.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☐ Manual (Go to 7) ☒ Automatic (Go to 9) ☒ Manual (Go to 7) ☒ Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	☐ Yes (Go to 9) ☐ No ☐ Yes (Go to 9) ☒ No	☐ Yes (Go to 10) ☒ No ☐ Yes (Go to 10) ☐ No		Mike Chan	12/18/2019
8	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	1/3/20 8:24 1/3/20 9:30	1/3/20 8:26 1/3/20 9:32	0.03 0.03	1.10	Manual Shutdown for maintenance.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☒ Manual (Go to 7) ☐ Automatic (Go to 9) ☒ Manual (Go to 7) ☐ Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	☐ Yes (Go to 9) ☒ No ☐ Yes (Go to 9) ☒ No	☐ Yes (Go to 10) ☐ No ☐ Yes (Go to 10) ☐ No		Mike Chan	1/3/2020
9	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	1/15/20 11:12 1/15/20 12:20	1/15/20 11:14 1/15/20 12:22	0.03 0.03	1.13	Manual Shutdown for maintenance.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☒ Manual (Go to 7) ☐ Automatic (Go to 9) ☒ Manual (Go to 7) ☐ Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	☐ Yes (Go to 9) ☒ No ☐ Yes (Go to 9) ☒ No	☐ Yes (Go to 10) ☐ No ☐ Yes (Go to 10) ☐ No		Mike Chan	1/15/2020
10	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	1/20/20 8:18 1/20/20 9:52	1/20/20 8:20 1/20/20 9:54	0.03 0.03	1.57	Manual Shutdown for maintenance.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☒ Manual (Go to 7) ☐ Automatic (Go to 9) ☒ Manual (Go to 7) ☐ Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	☐ Yes (Go to 9) ☒ No ☐ Yes (Go to 9) ☒ No	☐ Yes (Go to 10) ☐ No ☐ Yes (Go to 10) ☐ No		Mike Chan	1/20/2020
11	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	1/21/20 7:14 1/21/20 12:02	1/21/20 7:16 1/21/20 12:04	0.03 0.03	4.80	Manual Shutdown for maintenance.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☒ Manual (Go to 7) ☐ Automatic (Go to 9) ☒ Manual (Go to 7) ☐ Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	☐ Yes (Go to 9) ☒ No ☐ Yes (Go to 9) ☒ No	☐ Yes (Go to 10) ☐ No ☐ Yes (Go to 10) ☐ No		Mike Chan	1/21/2020
12	☒ Shutdown ☒ Startup ☐ Malfunction	A-60 Zone A	1/22/20 6:38 1/22/20 12:08	1/22/20 6:40 1/22/20 12:10	0.03 0.03	5.50	Manual Shutdown for A51 Source Testing.	☒ 113: Inspection/Maintenance ☐ 116: Well Raising ☐ 117: Gas Collection ☐ 118: Construction Activities	☒ Manual (Go to 7) ☐ Automatic (Go to 9) ☒ Manual (Go to 7) ☐ Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	☐ Yes (Go to 9) ☒ No ☐ Yes (Go to 9) ☒ No	☐ Yes (Go to 10) ☐ No ☐ Yes (Go to 10) ☐ No		Mike Chan	1/22/2020

No A-60 Zone A SSM events in February 2020

REDWOOD LANDFILL, INC.

A-60 ZONE A CONTROL DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
No A-60 Zone A SSM events in March 2020															
13		A-60 Zone A	4/21/20 6:30	4/21/20 6:32	0.03	0.30	Manual Shutdown for swapping blowers on A60	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	4/21/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		4/21/20 6:48	4/21/20 6:50	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
14		A-60 Zone A	4/30/20 8:10	4/30/20 8:12	0.03	1.57	Manual Shutdown for Yokogawa maintenance on A60	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	4/30/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		4/30/20 9:44	4/30/20 9:46	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			

REDWOOD LANDFILL, INC.

A-60 ZONE B CONTROL DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
1		A-60 Zone B	11/7/19 10:48	11/7/19 10:50	0.03	0.73	Manual Shutdown to disconnect generator from compressor.	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	11/7/2019
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		11/7/19 11:32	11/7/19 11:34	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
2		A-60 Zone B	11/27/19 0:28	11/27/19 0:30	0.03	1.43	All control devices were shutdown due to a site-wide power outage. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	11/27/2019
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		11/27/19 1:54	11/27/19 1:56	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
3		A-60 Zone B	12/9/19 9:00	12/9/19 9:02	0.03	218.80	Manual Shutdown for piping Willexa to A60A side. Running on A60A only.	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	12/18/2019
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	x Startup		12/18/19 11:48	12/18/19 11:50	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
4		A-60 Zone B	12/18/19 13:28	12/18/19 13:30	0.03	3226.53	Manual shutdown. Running on A60A only.	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		Mike Chan	5/1/2020
	x Shutdown							116: Well Raising	Automatic (Go to 9)		x No	No			
	Startup		Zone B shut down as of May 1, 2020					117: Gas Collection	Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		No	No			

(a) **STANDARD OPERATING PROCEDURES**

Shutdown

Procedure No.	Procedure
1.	Ensure that there is no unsafe conditions present, contact manager immediately
2.	Initiate shutdown sequence below by one or more of the following (Note date and time in Section 1 of form above) a. Press Emergency Stop if necessary b. Close On/Off switch(es) or Push On/Off button(s) c. Close adjacent valves if necessary
3.	Observe that system achieves normal shutdown ranges for levels, pressures, and temperatures (Note date and time in Section 2 of form above)

Startup

Procedure No.	Procedure
1.	Ensure that there is no unsafe conditions present
2.	Ensure that the system is ready to start by one of the following: a. Valves are in correct position b. Levels, pressures, and temperatures are within normal starting range c. Alarms are cleared d. Power is on and available to control panel and ready to energized equipment. e. Emergency stop is de-energized
3.	Initiate start sequence (Note time and date in section 1 of form above)
4.	Observe that system achieves normal shutdown ranges for levels, pressures, and temperatures (Note time and date in Section 2 of form above)

Malfunction

EQUIPMENT	PURPOSE	MALFUNCTION EVENT	COMMON CAUSES	PROCEDURE NO. -TYPICAL RESPONSE ACTIONS
LFG Collection and Control System				
Blower or Other Gas Mover Equipment	Applies vacuum to wellfield to extract LFG and transport to control device	Loss of LFG Flow/Blower Malfunction	-Flame arrestor fouling/deterioration -Automatic valve problems -Blower failure (e.g., belt, motor, impeller, coupling, seizing, etc.) -Loss of power -Extraction piping failure -Condensate knock-out problems -Extraction piping blockages	1. Repair breakages in extraction piping 2. Clean flame arrestor 3. Repair blockages in extraction piping 4. Verify automatic valve operation, compressed air/nitrogen supply 5. Notify power utility, if appropriate 6. Provide/utilize auxiliary power source, if necessary 7. Repair Settlement in Collection Piping 8. Repair Blower 9. Activate back-up blower, if available 10. Clean knock-up pot/demister 11. Drain knock-out pot
Extraction Wells and Collection Piping	Conduits for extractions and movement of LFG flow	Collection well and pipe failures	-Break/crack in header or lateral piping -Leaks at wellheads, valves, flanges, Test ports, seals, couplings, etc. -Collection piping blockages -Problems due to settlement (e.g. pipe separation, deformation, development of low points	12. Repair leaks or breaks in lines or wellheads 13. Follow procedures for loss of LFG flow/blower malfunction 14. Repair blockages in collection piping 15. Repair settlement in collection piping 16. Re-install, repair, or replace piping
Blower or Other Gas Mover Equipment And Control Device	Collection and control of LFG	Loss of electrical power	- Force majeure/Act of God (e.g., lightning, flood, earthquake, etc.) -Area-wide or local blackout or brown-ou -Interruption in service (e.g. blown service fuse -Electrical line failure -Breaker trip -Transformer failure -Motor starter failure/trip -Overdraw of power -Problems in electrical panel -Damage to electrical equipment from on-site operations	17. Check/reset breaker 18. Check/repair electrical panel components 19. Check/repair transformer 20. Check/repair motor starter 21. Check/repair electrical line 22. Test amperage to various equipment 23. Contact electricity supplier 24. Contact/contract electrician 25.Provide auxiliary power (if necessary
LFG Control Device	Combusts LFG	Low temperature conditions at control device	-Problems with temperature -monitoring equipmen -Problems/failure of -thermocouple and/or thermocouple wiring -Change of LFG flow -Change of LFG quality -Problems with air louvers -Problems with air/fuel controls -Change in atmospheric conditions	26. Check/repair temperature monitoring equipment 27. Check/repair thermocouple and/or wiring 28. Follow procedures for loss of flow/blower malfunction 29. Check/adjust louvers 30. Check/adjust air/fuel controls
LFG Control Device	Combusts LFG	Loss of Flame	-Problems/failure of thermocouple -Loss/change of LFG flow -Loss/change of LFG quality -Problems with air/fuel controls -Problems/failure of flame sensor -Problems with temperature monitoring equipmen	31. Check/repair temperature monitoring equipment 32. Check/repair thermocouple 33. Follow procedures for loss of flow/blower malfunction 34. Check/adjust air/fuel controls 35. Check/adjust/repair flame sensor 36. Check/adjust LFG collectors
Flow Monitoring/ Recording Device	Measures and records gas flow from collection system to control	Malfunctions of Flow Monitoring/Recording Device	-Problems with orifice plate, pitot tube, or other in-line flow measuring device -Problems with device controls and/or wiring -Problems with chart recorder	37. Check/adjust/repair flow measuring device and/or wiring 38. Check/repair chart recorder 39. Replace paper in chart recorder
Temperature Monitoring/ Recording Device	Monitors and records combustion temperature of enclosed combustion device	Malfunctions of Temperature Monitoring/Recording Device	-Problems with thermocouple -Problems with device controls and/or wiring -Problems with chart recorder	40. Check/adjust/repair thermocouple 41. Check/adjust/repair controller and/or wiring 42. Check/adjust/repair electrical panel components 43. Check/repair chart recorder 44. Replace paper in chart recorder
Control Device	Combusts LFG	Other Control Device Malfunctions	-Control device smoking (i.e. visible emissions) -Problems with flare insulation -Problems with pilot light system -Problems with air louvers -Problems with air/fuel controllers -Problems with thermocouple -Problems with burners -Problems with flame arrester -Alarmed malfunction conditions not covered above -Unalarmed conditions discovered during inspection not covered above	45. Site-specific diagnosis procedures 46. Site-specific responses actions based on diagnosis 47. Open manual louvers 48. Clean pitot orifice 49. Clean/drain flame arrestor 50. Refill propane supply 51. Check/repair pilot sparking system

(b) For each permit limit exceedance complete an "SSM Plan Departure Form".

REDWOOD LANDFILL, INC.
WMRE LFG Engine #1 (S-64) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
1		Engine #1 (S-64)	11/8/19 8:00	11/8/19 8:02	0.03	0.58	Oil Change	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	11/8/2019
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		11/8/19 8:35	11/8/19 8:37	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
2		Engine #1 (S-64)	11/10/19 18:35	11/10/19 18:37	0.03	2.50	Oil leveler fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	11/10/2019
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		11/10/19 21:05	11/10/19 21:07	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
3		Engine #1 (S-64)	11/12/19 1:00	11/12/19 1:02	0.03	1.42	oil leveler fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	11/12/2019
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		11/12/19 2:25	11/12/19 2:27	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
4		Engine #1 (S-64)	11/18/19 3:00	11/18/19 3:02	0.03	7.33	Low oil level	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	11/18/2019
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		11/18/19 10:20	11/18/19 10:22	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
5		Engine #1 (S-64)	11/18/19 14:10	11/18/19 14:12	0.03	0.92	Low Oil Level	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	11/18/2019
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		11/18/19 15:05	11/18/19 15:07	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
6		Engine #1 (S-64)	11/27/19 0:30	11/27/19 0:32	0.03	1.00	Loss of utlity	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	11/27/2019
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		11/27/19 1:30	11/27/19 1:32	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
7		Engine #1 (S-64)	12/7/19 7:40	12/7/19 7:42	0.03	1.00	Detonation Cylinder #20	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	12/7/2019
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		12/7/19 8:40	12/7/19 8:42	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
8		Engine #1 (S-64)	12/9/19 9:30	12/9/19 9:32	0.03	192.00	Repairs to flare	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	12/20/2019
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		12/17/19 9:30	12/17/19 9:32	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
9		Engine #1 (S-64)	12/17/19 10:30	12/17/19 10:32	0.03	20.50	Repairs to flare	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	12/20/2019
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		12/18/19 7:00	12/18/19 7:02	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
10		Engine #1 (S-64)	12/19/19 9:45	12/19/19 9:47	0.03	26.50	Repairs to flare	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	12/20/2019
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		12/20/19 12:15	12/20/19 12:17	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
11		Engine #1 (S-64)	12/30/19 19:30	12/30/19 19:32	0.03	0.67	Low voltage exhaust sensor Cylinder 17	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	12/30/2019
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		12/30/19 20:10	12/30/19 20:12	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
12		Engine #1 (S-64)	12/31/19 7:00	12/31/19 7:02	0.03	3.83	exhaust sensor Cylinder 17 replacement	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	12/31/2019
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		12/31/19 10:50	12/31/19 10:52	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #1 (S-64) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
13		Engine #1 (S-64)	12/31/19 12:25	12/31/19 12:27	0.03	0.58	Oil & Filter Change	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	12/31/2019
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		12/31/19 13:00	12/31/19 13:02	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
14		Engine #1 (S-64)	1/5/20 0:35	1/5/20 0:37	0.03	5.58	Low oil fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/5/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		1/5/20 6:10	1/5/20 6:12	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
15		Engine #1 (S-64)	1/6/20 3:20	1/6/20 3:22	0.03	3.00	High Engine Oil to Engine coolant Diff Temp	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/6/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		1/6/20 6:20	1/6/20 6:22	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
16		Engine #1 (S-64)	1/7/20 11:50	1/7/20 11:52	0.03	0.25	Oil Leveler malfunction	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/7/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		1/7/20 12:05	1/7/20 12:07	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
17		Engine #1 (S-64)	1/7/20 12:25	1/7/20 12:27	0.03	0.25	Oil Leveler malfunction	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/7/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		1/7/20 12:40	1/7/20 12:42	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
18		Engine #1 (S-64)	1/8/20 7:25	1/8/20 7:27	0.03	0.25	Oil Leveler malfunction	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/8/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		1/8/20 7:40	1/8/20 7:42	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
19		Engine #1 (S-64)	1/8/20 13:30	1/8/20 13:32	0.03	0.83	Shutdown for Air Compressor Installation	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/8/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		1/8/20 14:20	1/8/20 14:22	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
20		Engine #1 (S-64)	1/9/20 12:40	1/9/20 12:42	0.03	1.17	Shutdown for Air Compressor Installation	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/9/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		1/9/20 13:50	1/9/20 13:52	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
21		Engine #1 (S-64)	1/16/20 11:35	1/16/20 11:37	0.03	0.17	Exhaust Temp. Deviation	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/16/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		1/16/20 11:45	1/16/20 11:47	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
22		Engine #1 (S-64)	1/16/20 12:00	1/16/20 12:02	0.03	3.00	Exhaust Temp. Deviation	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/16/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		1/16/20 15:00	1/16/20 15:02	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
23		Engine #1 (S-64)	1/19/20 10:40	1/19/20 10:42	0.03	1.08	EEE high voltage testing	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/19/2019
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		1/19/20 11:45	1/19/20 11:47	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
24		Engine #1 (S-64)	1/20/20 8:25	1/20/20 8:27	0.03	7.17	EEE high voltage testing	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/20/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		1/20/20 15:35	1/20/20 15:37	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #1 (S-64) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
25		Engine #1 (S-64)	2/5/20 9:10	2/5/20 9:12	0.03	4.42	Oil,filter & valve service	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/5/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		2/5/20 13:35	2/5/20 13:37	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
26		Engine #1 (S-64)	2/8/20 14:30	2/8/20 14:32	0.03	8.33	Detonation cylinders 19 & 20	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/8/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		2/8/20 22:50	2/8/20 22:52	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
27		Engine #1 (S-64)	2/10/20 15:00	2/10/20 15:02	0.03	0.33	oil leveler malfunction	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/10/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		2/10/20 15:20	2/10/20 15:22	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
28		Engine #1 (S-64)	2/10/20 17:15	2/10/20 17:17	0.03	0.42	Detonation Cyl. 20	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/10/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		2/10/20 17:40	2/10/20 17:42	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
29		Engine #1 (S-64)	2/10/20 18:25	2/10/20 18:27	0.03	1.00	Detonation Cyl. 20	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/10/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		2/10/20 19:25	2/10/20 19:27	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
30		Engine #1 (S-64)	2/11/20 15:00	2/11/20 15:02	0.03	1.08	Oil Leveler fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/11/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		2/11/20 16:05	2/11/20 16:07	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
31		Engine #1 (S-64)	2/17/20 19:30	2/17/20 19:32	0.03	11.75	Detonation cyl. 20	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/18/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		2/18/20 7:15	2/18/20 7:17	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
32		Engine #1 (S-64)	2/21/20 23:05	2/21/20 23:07	0.03	4.42	Reverse Power	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/22/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		2/22/20 3:30	2/22/20 3:32	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
33		Engine #1 (S-64)	2/22/20 4:20	2/22/20 4:22	0.03	0.92	Overspeed fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/22/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		2/22/20 5:15	2/22/20 5:17	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
34		Engine #1 (S-64)	2/26/20 12:10	2/26/20 12:12	0.03	1.00	Low Fuel Pressure	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/26/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		2/26/20 13:10	2/26/20 13:12	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
35		Engine #1 (S-64)	2/27/20 1:25	2/27/20 1:27	0.03	9.83	Emergancy stop activated & engine maintenance	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/27/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		2/27/20 11:15	2/27/20 11:17	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
36		Engine #1 (S-64)	3/7/20 20:45	3/7/20 20:47	0.03	0.33	Detonation Cylinder 20	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/7/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/7/20 21:05	3/7/20 21:07	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #1 (S-64) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
37		Engine #1 (S-64)	3/9/20 21:10	3/9/20 21:12	0.03	0.75	Reverse power	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/9/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/9/20 21:55	3/9/20 21:57	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
38		Engine #1 (S-64)	3/10/20 23:45	3/10/20 23:47	0.03	0.17	High oil temp	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/10/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/10/20 23:55	3/10/20 23:57	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
39		Engine #1 (S-64)	3/10/20 23:55	3/10/20 23:57	0.03	0.33	Reverse power	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/11/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/11/20 0:15	3/11/20 0:17	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
40		Engine #1 (S-64)	3/11/20 0:30	3/11/20 0:32	0.03	0.17	Reverese Power	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/11/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/11/20 0:40	3/11/20 0:42	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
41		Engine #1 (S-64)	3/11/20 18:45	3/11/20 18:47	0.03	0.25	Reverse power	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/11/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/11/20 19:00	3/11/20 19:02	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
42		Engine #1 (S-64)	3/11/20 22:00	3/11/20 22:02	0.03	1.42	Reverse Power	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/11/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/11/20 23:25	3/11/20 23:27	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
43		Engine #1 (S-64)	3/11/20 23:40	3/11/20 23:42	0.03	0.25	Reverse Power	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/11/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/11/20 23:55	3/11/20 23:57	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
44		Engine #1 (S-64)	3/12/20 3:20	3/12/20 3:22	0.03	3.92	Oil leveler malfunction and oil change	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/12/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/12/20 7:15	3/12/20 7:17	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
45		Engine #1 (S-64)	3/12/20 8:05	3/12/20 8:07	0.03	3.42	Exhaust sensor replacement	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/12/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		3/12/20 11:30	3/12/20 11:32	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
46		Engine #1 (S-64)	3/13/20 7:45	3/13/20 7:47	0.03	2.33	Repairs on J-M pump	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/13/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		3/13/20 10:05	3/13/20 10:07	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
47		Engine #1 (S-64)	3/20/20 3:00	3/20/20 3:02	0.03	28.50	Detonation on clinder 1 and JW high temp	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/21/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/21/20 7:30	3/21/20 7:32	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
48		Engine #1 (S-64)	3/23/20 9:15	3/23/20 9:17	0.03	0.17	Jacket Water High temp	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/23/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/23/20 9:25	3/23/20 9:27	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #1 (S-64) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
49		Engine #1 (S-64)	3/23/20 17:15	3/23/20 17:17	0.03	0.17	Jacket Water High temp and Low fuel pressure	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/23/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/23/20 17:25	3/23/20 17:27	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
50		Engine #1 (S-64)	4/3/20 1:30	4/3/20 1:32	0.03	9.67	Low oil level	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/3/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/3/20 11:10	4/3/20 11:12	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
51		Engine #1 (S-64)	4/6/20 13:40	4/6/20 13:42	0.03	19.83	Detonation cyl. 15& 17	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/7/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/7/20 9:30	4/7/20 9:32	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
52		Engine #1 (S-64)	4/8/20 5:00	4/8/20 5:02	0.03	1.17	Detonation cyl. 15	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/8/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/8/20 6:10	4/8/20 6:12	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
53		Engine #1 (S-64)	4/8/20 7:30	4/8/20 7:32	0.03	3.33	Valve Service	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/8/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		4/8/20 10:50	4/8/20 10:52	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
54		Engine #1 (S-64)	4/8/20 20:50	4/8/20 20:52	0.03	3.08	Detonation Cyl. 15	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/8/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/8/20 23:55	4/8/20 23:57	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
55		Engine #1 (S-64)	4/12/20 22:15	4/12/20 22:17	0.03	9.00	Detonation Cyl. 15	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/13/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/13/20 7:15	4/13/20 7:17	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
56		Engine #1 (S-64)	4/13/20 15:25	4/13/20 15:27	0.03	6.17	Reverse Power	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/13/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/13/20 21:35	4/13/20 21:37	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
57		Engine #1 (S-64)	4/13/20 22:55	4/13/20 22:57	0.03	0.58	Detonation Cyl. 15	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/13/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/13/20 23:30	4/13/20 23:32	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
58		Engine #1 (S-64)	4/14/20 1:10	4/14/20 1:12	0.03	7.50	Detonation Cyl. 11	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/14/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/14/20 8:40	4/14/20 8:42	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
59		Engine #1 (S-64)	4/14/20 10:00	4/14/20 10:02	0.03	3.25	Cylinder 9 Low Temp / Ignition transformer under-voltage	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/14/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/14/20 13:15	4/14/20 13:17	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
60		Engine #1 (S-64)	4/16/20 4:55	4/16/20 4:57	0.03	0.83	Engine Oil Leveler Failure	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/16/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/16/20 5:45	4/16/20 5:47	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #1 (S-64) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
61		Engine #1 (S-64)	4/17/20 19:10	4/17/20 19:12	0.03	58.33	Engine faulted for Reverse power. Cylinder 19 Damage - Head and piston	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/20/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/20/20 5:30	4/20/20 5:32	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
62		Engine #1 (S-64)	4/20/20 19:05	4/20/20 19:07	0.03	1.42	High coolant temp	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/20/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/20/20 20:30	4/20/20 20:32	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
63		Engine #1 (S-64)	4/21/20 20:20	4/21/20 20:22	0.03	1.50	High Coolant temp	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/21/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/21/20 21:50	4/21/20 21:52	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
64		Engine #1 (S-64)	4/22/20 8:10	4/22/20 8:12	0.03	0.17	Reverse Power	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/22/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/22/20 8:20	4/22/20 8:22	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
65		Engine #1 (S-64)	4/23/20 0:55	4/23/20 0:57	0.03	3.92	High Coolant Temp	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/23/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/23/20 4:50	4/23/20 4:52	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
66		Engine #1 (S-64)	4/24/20 20:05	4/24/20 20:07	0.03	1.50	High Coolant Temp	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/24/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/24/20 21:35	4/24/20 21:37	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
67		Engine #1 (S-64)	4/26/20 10:45	4/26/20 10:47	0.03	1.17	low oil level	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/26/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/26/20 11:55	4/26/20 11:57	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
68		Engine #1 (S-64)	4/27/20 16:45	4/27/20 16:47	0.03	4.00	Low oil pressure	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/27/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/27/20 20:45	4/27/20 20:47	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
69		Engine #1 (S-64)	4/28/20 8:00	4/28/20 8:02	0.03	0.50	High coolant temp	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/28/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/28/20 8:30	4/28/20 8:32	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
70		Engine #1 (S-64)	4/28/20 9:20	4/28/20 9:22	0.03	0.17	High differential oil pressure	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/28/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/28/20 9:30	4/28/20 9:32	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
71		Engine #1 (S-64)	4/28/20 10:20	4/28/20 10:22	0.03	0.33	Low oil level	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/28/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/28/20 10:40	4/28/20 10:42	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
72		Engine #1 (S-64)	4/28/20 12:10	4/28/20 12:12	0.03	0.17	High Coolant temp	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/28/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/28/20 12:20	4/28/20 12:22	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #1 (S-64) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
73	☐	Engine #1 (S-64)	4/28/20 19:15	4/28/20 19:17	0.03	5.75	Reverse Power	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/29/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/29/20 1:00	4/29/20 1:02	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
74	☐	Engine #1 (S-64)	4/29/20 8:45	4/29/20 8:47	0.03	6.33	Reverse power	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/29/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/29/20 15:05	4/29/20 15:07	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
75	☐	Engine #1 (S-64)	4/29/20 15:10	4/29/20 15:12	0.03	0.50	Oil & Filter Service	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/29/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		4/29/20 15:40	4/29/20 15:42	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
76	☐	Engine #1 (S-64)	4/29/20 20:15	4/29/20 20:17	0.03	0.75	Reverse Power	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/29/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/29/20 21:00	4/29/20 21:02	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
77	☐	Engine #1 (S-64)	4/30/20 6:10	4/30/20 6:12	0.03	8.58	Replace JW regulators and crankcase breathers	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/30/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		4/30/20 14:45	4/30/20 14:47	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #2 (S-65) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event		Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation		(6) Type of Event		(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)		(9) Did Event Cause Any Emission Limit Exceedance?		(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
1			Engine #2 (S-65)	11/2/19 17:45	11/2/19 17:47	0.03	0.17	Low Coolant Pressure	x	113: Inspection/Maintenance		Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		P Madison	11/2/2019
	x	Shutdown								116: Well Raising	x	Automatic (Go to 9)			No	x	No			
	x	Startup		11/2/19 17:55	11/2/19 17:57	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
2			Engine #2 (S-65)	11/2/19 18:10	11/2/19 18:12	0.03	0.33	Johnson Matthey High Pressure	x	113: Inspection/Maintenance		Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		P Madison	11/2/2019
	x	Shutdown								116: Well Raising	x	Automatic (Go to 9)			No	x	No			
	x	Startup		11/2/19 18:30	11/2/19 18:32	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
3			Engine #2 (S-65)	11/8/19 9:00	11/8/19 9:02	0.03	0.33	Oil Change	x	113: Inspection/Maintenance	x	Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		P Madison	11/8/2019
	x	Shutdown								116: Well Raising		Automatic (Go to 9)		x	No		No			
	x	Startup		11/8/19 9:20	11/8/19 9:22	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
4			Engine #2 (S-65)	11/27/19 0:30	11/27/19 0:32	0.03	1.00	Loss of utility	x	113: Inspection/Maintenance		Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		P Madison	11/27/2019
	x	Shutdown								116: Well Raising	x	Automatic (Go to 9)			No	x	No			
	x	Startup		11/27/19 1:30	11/27/19 1:32	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
5			Engine #2 (S-65)	12/5/19 16:30	12/5/19 16:32	0.03	23.67	Repairs to Cylinder 11	x	113: Inspection/Maintenance		Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		P Madison	12/6/2019
	x	Shutdown								116: Well Raising	x	Automatic (Go to 9)			No	x	No			
	x	Startup		12/6/19 16:10	12/6/19 16:12	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
6			Engine #2 (S-65)	12/7/19 9:25	12/7/19 9:27	0.03	0.25	Detonation cylinder 11	x	113: Inspection/Maintenance		Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		P Madison	12/7/2019
	x	Shutdown								116: Well Raising	x	Automatic (Go to 9)			No	x	No			
	x	Startup		12/7/19 9:40	12/7/19 9:42	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
7			Engine #2 (S-65)	12/9/19 9:00	12/9/19 9:02	0.03	248.00	Repairs to flare	x	113: Inspection/Maintenance	x	Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		P Madison	12/19/2019
	x	Shutdown								116: Well Raising		Automatic (Go to 9)		x	No		No			
	x	Startup		12/19/19 17:00	12/19/19 17:02	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
8			Engine #2 (S-65)	12/20/19 6:45	12/20/19 6:47	0.03	4.00	Repairs to flare	x	113: Inspection/Maintenance		Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		P Madison	12/20/2019
	x	Shutdown								116: Well Raising	x	Automatic (Go to 9)			No	x	No			
	x	Startup		12/20/19 10:45	12/20/19 10:47	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
9			Engine #2 (S-65)	12/20/19 19:40	12/20/19 19:42	0.03	20.08	Repairs to Cylinder 19 detonation	x	113: Inspection/Maintenance		Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		P Madison	12/21/2019
	x	Shutdown								116: Well Raising	x	Automatic (Go to 9)			No	x	No			
	x	Startup		12/21/19 15:45	12/21/19 15:47	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
10			Engine #2 (S-65)	12/27/19 17:30	12/27/19 17:32	0.03	21.75	Repairs to cylinder 19 detonation	x	113: Inspection/Maintenance		Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		P Madison	12/28/2019
	x	Shutdown								116: Well Raising	x	Automatic (Go to 9)			No	x	No			
	x	Startup		12/28/19 15:15	12/28/19 15:17	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
11			Engine #2 (S-65)	12/30/19 20:50	12/30/19 20:52	0.03	0.42	Harness repair	x	113: Inspection/Maintenance	x	Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		P Madison	12/30/2019
	x	Shutdown								116: Well Raising		Automatic (Go to 9)		x	No		No			
	x	Startup		12/30/19 21:15	12/30/19 21:17	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			
12			Engine #2 (S-65)	1/8/20 13:30	1/8/20 13:32	0.03	0.75	Shutdown for Air Compressor Installation	x	113: Inspection/Maintenance	x	Manual (Go to 7)	Procedures 1 to 3		Yes (Go to 9)		Yes (Go to 10)		P Madison	1/8/2020
	x	Shutdown								116: Well Raising		Automatic (Go to 9)		x	No		No			
	x	Startup		1/8/20 14:15	1/8/20 14:17	0.03				117: Gas Collection	x	Manual (Go to 7)	Procedures 1 to 4		Yes (Go to 9)		Yes (Go to 10)			
		Malfunction								118: Construction Activities		Automatic (Go to 9)		x	No		No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #2 (S-65) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
13		Engine #2 (S-65)	1/9/20 12:35	1/9/20 12:37	0.03	0.75	Shutdown for Air Compressor Installation	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/9/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		1/9/20 13:20	1/9/20 13:22	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
14		Engine #2 (S-65)	1/9/20 13:30	1/9/20 13:32	0.03	0.25	Johnson Matthey Fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/9/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		1/9/20 13:45	1/9/20 13:47	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
15		Engine #2 (S-65)	1/9/20 14:10	1/9/20 14:12	0.03	0.17	Johnson Matthey fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/9/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		1/9/20 14:20	1/9/20 14:22	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
16		Engine #2 (S-65)	1/9/20 14:40	1/9/20 14:42	0.03	0.33	Johnson Matthey fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/9/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		1/9/20 15:00	1/9/20 15:02	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
17		Engine #2 (S-65)	1/14/20 10:00	1/14/20 10:02	0.03	25.17	Exhaust Gas temp. sensor replacement	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/15/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		1/15/20 11:10	1/15/20 11:12	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
18		Engine #2 (S-65)	1/15/20 11:50	1/15/20 11:52	0.03	0.17	Johnson Matthey fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/15/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		1/15/20 12:00	1/15/20 12:02	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
19		Engine #2 (S-65)	1/15/20 12:15	1/15/20 12:17	0.03	0.25	Console error	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/15/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		1/15/20 12:30	1/15/20 12:32	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
20		Engine #2 (S-65)	1/15/20 13:35	1/15/20 13:37	0.03	0.17	Johnson Matthey fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/15/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		1/15/20 13:45	1/15/20 13:47	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
21		Engine #2 (S-65)	1/19/20 8:35	1/19/20 8:37	0.03	1.42	EEE high voltage testing	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/19/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		1/19/20 10:00	1/19/20 10:02	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
22		Engine #2 (S-65)	1/19/20 10:10	1/19/20 10:12	0.03	0.25	Johnson Matthey fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/19/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		1/19/20 10:25	1/19/20 10:27	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
23		Engine #2 (S-65)	1/20/20 8:25	1/20/20 8:27	0.03	7.00	EEE high voltage testing	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/20/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		1/20/20 15:25	1/20/20 15:27	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
24		Engine #2 (S-65)	1/27/20 13:50	1/27/20 13:52	0.03	0.50	Oil & filter change	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/27/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		1/27/20 14:20	1/27/20 14:22	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #2 (S-65) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
25		Engine #2 (S-65)	2/5/20 9:20	2/5/20 9:22	0.03	0.25	Johnson-Matthey fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/5/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		2/5/20 9:35	2/5/20 9:37	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
26		Engine #2 (S-65)	2/22/20 1:45	2/22/20 1:47	0.03	3.17	Reverse power	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/22/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		2/22/20 4:55	2/22/20 4:57	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
27		Engine #2 (S-65)	2/22/20 5:15	2/22/20 5:17	0.03	0.67	Johnson-Matthey fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/22/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		2/22/20 5:55	2/22/20 5:57	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
28		Engine #2 (S-65)	2/24/20 11:30	2/24/20 11:32	0.03	0.33	Engine overspeed	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/24/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		2/24/20 11:50	2/24/20 11:52	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
29		Engine #2 (S-65)	2/24/20 12:05	2/24/20 12:07	0.03	0.25	Johnson-Matthey fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/24/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		2/24/20 12:20	2/24/20 12:22	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
30		Engine #2 (S-65)	2/24/20 22:25	2/24/20 22:27	0.03	7.42	Detonation cyl. 11	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/25/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		2/25/20 5:50	2/25/20 5:52	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
31		Engine #2 (S-65)	2/25/20 6:25	2/25/20 6:27	0.03	0.25	Console malfunction	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/25/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		2/25/20 6:40	2/25/20 6:42	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
32		Engine #2 (S-65)	2/25/20 6:50	2/25/20 6:52	0.03	0.67	Johnson-Matthey fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/25/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		2/25/20 7:30	2/25/20 7:32	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
33		Engine #2 (S-65)	2/26/20 12:15	2/26/20 12:17	0.03	0.42	Electrical malfunctions	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/26/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		2/26/20 12:40	2/26/20 12:42	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
34		Engine #2 (S-65)	2/27/20 7:00	2/27/20 7:02	0.03	6.75	Wiring of new compressor	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/27/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		2/27/20 13:45	2/27/20 13:47	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
35		Engine #2 (S-65)	2/27/20 14:50	2/27/20 14:52	0.03	0.33	Johnson-Matthey fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/27/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		2/27/20 15:10	2/27/20 15:12	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
36		Engine #2 (S-65)	2/27/20 15:20	2/27/20 15:22	0.03	0.25	Console Malfunction	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/27/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		2/27/20 15:35	2/27/20 15:37	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #2 (S-65) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
37		Engine #2 (S-65)	2/27/20 16:35	2/27/20 16:37	0.03	0.17	Johnson-Matthey fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	2/27/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		2/27/20 16:45	2/27/20 16:47	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
38		Engine #2 (S-65)	3/10/20 21:45	3/10/20 21:47	0.03	0.17	High condensation level fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/10/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/10/20 21:55	3/10/20 21:57	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
39		Engine #2 (S-65)	3/10/20 22:05	3/10/20 22:07	0.03	0.17	Johnson-Matthey fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/10/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/10/20 22:15	3/10/20 22:17	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
40		Engine #2 (S-65)	3/10/20 22:45	3/10/20 22:47	0.03	0.17	Johnson-Matthey fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/10/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/10/20 22:55	3/10/20 22:57	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
41		Engine #2 (S-65)	3/10/20 23:50	3/10/20 23:52	0.03	0.25	Johnson-Matthey fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/11/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/11/20 0:05	3/11/20 0:07	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
42		Engine #2 (S-65)	3/12/20 10:50	3/12/20 10:52	0.03	1.17	Replaced exhaust temp sensor	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/12/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		3/12/20 12:00	3/12/20 12:02	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
43		Engine #2 (S-65)	3/12/20 12:10	3/12/20 12:12	0.03	0.50	Johnson-Matthey fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/12/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/12/20 12:40	3/12/20 12:42	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
44		Engine #2 (S-65)	3/13/20 8:55	3/13/20 8:57	0.03	0.50	Johnson-Matthey fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/13/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/13/20 9:25	3/13/20 9:27	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
45		Engine #2 (S-65)	3/27/20 4:25	3/27/20 4:27	0.03	5.08	Detonation on Cylinder 11 & Johnson-Matthey faults	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/27/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/27/20 9:30	3/27/20 9:32	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
46		Engine #2 (S-65)	3/30/20 14:20	3/30/20 14:22	0.03	0.50	Turbo inlet temp high	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/30/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/30/20 14:50	3/30/20 14:52	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
47		Engine #2 (S-65)	3/31/20 4:15	3/31/20 4:17	0.03	0.50	Johnson-Matthey fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/31/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/31/20 4:45	3/31/20 4:47	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
48		Engine #2 (S-65)	3/31/20 5:20	3/31/20 5:22	0.03	0.42	high JW temp	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	3/31/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		3/31/20 5:45	3/31/20 5:47	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #2 (S-65) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
49		Engine #2 (S-65)	3/31/20 5:45	3/31/20 5:47	0.03	0.75	Johnson-Matthey fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	3/31/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		3/31/20 6:30	3/31/20 6:32	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
50		Engine #2 (S-65)	4/2/20 18:25	4/2/20 18:27	0.03	1.42	SCR Fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/2/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/2/20 19:50	4/2/20 19:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
51		Engine #2 (S-65)	4/5/20 22:50	4/5/20 22:52	0.03	7.33	SCR fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/6/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/6/20 6:10	4/6/20 6:12	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
52		Engine #2 (S-65)	4/6/20 6:35	4/6/20 6:37	0.03	0.50	SCR Fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/6/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/6/20 7:05	4/6/20 7:07	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
53		Engine #2 (S-65)	4/6/20 7:50	4/6/20 7:52	0.03	0.42	SCR Fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/6/2020
	x Shutdown							116: Well Raising	X Automatic (Go to 9)		No	x No			
	x Startup		4/6/20 8:15	4/6/20 8:17	0.03			117: Gas Collection	X Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
54		Engine #2 (S-65)	4/9/20 0:05	4/9/20 0:07	0.03	0.33	Johnson-Matthey fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/9/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/9/20 0:25	4/9/20 0:27	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
55		Engine #2 (S-65)	4/9/20 0:40	4/9/20 0:42	0.03	0.25	Johnson-Matthey fault	x 113: Inspection/Maintenance	x Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/9/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		x No	x No			
	x Startup		4/9/20 0:55	4/9/20 0:57	0.03			117: Gas Collection	Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		No	No			
56		Engine #2 (S-65)	4/9/20 1:10	4/9/20 1:12	0.03	0.25	Johnson-Matthey fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/9/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/9/20 1:25	4/9/20 1:27	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
57		Engine #2 (S-65)	4/9/20 1:30	4/9/20 1:32	0.03	0.33	High coolant temp	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/9/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/9/20 1:50	4/9/20 1:52	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
58		Engine #2 (S-65)	4/9/20 2:35	4/9/20 2:37	0.03	0.17	Johnson-Matthey fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/9/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/9/20 2:45	4/9/20 2:47	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
59		Engine #2 (S-65)	4/9/20 3:10	4/9/20 3:12	0.03	0.42	High coolant temp	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/9/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/9/20 3:35	4/9/20 3:37	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			
60		Engine #2 (S-65)	4/9/20 3:50	4/9/20 3:52	0.03	0.50	Johnson-Matthey fault	x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures 1 to 3	Yes (Go to 9)	Yes (Go to 10)		P Madison	4/9/2020
	x Shutdown							116: Well Raising	x Automatic (Go to 9)		No	x No			
	x Startup		4/9/20 4:20	4/9/20 4:22	0.03			117: Gas Collection	x Manual (Go to 7)	Procedures 1 to 4	Yes (Go to 9)	Yes (Go to 10)			
	Malfunction							118: Construction Activities	Automatic (Go to 9)		x No	No			

REDWOOD LANDFILL, INC.
WMRE LFG Engine #2 (S-65) DEVICE DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
61		Engine #2 (S-65)	4/13/20 9:35	4/13/20 9:37	0.03	0.58	Oil & filter change	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/13/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		4/13/20 10:10	4/13/20 10:12	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
62		Engine #2 (S-65)	4/14/20 1:55	4/14/20 1:57	0.03	6.75	Johnson-Matthey fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/14/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/14/20 8:40	4/14/20 8:42	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
63		Engine #2 (S-65)	4/14/20 9:30	4/14/20 9:32	0.03	0.17	Johnson-Matthey fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/14/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/14/20 9:40	4/14/20 9:42	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
64		Engine #2 (S-65)	4/14/20 16:45	4/14/20 16:47	0.03	0.17	JW high temp	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/14/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/14/20 16:55	4/14/20 16:57	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
65		Engine #2 (S-65)	4/14/20 17:00	4/14/20 17:02	0.03	0.33	JW high temp	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/14/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/14/20 17:20	4/14/20 17:22	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
66		Engine #2 (S-65)	4/21/20 6:15	4/21/20 6:17	0.03	3.42	Replace Jacket Water Regulators	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/21/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		4/21/20 9:40	4/21/20 9:42	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
67		Engine #2 (S-65)	4/22/20 11:10	4/22/20 11:12	0.03	0.25	Crankcase vent filter	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/22/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/22/20 11:25	4/22/20 11:27	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
68		Engine #2 (S-65)	4/29/20 13:15	4/29/20 13:17	0.03	2.50	Detonation Cylinder 18 & J-M fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/29/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/29/20 15:45	4/29/20 15:47	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
69		Engine #2 (S-65)	4/29/20 16:50	4/29/20 16:52	0.03	0.17	Johnson-Matthew fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/29/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/29/20 17:00	4/29/20 17:02	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
70		Engine #2 (S-65)	4/29/20 17:10	4/29/20 17:12	0.03	0.25	Johnson-Matthew fault	☒ 113: Inspection/Maintenance	☐ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	4/29/2020
	☒ Shutdown							☐ 116: Well Raising	☒ Automatic (Go to 9)		☐ No	☒ No			
	☒ Startup		4/29/20 17:25	4/29/20 17:27	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			

REDWOOD LANDFILL, INC.
WMRE TREATMENT SYSTEM (S-71) DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
No S-71 SSM events in November 2019															
1	☒ Shutdown ☒ Startup ☐ Malfunction	Treatment System (S-71)	12/9/19 9:00	12/9/19 9:02	0.03	195.67	Repairs to flare	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	12/17/2019
								☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
			12/17/19 12:40	12/17/19 12:42	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
								☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
2	☒ Shutdown ☒ Startup ☐ Malfunction	Treatment System (S-71)	1/20/20 8:40	1/20/20 8:42	0.03	5.33	EEE high voltage testing	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		P Madison	1/20/2020
								☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
			1/20/20 14:00	1/20/20 14:02	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
								☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
No S-71 SSM events in February 2020															
No S-71 SSM events in March 2020															
No S-71 SSM events in April 2020															

Emission Control Devices
Gas Collection and Control System (GCCS) Downtime Summary

Redwood Landfill, Novato, CA
GCCS DOWNTIME REPORT Period: November 1, 2019 to April 30, 2020

SHUTDOWN DATE/TIME	START-UP DATE/TIME	TOTAL DOWNTIME (hours)	COMMENTS/ACTION TAKEN
11/07/19 10:48	11/07/19 11:26	0.63	Manual Shutdown to disconnect generator from compressor.
11/27/19 00:28	11/27/19 01:00	0.53	All control devices were shutdown due to a site-wide power outage. Inspected upon restart of the control devices. Visual inspections and PLC checks were
12/09/19 09:00	12/09/19 09:04	0.07	Manual Shutdown for piping Willexa to A60A side.
12/16/19 12:20	12/16/19 12:22	0.03	Manual Shutdown for maintenance & programing.
12/16/19 12:50	12/16/19 12:52	0.03	Manual Shutdown for maintenance & programing.
12/17/19 08:50	12/17/19 08:54	0.07	Manual Shutdown for maintenance.
12/17/19 10:06	12/17/19 10:10	0.07	Flame alarm shutdown. System inspected after restart.
12/18/19 15:58	12/18/19 16:02	0.07	Flame alarm shutdown. System inspected after restart.
01/03/20 08:24	01/03/20 08:26	0.03	A51 Flare Started to check operating parameters.
01/03/20 09:28	01/03/20 09:30	0.03	A51 Flare Started to check operating parameters.
01/15/20 11:12	01/15/20 11:20	0.13	A51 Flare Started to check new flame arrestor.
01/15/20 12:18	01/15/20 12:20	0.03	A51 Flare Started to check new flame arrestor.
01/20/20 08:18	01/20/20 08:20	0.03	A51 Started to check Flowmeter calibration.
01/21/20 07:14	01/21/20 07:16	0.03	A51 Started for engineering test.
01/21/20 12:00	01/21/20 12:02	0.03	A51 Started for engineering test.
01/22/20 06:38	01/22/20 06:40	0.03	A51 Started for Annual Source Test.
01/22/20 12:06	01/22/20 12:08	0.03	A51 Started for Annual Source Test.
		0.00	No GCCS Downtime in February 2020
		0.00	No GCCS Downtime in March 2020
04/21/20 06:30	04/21/20 06:32	0.03	A51 flare started for swapping A60 blowers
04/21/20 06:46	04/21/20 06:48	0.03	A51 flare started for swapping A60 blowers
04/30/20 09:42	04/30/20 09:44	0.03	A51 started for A60 Yokogawa maintenance

Combined Emission Control Devices	
Total 2019 Downtime:	**64.63**
November 1, 2019 through April 30, 2020 Downtime:	**2.00**
January 1, 2020 through April 30, 2020 Total Downtime:	**0.50**
Total 2020 Downtime:	**0.50**

GCCS Downtime is when emission control devices (flares only) are not operating.

APPENDIX C

BAAQMD CORRESPONDENCE

WASTE MANAGEMENT

REDWOOD LANDFILL, INC.
8950 Redwood Highway
P.O. Box 793
Novato, CA 94948
(415) 892-2851
(855) 242-0798 Fax

November 4, 2019
(Via email: compliance@baaqmd.gov)

Director of Compliance and Enforcement
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, California 94105
Attn: Title V Reports

Re: Title V 10-Day Written Report for PG&E Public Safety Power Shutoff (PSPS)
Facility A1179, Redwood Landfill, Inc., Novato, California

Dear Sir or Madam:

The Redwood Landfill, Inc. (RLI) is submitting this 10-day written report to the Bay Area Air Quality Management District (BAAQMD) as required under Title V Permit Condition Section I.F for Monitoring Reports.

The RLI Title V Permit Requirement states that "*All instances of non-compliance with the permit shall be reported in writing to the District's Compliance and Enforcement Division within 10 calendar days of the discovery of the incident*". This 10-day written report is a follow-up report for the RLI Permit Source S-5 due to the recent PG&E's Public Safety Power Shutoff (PSPS).

The RLI gas collection and control system (GCCS) was shutdown for an extended period from 10/26/2019 5:18 PM through 10/28/2019 9:46 PM, due to the recent PSPS event. During this PSPS event, the GCCS was potentially out of compliance with the BAAQMD regulation 8-34-301.1.

A breakdown report was submitted during the weekend on 10/26/2019 at ~7:53 pm via the afterhours phone line (BAAQMD issued RCA #07P68) and updated with event clear date on October 28, 2019 when RLI was able to secure a rental generator and connect it to the GCCS and get it back online (see attachments).

RLI has requested that a Breakdown Relief should be granted as RLI complied with administrative requirements despite its objections to the re-interpretation of Rule 8-34 and:

1. The breakdown is not the result of intent, negligence or disregard of air pollution control regulations;
2. The breakdown is not the result of improper maintenance;
3. The breakdown does not create a public nuisance;

4. The breakdown was not caused by an excessively recurrent breakdown of the same equipment; and
5. The breakdown did not occur and any emissions did not interfere with attainment or maintenance of any National or California air quality standard.

RLI filed for an Emergency Variance on October 28, 2019, due to the potential length of the PSPS. RLI had been actively seeking a permitted generator to power the flare before the PSPS. On October 28, 2019, RLI secured a generator and arranged for an electrician to make the necessary connections to power the GCCS. The RLI GCCS came back online via generator power on October 28, 2019 at 9:46 pm.

As required, RLI will submit a 30-day follow-up written report and provide additional details as appropriate. RLI is committed to operating its landfill in compliance with all applicable regulations.

If you have any questions regarding this notification, please contact me at (510) 613-2852 or Alisha McCutcheon, Redwood Landfill Technical Manager, at (415) 373-8033.

Thank you,
Redwood Landfill, Inc.

Michael Chan

Michael Chan
Environmental Protection Specialist

Attachment: RLI RCA Form -RCA Number 07P68 for Breakdown Relief

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

COMPLIANCE & ENFORCEMENT DIVISION

Notification Form

Reportable Compliance Activity (RCA)

See back of form for instructions →

1. ☒ **BREAKDOWN RELIEF:** ***District Use Only*** **BREAKDOWN REFERENCE #:**

2. ☐ **MONITOR EXCESS EMISSION or EXCURSION:** ***District Use Only*** **REFERENCE #:**

3. ☐ **MONITOR IS INOPERATIVE:** ***District Use Only*** **REFERENCE #:**

4. ☐ **PRESSURE RELIEF DEVICE (PRD):** ***District Use Only*** **PRD REFERENCE #:**

SITE INFORMATION AND DESCRIPTION INFORMATION (REQUIRED)

Company	Redwood Landfill (RLI)	Site #	A1179
Address	8950 Redwood Hwy, Novato	Source #	S5
Reported by	C. Colline/Michael Chan	Phone #	510-613-2852
Indicated Excess		Fax #	
Allowable Limit		Averaging Time	
Start Time/Date	10/26/2019 5:18 PM	Clear Time	10/28/19 9:46 PM

Monitor/device type(s) ☐ ▶CEM ☐ ▶GLM ☐ ▶Parametric ☐ ▶PRD ☐ ▶Non-monitor

Monitor description(s)

Parameter(s) exceeded or not functioning due to inoperation

☐ ▶NO_x ☐ ▶SO_2 ☐ ▶CO ☐ ▶CO_2 ☐ ▶H_2S ☐ ▶TRS ☐ ▶NH_3

☐ ▶O_2 ☐ ▶H_2O ☐ ▶Opacity ☐ ▶Lead ☐ ▶Gauge Pressure ☐ ▶Flow

☐ ▶Hydrocarbon Breakthrough (VOC) ☐ ▶Temperature ☐ ▶Wind Speed

☐ ▶Wind Direction ☐ ▶Steam ☒ ▶Other (describe) Power Outage

Unit(s) of Measurement

☐ ▶ppm ☐ ▶ppb ☐ ▶min/hr > 20% ☐ ▶inches H_2O ☐ ▶mmHg

☐ ▶psig ☐ ▶pH ☐ ▶^{0}Fahrenheit ☐ ▶Other (describe)

Event Description:

A breakdown report was submitted on 10/26/2019 at ~7:53 pm via the after hours phone line by RLI because the GCCS cannot continuously operate due to PG&E's forced Public Safety Power Shutoff (PSPS). During the PG&E's forced PSPS power outage, the GCCS was potentially out of compliance with BAAQMD regulation 8-34-301.1. Please also see our objections and discussion in the attached cover letter dated 10/28/2019. Update(10/29/2019)(RCA #07P68): Generator connected and GCCS back online 10/28/2019 ~9:46 pm.

District Use Only		
Received by	Date	Time

General Instructions

- ✓ Check the Box numbers 1- 4 that apply to the RCA you are trying to report or request and read the detailed instructions.
- ✓ You will receive an ID # for each RCA you submit. In the case of a request for Breakdown Relief where multiple monitors are affected, you do not need to submit multiple forms, as long as all necessary information is given on one form. RCA reported during other than core business hours will be assigned an ID # the following working day. If you do not receive an ID #, it is your responsibility to contact the BAAQMD to get one.
- ✓ You may submit only one request for breakdown relief per form. However, you may submit multiple indicated excess, inoperative monitors and PRD reports on one form, provided that the start and end times given for the events in the required information section is inclusive of all events. Information on parameters exceeded, units of measurement and allowable limits can be provided in the event description box or when contacted by District staff with questions.
- ✓ Fill out the "Site Information and Description Information Required" areas of this form and email to *rca@baaqmd.gov*
- ✓ **A 30-day written follow-up report is required for Breakdown Requests and PRD Releases**. Reports for these types of RCA must contain a quantification of emissions, the calculations used to derive the emissions, and their duration. Reference Breakdown Admissions Advisory dated 12/3/04. Send 30-day report letters to: BAAQMD Compliance and Enforcement Division, MAILSTOP: RCA 30-DAY REPORT, 375 Beale Street, Ste. 600 San Francisco, CA 94105. NOTE: **You may have additional report requirements under Title V.**

Detailed Instructions

Box 1: To Request Breakdown Relief (Regulations 1-112, 1-113, 1-208, 1-431, 1-432)

If you have an equipment malfunction (e.g.; breakdown) that leads to the release of air pollutants above the regulatory or your permitted levels, you may request relief from BAAQMD enforcement action.

- Check Box #1.
- **NOTE:** Start and end times given for these events in the required information section must be inclusive of all events.
- Fill out all the information in the "Site Information and Description Information (Required)" area of the form.
- Requests for breakdown relief may not be withdrawn and must be called in or faxed to the BAAQMD immediately upon discovery of an equipment malfunction.
- Receipt of an RCA ID# for a breakdown does not mean relief has been granted. An Inspector will visit your facility to determine compliance.

Box 2: Monitor Indicates Excess Emission or Excursion (Regulation 1-522.7, 1-523.3, 1-542)

When a BAAQMD-required monitor indicates an excess or excursion, you must report it to the BAAQMD.

- Check Box #2.
- Fill out all the information in the "Site Information and Description Information (Required)" area of the form.
- Any excess emission indicated by a CEM or excursion of a parametric monitor, shall be reported to the BAAQMD within 96 hours.
- Area concentration excesses over the limits prescribed in District regulations shall be reported to the BAAQMD within the next normal working day following the examination of data.

Box 3: Monitor Is Inoperative (Regulations 1-522, 1-523, 1-530)

When a BAAQMD-required monitor is inoperative for greater than 24 hours, you must report it to the BAAQMD.

- Check Box #3 only if inoperative for greater than 24 hours.
- Fill out all the information in the "Site Information and Description Information (Required)" area of the form.
- All reports of inoperative monitors must be reported by the following BAAQMD working day and additionally be cleared by a notification of resumption of monitoring. To notify the BAAQMD regarding the resumption of monitoring, do not send in a separate RCA form; call (415) 749-4979 and give the RCA ID #, date, and the time of resumption.
- Inoperative monitors (except parametric monitors) with downtime greater than 15 days must furnish proof of expedited repair in a follow-up report.

Box 4: Pressure Relief Device (PRD) Is Released (Regulation 8-28-401)

When a PRD at your refinery/chemical plant vents to the atmosphere, you must report it to the BAAQMD.

- Check Box #4 only if a pressure relief device is released.
- Separate RCA ID #'s can be applied to monitor(s) affected by a PRD by also checking Box #2 if other monitors record an excess or excursion.
- Fill out all the information in the "Site Information and Description Information (Required)" area of the form.
- All PRD release reports must be reported by the following BAAQMD working day.

UPS CampusShip: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.
   Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.
   Hand the package to any UPS driver in your area.

UPS Access Point™
CAOAK-LOCKR-UPS CC
8400 PARDEE DR
OAKLAND ,CA 94621

UPS Access Point™
ABE'S LOTTO
10125 INTERNATIONAL BLVD
OAKLAND ,CA 94603

UPS Access Point™
THE UPS STORE
1271 WASHINGTON AVE
SAN LEANDRO ,CA 94577

FOLD HERE

MICHAEL CHAN
5102050410
WM OF N CALIFORNIA AREA OFFICE
172 98TH AVE
OAKLAND CA 946031004

0.4 LBS LTR 1 OF 1

SHIP TO:
DIRECTOR OF COMPLIANCE &ENFORCEMENT
4157494900 5032
BAY AREA AIR QUALITY MANAGEMENT DIS
STE 600
375 BEALE ST
SAN FRANCISCO CA 94105-2097

CA 941 9-22

UPS NEXT DAY AIR SAVER 1P

TRACKING #: 1Z 56E 1A0 13 0103 5610

BILLING: P/P

Reference # 1: NorCal
Reference # 2: Redwood Title V 10day Letter

CS 21.5.47. WNTNV50 17.0A 09/2019

Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number
1Z56E1A01301035610

Weight
0.40 LBS

Service

UPS Next Day Air Saver®

Shipped / Billed On
11/04/2019

Delivered On

11/05/2019 2:40 P.M.

Delivered To
SAN FRANCISCO, CA, US
Received By

JASON

Left At
Mail Room

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 11/05/2019 6:17 P.M. EST

HEARING BOARD RESPONSE

FILED
NOV 05 2019
HEARING BOARD
BAY AREA AIR QUALITY
MANAGEMENT DISTRICT

Hearing Board Member: Dr. Peter Y. Chiu

DOCKET NO. 3718 (Waste Management (Redwood Landfill) Emergency Variance)

Contacted on: Date: 11/5/2019 Time: 11:32 a.m.

Decision Rendered: Date: 11/5/2019 Time: 2:45 pm

GRANT (X) Emergency Variance until: 11/27/2019

DENY ( ) Emergency Variance

Reason for Hearing Board action (and conditions, if any): ___________________

The Hearing Board accepts the following reasons as presented in the response from the Air District staff:

On October 26, 2019, Pacific Gas & Electric (PG&E) executed a Public Safety Power Shutoff (PSPS) event due to extreme wind conditions and increased wildfire risks in PG&E service areas. The PSPS event impacted over 1.3 million Bay Area residents and lasted up to several days in some regions of the Bay Area. Governor Newsom issued a Proclamation of a Stale of Emergency directing collective support from public agencies, stakeholders and organizations to assist and minimize impacts, utilizing maximum discretion to provide relief.

The magnitude and scale of those impacted by the PSPS event was unforeseeable and resultant power outage at the Redwood Landfill was unpreventable. Air District Regulation 8-34-301.1 and associated permit condition #19867.17 requires the landfill to operate gas collection and emissions control systems continuously, however, due to the PSPS event, the facility experienced a power outage, and the collection system and flare shutdown for approximately 52 hours. Due to the extreme wildfire threat, additional PSPS events cannot be ruled out during the proposed variance period. This Emergency Variance shall only apply to PSPS specific events.

The Emergency Variance is granted with the following conditions as recommended by Air District staff:

1) Notify Air District Compliance & Enforcement Division via email at Compliance@baaqmd.gov of the following:
a. Immediate notification to Air District that a PG&E PSPS would impact facility operations;
b. Within 24 hours of PG&E power restoration, provide notification to the Air District of the total electrical service downtime, including the date and time power was restored at the facility.

2) Explore and evaluate options to ensure continuous operation of landfill gas collection and emissions control system during PSPS events. At the conclusion of the variance period, provide a summary of the options to prevent operational downtime and provide an estimated timeline to install backup power and/or other feasible option(s) evaluated.

Applicant advised of decision: Date: 11/5/19 Time: 4:15 p.m.

Person receiving information: Michael Chan & Alisha McCutcheon

cc: Enforcement
APCO

Revised 07/15/2015

FILED

NOV 12 2019

HEARING BOARD
BAY AREA AIR QUALITY
MANAGEMENT DISTRICT

BEFORE THE HEARING BOARD
OF THE
BAY AREA AIR QUALITY MANAGEMENT DISTRICT
STATE OF CALIFORNIA

In the Matter of the Application of WASTE MANAGEMENT – REDWOOD LANDFILL, INCORPORATED For Emergency Variance from Regulation 8, Rule 34, Section 301.1; and Permit Condition #19867, Item 17.	Docket No.: 3718 ORDER GRANTING EMERGENCY VARIANCE

The above-entitled matter, being an Application for Emergency Variance (EV) from the provisions of Regulation 8, Rule 34, Section 301.1; and Permit Condition #19867, Item 17 was filed on October 29, 2019, after initial contact by telephone at 4:47 p.m. on October 28, 2019, and having been considered by the Hearing Board,

THE HEARING BOARD STATES as the reasons for its decision and FINDS as to those matters in which findings are required:

A. Applicant filed an application under the EV procedures, Hearing Board Rules, Section 2.5. Pursuant to Health and Safety Code Sections 42359 and 42359.5, and the Hearing Board determined that this Application properly could be ruled upon without notice and hearing. Prior to making this determination, and in accordance with Hearing Board Rules Section 2.5.d.2, the Hearing Board requested and received a response to this Application from the Executive Officer/Air Pollution Control Officer for the Bay Area Air Quality Management District (Air District). The Air District staff response recommended the Application for EV be granted.

B. Applicant operates a landfill gas collection and control system (GCCS) (Source #S-5), located at 8950 Redwood Highway, Novato, CA 94948.

C. On October 26, 2019, PG&E executed a Public Safety Power Shutoff (PSPS) due to extreme wind conditions and increased wildfire risks. This PSPS event lasted up to several days in some regions of the San Francisco Bay Area. As a result of this PSPS event, the applicant's facility experienced a power outage, and consequently the gas collection and flare shut down for approximately fifty-two (52) hours.

D. Applicant requested an emergency variance period of October 28, 2019 to November 27, 2019, (30 days).

E. Compliance is beyond Applicant's reasonable control.

F. Due to the extreme wildfire threat, additional PSPS events cannot be ruled out during the Emergency Variance period.

G. The Applicant does meet the good cause standard for issuance of an EV.

THEREFORE, THE HEARING BOARD ORDERS:

An Emergency Variance from Regulation 8, Rule 34, Section 301.1; and Permit Condition #19867, Item 17, is hereby granted from October 28, 2019, at 4:47 pm, to November 27, 2019 with the following conditions:

A. Notify Air District Compliance & Enforcement Division via email at Compliance@baaqmd.gov of the following: 1) Immediate notification to Air District that a PG&E Public Safety Power Shutoff (PSPS) would impact facility operations; and 2) Within 24 hours of PG&E power restoration, provide notification to the Air District of the total electrical service downtime, including the date and time power was restored at the facility; **(Air District Staff Condition 1)**

B. Explore and evaluate options to ensure continuous operation of landfill gas collection and emissions control system during PSPS events, and at the conclusion of the variance period, provide a summary of the options to prevent operational downtime and provide an estimated timeline to install backup power and/or other feasible option(s) evaluated. **(Air District Staff Condition 2)**

C. This Emergency Variance shall only apply to PSPS specific events.

Peter Y. C

11/6/2019

Peter Y. Chiu, MD, PE
Hearing Board Member

Date

Bay Area Air Quality Management District

BEFORE THE HEARING BOARD
OF THE
BAY AREA AIR QUALITY MANAGEMENT DISTRICT
STATE OF CALIFORNIA

FILED
NOV 12 2019
HEARING BOARD
BAY AREA AIR QUALITY
MANAGEMENT DISTRICT

In the Matter of the Application of)
)
WASTE MANAGEMENT – REDWOOD LANDFILL, INCORPORATED) No. 3718
)
) CERTIFICATION OF SERVICE
For Emergency Variance from Regulation 8, Rule 34, Section 301.1; and Permit Condition #19867, Item 17.)
)

STATE OF CALIFORNIA)
) ss.
City and County of San Francisco)

I, Marcy Hiratzka, do hereby certify under penalty of perjury as follows:

That I am a citizen of the United States, over the age of eighteen years and not a party to the above entitled action; and that I served a true and correct copy of the attached Order Granting Emergency Variance on:

Michael Chan, Environmental Protection Air Quality Specialist
Waste Management
Redwood Landfill, Incorporated
172 98th Avenue
Oakland, CA 94603

by depositing same in the United States certified mail, return receipt requested, and via email, on November 12, 2019 on

Brian Bunger, District Counsel
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, California 94105

via email and by hand-delivery deposit of same in the in-box of the District Counsel's office, on November 12, 2019

11/12/19
Date

Marcy Hiratzka, Clerk of the Boards

WASTE MANAGEMENT

REDWOOD LANDFILL, INC.
8950 Redwood Highway
P.O. Box 793
Novato, CA 94948
(415) 892-2851
(855) 242-0798 Fax

November 22, 2019
(via compliance@baaqmd.gov and rca@baaqmd.gov)

BAAQMD Compliance and Enforcement Division
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, California 94105
Attn: RCA 30-DAY REPORTS

Re: Facility A1179, Redwood Landfill, Inc., Novato, California
30-Day Written Report for PG&E Public Safety Power Shutoff (PSPS) Breakdown Episode (RCA #07P68)

Dear Sir or Madam:

Redwood Landfill, Inc. (RLI) submits this 30-day written report to the Bay Area Air Quality Management District (BAAQMD) for RLI Source S-5, pursuant to BAAQMD regulation 1-432. A breakdown report was submitted during the weekend on 10/26/2019 at ~7:53 pm via the afterhours phone line (BAAQMD issued RCA #07P68) and updated with event clear date on October 28, 2019 when RLI was able to secure a rental generator, connect it to the GCCS, and bring the GCCS back online (see attachments). The Breakdown report describes a potential non-compliance with BAAQMD regulation 8-34-301.1 due to the approximate 52 hour shutdown of the RLI gas collection and control system (GCCS) from 10/26/2019 5:18 PM through 10/28/2019 9:46 PM caused by a PG&E forced public safety outage designated as a Public Safety Power Shutoff (PSPS). On November 5, 2019, for the period of October 28, 2019 at 4:47 PM to November 27, 2019, an emergency variance from BAAQMD regulation 8-34-301.1 and associated permit condition #19867, Item 17 was granted by BAAQMD for the PSPS shutdown and any additional PSPS events with notification conditions.

Excess emissions:

During the PG&E public safety forced power outage event, the GCCS was potentially out of compliance with the BAAQMD regulation 8-34-301.1 that required continuous operation of GCCS, however, it was not anticipated that RLI violated applicable emission standard(s).

RLI requested that a Breakdown Relief should be granted as RLI complied with administrative requirements despite its objections to the re-interpretation of Rule 8-34 and:

1. The breakdown was not the result of intent, negligence or disregard of air pollution control regulations;
2. The breakdown was not the result of improper maintenance;

3. The breakdown did not create a public nuisance;
4. The breakdown was not caused by an excessively recurrent breakdown of the same equipment; and
5. The breakdown did not occur, and any emissions did not interfere with attainment or maintenance of any National or California air quality standard.

Chronology of corrective action steps taken to minimize potential excess emissions by restoring power and bringing the system back online and to insure a PSPS breakdown will be minimized in the future:

- Prior to and during the PSPS event, RLI actively sought a rental generator or the potential to relocate a generator from outside the PSPS/fire zone and finally received and put to use a rental generator two days prior to the end of the PSPS event; the rental generator remains onsite. RLI also arranged for an electrician to construct the necessary connections between a generator and the GCCS.
- RLI has been and continues to actively seek a permanent permitted generator
- 10/26/2019: RLI site experiences PSPS on 10/26/2019 5:18 PM
- 10/26/2019: A breakdown report was submitted during the weekend on 10/26/2019 at ~7:53 pm via the afterhours phone line
- 10/28/2019: RLI filed for an Emergency Variance on October 28, 2019, due to the potential length of the 10/26/2019 PSPS event and the uncertainty of future PSPS events
- 10/28/2019: RLI brought the GCCS back online via generator power on 10/28/2019 at 9:46 pm.
- 10/29/2019: BAAQMD issued Reportable Compliance Activity (RCA) #07P68
- 10/30/2019: RLI brought the GCCS back online via PG&E power on 10/30/2019 at 8:30 am.
- 11/4/2019: RLI submitted 10-day Title V written report to the BAAQMD on 11/4/2019
- 11/5/2019: BAAQMD granted Emergency Variance (Docket #3718) on 11/5/2019 (see attachment)
- 11/12/2019: BAAQMD Order Granting Emergency Variance (Docket #3718) to RLI on 11/12/2019 (see attachment)

RLI is committed to operating its landfill in compliance with all applicable regulations and respectfully requests concurrence that breakdown relief is granted, the variance is in effect and/or that no further action applies.

If you have any questions regarding this notification, please contact me at (415) 892-2851 or Alisha McCutcheon, Redwood Landfill Technical Manager, at (415) 373-8033.

Thank you,
Redwood Landfill, Inc.

Ramin A. Khany

Ramin Khany
District Manager

Attachment:	A - RLI RCA Form - RCA Number 07P68 for Breakdown Relief
	B - BAAQMD Granting Emergency Variance – Docket #3718, 11/5/19
	C - BAAQMD Order Granting Emergency Variance – Docket #3718, 11/12/19

Attachment A
RLI RCA Form - RCA Number 07P68 for Breakdown Relief

WASTE MANAGEMENT

REDWOOD LANDFILL, INC.
8950 Redwood Highway
P.O. Box 793
Novato, CA 94948
(415) 892-2851
(855) 242-0798 Fax

Via email: rca@baaqmd.gov

October 29, 2019 (update of 10/28/19 letter)

Compliance & Enforcement Division
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, California 94105

Re: Update: Reportable Compliance Activity (RCA) Notification (RCA #07P68)
Facility A1179
Redwood Landfill, Inc., Novato, California

On behalf of Redwood Landfill, Inc. (RLI), although RLI disagrees that Breakdown Relief is the appropriate methodology for compliance with Rule 8-34 during an unplanned power outage, due to direction from Bay Area Air Quality Management District (BAAQMD) staff, this letter is to request Breakdown Relief from BAAQMD for the forced power outage due to PG&E’s Public Safety Power Shutoff (PSPS). A breakdown report was submitted during the weekend on October 26, 2019 at ~7:53 pm via the after hours phone line by RLI because the GCCS was no longer operating due to PG&E's forced PSPS. BAAQMD’s Reportable Compliance Activity (RCA) notification form, as modified, is enclosed. It is not anticipated at this time that RLI violated applicable emission standard(s).

Breakdown Relief should be granted as RLI complied with administrative requirements despite its objections to the re-interpretation of Rule 8-34 and:

1. The breakdown is not the result of intent, negligence or disregard of air pollution control regulations;
2. The breakdown is not the result of improper maintenance;
3. The breakdown does not create a public nuisance;
4. The breakdown was not caused by an excessively recurrent breakdown of the same equipment; and
5. The breakdown did not occur and any emissions did not interfere with attainment or maintenance of any National or California air quality standard.

RLI had been actively seeking a permitted generator to power the flare during the PSPS. On October 28, 2019, RLI secured a generator and arranged for an electrician to make the necessary connections to power the GCCS. The RLI GCCS came back online via generator power on October 28, 2019 at 9:46 pm. RLI filed for an Emergency Variance due to the potential length of the PSPS.

If you have any questions regarding this notification, please contact me at (510) 613-2852 or Alisha McCutcheon, Redwood Landfill Technical Manager, at (415) 373-8033.

Thank you,
Redwood Landfill, Inc.

Michael Chan

Michael Chan
Environmental Protection Specialist

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

COMPLIANCE & ENFORCEMENT DIVISION

Notification Form

Reportable Compliance Activity (RCA)

See back of form for instructions →

1. ☒ **BREAKDOWN RELIEF:** ***District Use Only*** **BREAKDOWN REFERENCE #:**

2. ☐ **MONITOR EXCESS EMISSION or EXCURSION:** ***District Use Only*** **REFERENCE #:**

3. ☐ **MONITOR IS INOPERATIVE:** ***District Use Only*** **REFERENCE #:**

4. ☐ **PRESSURE RELIEF DEVICE (PRD):** ***District Use Only*** **PRD REFERENCE #:**

SITE INFORMATION AND DESCRIPTION INFORMATION (REQUIRED)

Company	Redwood Landfill (RLI)	Site #	A1179
Address	8950 Redwood Hwy, Novato	Source #	S5
Reported by	C. Colline/Michael Chan	Phone #	510-613-2852
Indicated Excess		Fax #	
Allowable Limit		Averaging Time	
Start Time/Date	10/26/2019 5:18 PM	Clear Time	10/28/19 9:46 PM

Monitor/device type(s) ☐ ▶CEM ☐ ▶GLM ☐ ▶Parametric ☐ ▶PRD ☐ ▶Non-monitor

Monitor description(s)

Parameter(s) exceeded or not functioning due to inoperation

☐ ▶NO_x ☐ ▶SO_2 ☐ ▶CO ☐ ▶CO_2 ☐ ▶H_2S ☐ ▶TRS ☐ ▶NH_3

☐ ▶O_2 ☐ ▶H_2O ☐ ▶Opacity ☐ ▶Lead ☐ ▶Gauge Pressure ☐ ▶Flow

☐ ▶Hydrocarbon Breakthrough (VOC) ☐ ▶Temperature ☐ ▶Wind Speed

☐ ▶Wind Direction ☐ ▶Steam ☒ ▶Other (describe) Power Outage

Unit(s) of Measurement

☐ ▶ppm ☐ ▶ppb ☐ ▶min/hr > 20% ☐ ▶inches H_2O ☐ ▶mmHg

☐ ▶psig ☐ ▶pH ☐ ▶^{0}Fahrenheit ☐ ▶Other (describe)

Event Description:
A breakdown report was submitted on 10/26/2019 at ~7:53 pm via the after hours phone line by RLI because the GCCS cannot continuously operate due to PG&E's forced Public Safety Power Shutoff (PSPS). During the PG&E's forced PSPS power outage, the GCCS was potentially out of compliance with BAAQMD regulation 8-34-301.1. Please also see our objections and discussion in the attached cover letter dated 10/28/2019. Update(10/29/2019)(RCA #07P68): Generator connected and GCCS back online 10/28/2019 ~9:46 pm.

District Use Only

Received by Date Time

General Instructions

Attachment B
BAAQMD Granting Emergency Variance – Docket #3718, 11/5/19

HEARING BOARD RESPONSE

Hearing Board Member: Dr. Peter Y. Chiu

DOCKET NO. 3718 (Waste Management (Redwood Landfill) Emergency Variance)

Contacted on: Date: 11/5/2019 Time: 11:32 a.m.

FILED
NOV 05 2019
HEARING BOARD
BAY AREA AIR QUALITY
MANAGEMENT DISTRICT

Decision Rendered: Date: 11/5/2019 Time: 2:45 pm

GRANT (X) Emergency Variance until: 11/27/2019

DENY ( ) Emergency Variance

Reason for Hearing Board action (and conditions, if any): ____________________

The Hearing Board accepts the following reasons as presented in the response from the Air District staff:

On October 26, 2019, Pacific Gas & Electric (PG&E) executed a Public Safety Power Shutoff (PSPS) event due to extreme wind conditions and increased wildfire risks in PG&E service areas. The PSPS event impacted over 1.3 million Bay Area residents and lasted up to several days in some regions of the Bay Area. Governor Newsom issued a Proclamation of a Stale of Emergency directing collective support from public agencies, stakeholders and organizations to assist and minimize impacts, utilizing maximum discretion to provide relief.

The magnitude and scale of those impacted by the PSPS event was unforeseeable and resultant power outage at the Redwood Landfill was unpreventable. Air District Regulation 8-34-301.1 and associated permit condition #19867.17 requires the landfill to operate gas collection and emissions control systems continuously, however, due to the PSPS event, the facility experienced a power outage, and the collection system and flare shutdown for approximately 52 hours. Due to the extreme wildfire threat, additional PSPS events cannot be ruled out during the proposed variance period. This Emergency Variance shall only apply to PSPS specific events.

The Emergency Variance is granted with the following conditions as recommended by Air District staff:

1) Notify Air District Compliance & Enforcement Division via email at Compliance@baaqmd.gov of the following:
a. Immediate notification to Air District that a PG&E PSPS would impact facility operations;
b. Within 24 hours of PG&E power restoration, provide notification to the Air District of the total electrical service downtime, including the date and time power was restored at the facility.

2) Explore and evaluate options to ensure continuous operation of landfill gas collection and emissions control system during PSPS events. At the conclusion of the variance period, provide a summary of the options to prevent operational downtime and provide an estimated timeline to install backup power and/or other feasible option(s) evaluated.

Applicant advised of decision: Date: 11/5/19 Time: 4:15 p.m.

Person receiving information: Michael Chan & Alisha McCutcheon

cc: Enforcement
APCO

Attachment C

BAAQMD Order Granting Emergency Variance – Docket #3718, 11/12/19

FILED
NOV 12 2019
HEARING BOARD
BAY AREA AIR QUALITY
MANAGEMENT DISTRICT

BEFORE THE HEARING BOARD
OF THE
BAY AREA AIR QUALITY MANAGEMENT DISTRICT
STATE OF CALIFORNIA

In the Matter of the Application of WASTE MANAGEMENT – REDWOOD LANDFILL, INCORPORATED For Emergency Variance from Regulation 8, Rule 34, Section 301.1; and Permit Condition #19867, Item 17.	Docket No.: 3718 ORDER GRANTING EMERGENCY VARIANCE

The above-entitled matter, being an Application for Emergency Variance (EV) from the provisions of Regulation 8, Rule 34, Section 301.1; and Permit Condition #19867, Item 17 was filed on October 29, 2019, after initial contact by telephone at 4:47 p.m. on October 28, 2019, and having been considered by the Hearing Board,

THE HEARING BOARD STATES as the reasons for its decision and FINDS as to those matters in which findings are required:

A. Applicant filed an application under the EV procedures, Hearing Board Rules, Section 2.5. Pursuant to Health and Safety Code Sections 42359 and 42359.5, and the Hearing Board determined that this Application properly could be ruled upon without notice and hearing. Prior to making this determination, and in accordance with Hearing Board Rules Section 2.5.d.2, the Hearing Board requested and received a response to this Application from the Executive Officer/Air Pollution Control Officer for the Bay Area Air Quality Management District (Air District). The Air District staff response recommended the Application for EV be granted.

B. Applicant operates a landfill gas collection and control system (GCCS) (Source #S-5), located at 8950 Redwood Highway, Novato, CA 94948.

C. On October 26, 2019, PG&E executed a Public Safety Power Shutoff (PSPS) due to extreme wind conditions and increased wildfire risks. This PSPS event lasted up to several days in some regions of the San Francisco Bay Area. As a result of this PSPS event, the applicant's facility experienced a power outage, and consequently the gas collection and flare shut down for approximately fifty-two (52) hours.

D. Applicant requested an emergency variance period of October 28, 2019 to November 27, 2019, (30 days).

E. Compliance is beyond Applicant's reasonable control.

F. Due to the extreme wildfire threat, additional PSPS events cannot be ruled out during the Emergency Variance period.

G. The Applicant does meet the good cause standard for issuance of an EV.

THEREFORE, THE HEARING BOARD ORDERS:

An Emergency Variance from Regulation 8, Rule 34, Section 301.1; and Permit Condition #19867, Item 17, is hereby granted from October 28, 2019, at 4:47 pm, to November 27, 2019 with the following conditions:

A. Notify Air District Compliance & Enforcement Division via email at Compliance@baaqmd.gov of the following: 1) Immediate notification to Air District that a PG&E Public Safety Power Shutoff (PSPS) would impact facility operations; and 2) Within 24 hours of PG&E power restoration, provide notification to the Air District of the total electrical service downtime, including the date and time power was restored at the facility; **(Air District Staff Condition 1)**

B. Explore and evaluate options to ensure continuous operation of landfill gas collection and emissions control system during PSPS events, and at the conclusion of the variance period, provide a summary of the options to prevent operational downtime and provide an estimated timeline to install backup power and/or other feasible option(s) evaluated. **(Air District Staff Condition 2)**

C. This Emergency Variance shall only apply to PSPS specific events.

Peter Y. C

11/6/2019

Peter Y. Chiu, MD, PE
Hearing Board Member

Bay Area Air Quality Management District

Date

BEFORE THE HEARING BOARD
OF THE
BAY AREA AIR QUALITY MANAGEMENT DISTRICT
STATE OF CALIFORNIA

FILED
NOV 12 2019
HEARING BOARD
BAY AREA AIR QUALITY
MANAGEMENT DISTRICT

In the Matter of the Application of)
)
WASTE MANAGEMENT – REDWOOD LANDFILL, INCORPORATED) No. 3718
)
) CERTIFICATION OF SERVICE
For Emergency Variance from Regulation 8, Rule 34, Section 301.1; and Permit Condition #19867, Item 17.)
)

STATE OF CALIFORNIA)
) ss.
City and County of San Francisco)

I, Marcy Hiratzka, do hereby certify under penalty of perjury as follows:

That I am a citizen of the United States, over the age of eighteen years and not a party to the above entitled action; and that I served a true and correct copy of the attached Order Granting Emergency Variance on:

Michael Chan, Environmental Protection Air Quality Specialist
Waste Management
Redwood Landfill, Incorporated
172 98th Avenue
Oakland, CA 94603

by depositing same in the United States certified mail, return receipt requested, and via email, on November 12, 2019 on

Brian Bunger, District Counsel
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, California 94105

via email and by hand-delivery deposit of same in the in-box of the District Counsel's office, on November 12, 2019

11/12/19
Date

Marcy Hiratzka, Clerk of the Boards

UPS CampusShip: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.
   Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.
   Hand the package to any UPS driver in your area.

UPS Access Point™
CAOAK-LOCKR-UPS CC
8400 PARDEE DR
OAKLAND ,CA 94621

UPS Access Point™
ABE'S LOTTO
10125 INTERNATIONAL BLVD
OAKLAND ,CA 94603

UPS Access Point™
THE UPS STORE
1271 WASHINGTON AVE
SAN LEANDRO ,CA 94577

FOLD HERE

MICHAEL CHAN
5102050410
WM OF N CALIFORNIA AREA OFFICE
172 98TH AVE
OAKLAND CA 946031004

0.5 LBS LTR 1 OF 1

SHIP TO:
DIRECTOR OF COMPLIANCE &ENFORCEMENT
4157494900 5032
BAY AREA AIR QUALITY MANAGEMENT DIS
STE 600
375 BEALE ST
SAN FRANCISCO CA 94105-2097

CA 941 9-22

UPS NEXT DAY AIR SAVER 1P
TRACKING #: 1Z 56E 1A0 13 1953 9678

BILLING: P/P

Reference # 1: NorCal
Reference # 2: Redwood Title V 30day Letter

CS 21.5.48. WNTNV50 20.0A 10/2019

Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number
1Z56E1A01319539678

Weight
0.50 LBS

Service

UPS Next Day Air Saver®

Shipped / Billed On
11/22/2019

Delivered On

11/25/2019 1:39 P.M.

Delivered To
SAN FRANCISCO, CA, US
Received By

JASON

Left At
Mail Room

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 11/25/2019 5:13 P.M. EST

REDWOOD LANDFILL, INC.
8950 Redwood Highway
P.O. Box 793
Novato, CA 94948
(415) 892-2851
(855) 242-0798 Fax

November 22, 2019
(via compliance@baaqmd.gov)

Director of Compliance and Enforcement
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, California 94105
Attn: Title V Reports

Re: Facility A1179, Redwood Landfill, Inc., Novato, California
Title V 30-Day Written Report for PG&E Public Safety Power Shutoff (PSPS)
Breakdown Episode (RCA #07P68)

Dear Sir or Madam:

Redwood Landfill, Inc. (RLI) is submits this 30-day written report to the Bay Area Air Quality Management District (BAAQMD) as required under Title V Permit Condition Section I.F for Monitoring Reports. The 10-day written report was submitted on November 4, 2019, to BAAQMD as required under Title V Permit Condition Section I.F for Monitoring Reports.

The RLI Title V Permit Requirement states that "*Within 30 calendar days of the discovery of any incident of non-compliance, the facility shall submit a written report including the probable cause of non-compliance and any corrective or preventative actions.*".

A breakdown report was submitted during the weekend on 10/26/2019 at ~7:53 pm via the afterhours phone line (BAAQMD issued RCA #07P68) and updated with event clear date on October 28, 2019 when RLI was able to secure a rental generator, connect it to the GCCS, and bring the GCCS back online (see attachments). The Breakdown report describes a potential non-compliance with BAAQMD regulation 8-34-301.1 due to the approximate 52 hour shutdown of the RLI gas collection and control system (GCCS) from 10/26/2019 5:18 PM through 10/28/2019 9:46 PM caused by a PG&E forced public safety outage designated as a Public Safety Power Shutoff (PSPS). On November 5, 2019, for the period of October 28, 2019 at 4:47 PM to November 27, 2019, an emergency variance from BAAQMD regulation 8-34-301.1 and associated permit condition #19867, Item 17 was granted by BAAQMD for the PSPS shutdown and any additional PSPS events with notification conditions.

Excess emissions:

During the PG&E public safety forced power outage event, the GCCS was potentially out of compliance with the BAAQMD regulation 8-34-301.1 that required continuous operation of GCCS, however, it was not anticipated that RLI violated applicable emission standard(s).

RLI requested that a Breakdown Relief should be granted as RLI complied with administrative requirements despite its objections to the re-interpretation of Rule 8-34 and:

1. The breakdown was not the result of intent, negligence or disregard of air pollution control regulations;

2. The breakdown was not the result of improper maintenance;

3. The breakdown did not create a public nuisance;

4. The breakdown was not caused by an excessively recurrent breakdown of the same equipment; and

5. The breakdown did not occur, and any emissions did not interfere with attainment or maintenance of any National or California air quality standard.

Corrective actions:

The corrective actions included sourcing, obtaining, and connecting a rental generator to the GCCS. RLI received, connected, and operated the rental generator at the site on October 28, 2019.

Chronology of corrective action steps taken to minimize potential excess emissions by restoring power and bringing the system back online and to insure a PSPS breakdown will be minimized in the future:

- Prior to and during the PSPS event, RLI actively sought a rental generator or the potential to relocate a generator from outside the PSPS/fire zone and finally received and put to use a rental generator two days prior to the end of the PSPS event; the rental generator remains onsite. RLI also arranged for an electrician to construct the necessary connections between a generator and the GCCS in anticipation of receiving a generator.
- RLI has been and continues to actively seek a permanent permitted generator
- 10/26/2019: RLI site experiences PSPS on 10/26/2019 5:18 PM
- 10/26/2019: A breakdown report was submitted during the weekend on 10/26/2019 at ~7:53 pm via the afterhours phone line
- 10/28/2019: RLI filed for an Emergency Variance on October 28, 2019, due to the potential length of the 10/26/2019 PSPS event and the uncertainty of future PSPS events
- 10/28/2019: RLI brought the GCCS came back online via generator power on 10/28/2019 at 9:46 pm.
- 10/29/2019: BAAQMD issued Reportable Compliance Activity (RCA) #07P68
- 10/30/2019: RLI brought the GCCS back online via PG&E power on 10/30/2019 at 8:30 am.
- 11/4/2019: RLI submitted 10-day Title V written report to the BAAQMD on 11/4/2019
- 11/5/2019: BAAQMD granted Emergency Variance (Docket #3718) on 11/5/2019 (see attachment)

- 11/12/2019: BAAQMD Order Granting Emergency Variance (Docket #3718) to RLI on 11/12/2019 (see attachment)

RLI is committed to operating its landfill in compliance with all applicable regulations and respectfully requests concurrence that breakdown relief is granted, the variance is in effect and/or that no further action applies.

If you have any questions regarding this notification, please contact me at (415) 892-2851 or Alisha McCutcheon, Redwood Landfill Technical Manager, at (415) 373-8033.

Thank you,
Redwood Landfill, Inc.

Ramin A. Khany

Ramin Khany
District Manager

Attachment: A - RLI RCA Form - RCA Number 07P68 for Breakdown Relief
B - BAAQMD Granting Emergency Variance – Docket #3718, 11/5/19
C - BAAQMD Order Granting Emergency Variance – Docket #3718, 11/12/19

Attachment A
RLI RCA Form - RCA Number 07P68 for Breakdown Relief

REDWOOD LANDFILL, INC.
8950 Redwood Highway
P.O. Box 793
Novato, CA 94948
(415) 892-2851
(855) 242-0798 Fax

Via email: rca@baaqmd.gov

October 29, 2019 (update of 10/28/19 letter)

Compliance & Enforcement Division
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, California 94105

**Re: Update: Reportable Compliance Activity (RCA) Notification (RCA #07P68)
Facility A1179
Redwood Landfill, Inc., Novato, California**

On behalf of Redwood Landfill, Inc. (RLI), although RLI disagrees that Breakdown Relief is the appropriate methodology for compliance with Rule 8-34 during an unplanned power outage, due to direction from Bay Area Air Quality Management District (BAAQMD) staff, this letter is to request Breakdown Relief from BAAQMD for the forced power outage due to PG&E's Public Safety Power Shutoff (PSPS). A breakdown report was submitted during the weekend on October 26, 2019 at ~7:53 pm via the after hours phone line by RLI because the GCCS was no longer operating due to PG&E's forced PSPS. BAAQMD's Reportable Compliance Activity (RCA) notification form, as modified, is enclosed. It is not anticipated at this time that RLI violated applicable emission standard(s).

Breakdown Relief should be granted as RLI complied with administrative requirements despite its objections to the re-interpretation of Rule 8-34 and:

1. The breakdown is not the result of intent, negligence or disregard of air pollution control regulations;
2. The breakdown is not the result of improper maintenance;
3. The breakdown does not create a public nuisance;
4. The breakdown was not caused by an excessively recurrent breakdown of the same equipment; and
5. The breakdown did not occur and any emissions did not interfere with attainment or maintenance of any National or California air quality standard.

RLI had been actively seeking a permitted generator to power the flare during the PSPS. On October 28, 2019, RLI secured a generator and arranged for an electrician to make the necessary connections to power the GCCS. The RLI GCCS came back online via generator power on October 28, 2019 at 9:46 pm. RLI filed for an Emergency Variance due to the potential length of the PSPS.

If you have any questions regarding this notification, please contact me at (510) 613-2852 or Alisha McCutcheon, Redwood Landfill Technical Manager, at (415) 373-8033.

Thank you,
Redwood Landfill, Inc.

Michael Chan

Michael Chan
Environmental Protection Specialist

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

COMPLIANCE & ENFORCEMENT DIVISION

Notification Form

Reportable Compliance Activity (RCA)

See back of form for instructions →

1. ☒ **BREAKDOWN RELIEF:** ***District Use Only*** **BREAKDOWN REFERENCE #:**

2. ☐ **MONITOR EXCESS EMISSION or EXCURSION:** ***District Use Only*** **REFERENCE #:**

3. ☐ **MONITOR IS INOPERATIVE:** ***District Use Only*** **REFERENCE #:**

4. ☐ **PRESSURE RELIEF DEVICE (PRD):** ***District Use Only*** **PRD REFERENCE #:**

SITE INFORMATION AND DESCRIPTION INFORMATION (REQUIRED)

Company	Redwood Landfill (RLI)	Site #	A1179
Address	8950 Redwood Hwy, Novato	Source #	S5
Reported by	C. Colline/Michael Chan	Phone #	510-613-2852
Indicated Excess		Fax #	
Allowable Limit		Averaging Time	
Start Time/Date	10/26/2019 5:18 PM	Clear Time	10/28/19 9:46 PM

Monitor/device type(s) ☐ ▶CEM ☐ ▶GLM ☐ ▶Parametric ☐ ▶PRD ☐ ▶Non-monitor

Monitor description(s)

Parameter(s) exceeded or not functioning due to inoperation

☐ ▶NO_x ☐ ▶SO_2 ☐ ▶CO ☐ ▶CO_2 ☐ ▶H_2S ☐ ▶TRS ☐ ▶NH_3

☐ ▶O_2 ☐ ▶H_2O ☐ ▶Opacity ☐ ▶Lead ☐ ▶Gauge Pressure ☐ ▶Flow

☐ ▶Hydrocarbon Breakthrough (VOC) ☐ ▶Temperature ☐ ▶Wind Speed

☐ ▶Wind Direction ☐ ▶Steam ☒ ▶Other (describe) Power Outage

Unit(s) of Measurement

☐ ▶ppm ☐ ▶ppb ☐ ▶min/hr > 20% ☐ ▶inches H_2O ☐ ▶mmHg

☐ ▶psig ☐ ▶pH ☐ ▶^{0}Fahrenheit ☐ ▶Other (describe)

Event Description:

A breakdown report was submitted on 10/26/2019 at ~7:53 pm via the after hours phone line by RLI because the GCCS cannot continuously operate due to PG&E's forced Public Safety Power Shutoff (PSPS). During the PG&E's forced PSPS power outage, the GCCS was potentially out of compliance with BAAQMD regulation 8-34-301.1. Please also see our objections and discussion in the attached cover letter dated 10/28/2019. Update(10/29/2019)(RCA #07P68): Generator connected and GCCS back online 10/28/2019 ~9:46 pm.

District Use Only

Received by Date Time

General Instructions

Attachment B
BAAQMD Granting Emergency Variance – Docket #3718, 11/5/19

HEARING BOARD RESPONSE

Hearing Board Member: Dr. Peter Y. Chiu

DOCKET NO. 3718 (Waste Management (Redwood Landfill) Emergency Variance)

FILED
NOV 05 2019
HEARING BOARD
BAY AREA AIR QUALITY
MANAGEMENT DISTRICT

Contacted on: Date: 11/5/2019 Time: 11:32 a.m.

Decision Rendered: Date: 11/5/2019 Time: 2:45 pm

GRANT (X) Emergency Variance until: 11/27/2019

DENY ( ) Emergency Variance

Reason for Hearing Board action (and conditions, if any): ____________________

The Hearing Board accepts the following reasons as presented in the response from the Air District staff:

On October 26, 2019, Pacific Gas & Electric (PG&E) executed a Public Safety Power Shutoff (PSPS) event due to extreme wind conditions and increased wildfire risks in PG&E service areas. The PSPS event impacted over 1.3 million Bay Area residents and lasted up to several days in some regions of the Bay Area. Governor Newsom issued a Proclamation of a Stale of Emergency directing collective support from public agencies, stakeholders and organizations to assist and minimize impacts, utilizing maximum discretion to provide relief.

The magnitude and scale of those impacted by the PSPS event was unforeseeable and resultant power outage at the Redwood Landfill was unpreventable. Air District Regulation 8-34-301.1 and associated permit condition #19867.17 requires the landfill to operate gas collection and emissions control systems continuously, however, due to the PSPS event, the facility experienced a power outage, and the collection system and flare shutdown for approximately 52 hours. Due to the extreme wildfire threat, additional PSPS events cannot be ruled out during the proposed variance period. This Emergency Variance shall only apply to PSPS specific events.

The Emergency Variance is granted with the following conditions as recommended by Air District staff:

1) Notify Air District Compliance & Enforcement Division via email at Compliance@baaqmd.gov of the following:
a. Immediate notification to Air District that a PG&E PSPS would impact facility operations;
b. Within 24 hours of PG&E power restoration, provide notification to the Air District of the total electrical service downtime, including the date and time power was restored at the facility.

2) Explore and evaluate options to ensure continuous operation of landfill gas collection and emissions control system during PSPS events. At the conclusion of the variance period, provide a summary of the options to prevent operational downtime and provide an estimated timeline to install backup power and/or other feasible option(s) evaluated.

Applicant advised of decision: Date: 11/5/19 Time: 4:15 p.m.

Person receiving information: Michael Chan & Alisha McCutcheon

cc: Enforcement
APCO

Attachment C
BAAQMD Order Granting Emergency Variance – Docket #3718, 11/12/19

FILED

NOV 12 2019

HEARING BOARD
BAY AREA AIR QUALITY
MANAGEMENT DISTRICT

BEFORE THE HEARING BOARD
OF THE
BAY AREA AIR QUALITY MANAGEMENT DISTRICT
STATE OF CALIFORNIA

In the Matter of the Application of

WASTE MANAGEMENT –
REDWOOD LANDFILL, INCORPORATED

For Emergency Variance from Regulation 8, Rule 34, Section 301.1; and Permit Condition #19867, Item 17.

Docket No.: 3718

ORDER GRANTING EMERGENCY VARIANCE

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THE HEARING BOARD STATES as the reasons for its decision and FINDS as to those matters in which findings are required:

A. Applicant filed an application under the EV procedures, Hearing Board Rules, Section 2.5. Pursuant to Health and Safety Code Sections 42359 and 42359.5, and the Hearing Board determined that this Application properly could be ruled upon without notice and hearing. Prior to making this determination, and in accordance with Hearing Board Rules Section 2.5.d.2, the Hearing Board requested and received a response to this Application from the Executive Officer/Air Pollution Control Officer for the Bay Area Air Quality Management District (Air District). The Air District staff response recommended the Application for EV be granted.

B. Applicant operates a landfill gas collection and control system (GCCS) (Source #S-5), located at 8950 Redwood Highway, Novato, CA 94948.

C. On October 26, 2019, PG&E executed a Public Safety Power Shutoff (PSPS) due to extreme wind conditions and increased wildfire risks. This PSPS event lasted up to several days in some regions of the San Francisco Bay Area. As a result of this PSPS event, the applicant's facility experienced a power outage, and consequently the gas collection and flare shut down for approximately fifty-two (52) hours.

D. Applicant requested an emergency variance period of October 28, 2019 to November 27, 2019, (30 days).

E. Compliance is beyond Applicant's reasonable control.

F. Due to the extreme wildfire threat, additional PSPS events cannot be ruled out during the Emergency Variance period.

G. The Applicant does meet the good cause standard for issuance of an EV.

THEREFORE, THE HEARING BOARD ORDERS:

An Emergency Variance from Regulation 8, Rule 34, Section 301.1; and Permit Condition #19867, Item 17, is hereby granted from October 28, 2019, at 4:47 pm, to November 27, 2019 with the following conditions:

A. Notify Air District Compliance & Enforcement Division via email at Compliance@baaqmd.gov of the following: 1) Immediate notification to Air District that a PG&E Public Safety Power Shutoff (PSPS) would impact facility operations; and 2) Within 24 hours of PG&E power restoration, provide notification to the Air District of the total electrical service downtime, including the date and time power was restored at the facility; **(Air District Staff Condition 1)**

B. Explore and evaluate options to ensure continuous operation of landfill gas collection and emissions control system during PSPS events, and at the conclusion of the variance period, provide a summary of the options to prevent operational downtime and provide an estimated timeline to install backup power and/or other feasible option(s) evaluated. **(Air District Staff Condition 2)**

C. This Emergency Variance shall only apply to PSPS specific events.

Peter Y. C

11/6/2019

Peter Y. Chiu, MD, PE
Hearing Board Member

Bay Area Air Quality Management District

Date

BEFORE THE HEARING BOARD
OF THE
BAY AREA AIR QUALITY MANAGEMENT DISTRICT
STATE OF CALIFORNIA

FILED
NOV 12 2019
HEARING BOARD
BAY AREA AIR QUALITY
MANAGEMENT DISTRICT

In the Matter of the Application of

WASTE MANAGEMENT – REDWOOD LANDFILL, INCORPORATED

For Emergency Variance from Regulation 8, Rule 34, Section 301.1; and Permit Condition #19867, Item 17.

No. 3718

CERTIFICATION OF SERVICE

STATE OF CALIFORNIA)
) ss.
City and County of San Francisco)

I, Marcy Hiratzka, do hereby certify under penalty of perjury as follows:

That I am a citizen of the United States, over the age of eighteen years and not a party to the above entitled action; and that I served a true and correct copy of the attached Order Granting Emergency Variance on:

Michael Chan, Environmental Protection Air Quality Specialist
Waste Management
Redwood Landfill, Incorporated
172 98th Avenue
Oakland, CA 94603

by depositing same in the United States certified mail, return receipt requested, and via email, on November 12, 2019 on

Brian Bunger, District Counsel
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, California 94105

via email and by hand-delivery deposit of same in the in-box of the District Counsel's office, on November 12, 2019

11/12/19
Date

Marcy Hiratzka, Clerk of the Boards

UPS CampusShip: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.
   Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.
   Hand the package to any UPS driver in your area.

UPS Access Point™
CAOAK-LOCKR-UPS CC
8400 PARDEE DR
OAKLAND ,CA 94621

UPS Access Point™
ABE'S LOTTO
10125 INTERNATIONAL BLVD
OAKLAND ,CA 94603

UPS Access Point™
THE UPS STORE
1271 WASHINGTON AVE
SAN LEANDRO ,CA 94577

FOLD HERE

MICHAEL CHAN
5102050410
WM OF N CALIFORNIA AREA OFFICE
172 98TH AVE
OAKLAND CA 946031004

0.5 LBS LTR 1 OF 1

SHIP TO:
DIRECTOR OF COMPLIANCE &ENFORCEMENT
4157494900 5032
BAY AREA AIR QUALITY MANAGEMENT DIS
STE 600
375 BEALE ST
SAN FRANCISCO CA 94105-2097

CA 941 9-22

UPS NEXT DAY AIR SAVER 1P

TRACKING #: 1Z 56E 1A0 13 1953 9678

BILLING: P/P

Reference # 1: NorCal
Reference # 2: Redwood Title V 30day Letter

CS 21.5.48. WNTNV50 20.0A 10/2019

Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number

1Z56E1A01319539678

Weight

0.50 LBS

Service

UPS Next Day Air Saver®

Shipped / Billed On

11/22/2019

Delivered On

11/25/2019 1:39 P.M.

Delivered To

SAN FRANCISCO, CA, US

Received By

JASON

Left At

Mail Room

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 11/25/2019 5:13 P.M. EST

WASTE MANAGEMENT

REDWOOD LANDFILL, INC.
8950 Redwood Highway
P.O. Box 793
Novato, CA 94948
(415) 892-2851
(855) 242-0798 Fax

December 20, 2019
(via compliance@baaqmd.gov)

Director of Compliance and Enforcement
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, California 94105
Attn: Variance Report – Docket No. 3718

Re: Facility A1179, Redwood Landfill, Inc., Novato, California
30-Day Emergency Variance Written Report

Dear Sir or Madam:

Redwood Landfill, Inc. (RLI) submits this 30-day emergency variance report to the Bay Area Air Quality Management District (BAAQMD) pursuant to the emergency variance granted on November 5, 2019 for RLI (Docket No. 3718).

Pursuant to Condition B of the Order Granting Emergency Variance (Docket No. 3718) from BAAQMD Regulation 8, Rule 34, Section 301.1 and associated Permit Condition #19867, Item 17, this letter details the steps taken to explore and evaluate options to minimize landfill gas collection and control system (GCCS) downtime during PSPS events. During the variance period, 10/28/2019 to 11/27/2019, no additional PSPS events affected RLI landfill GCCS. Prior to and during the 10/26/2019 PSPS event, RLI actively sought a rental generator or the potential to relocate a generator from outside the PSPS/fire zone. During the PSPS event that started on 10/26/2019, RLI took all required measures to minimize the landfill gas collection and control system downtime by securing a rental generator, hired an electrician to connect the generator to the flare station, and restored power to the GCCS on 10/28/2019 before PG&E ended the PSPS event on 10/30/2019.

A rental generator currently remains onsite as backup power, after the end of the PSPS event, to address future PSPS events. RLI has been and continues to actively seek quotes, evaluate the options, allocate funds, and procure a permanent permitted generator for RLI.

RLI appreciates the timely response from the Hearing Board granting the 30-day variance, to cover the potential of future PG&E forced Public Safety Power Shutdown (PSPS) events. RLI is committed to operating its landfill in compliance with all applicable regulations.

If you have any questions regarding this notification, please contact me at (415) 892-2851 or Alisha McCutcheon, Redwood Landfill Technical Manager, at (415) 373-8033.

Thank you,
Redwood Landfill, Inc.

Ramin A. Khany

Ramin Khany
District Manager

Attachment: A - BAAQMD Order Granting Emergency Variance – Docket #3718

Attachment A
BAAQMD Order Granting Emergency Variance – Docket #3718

FILED

NOV 12 2019

HEARING BOARD
BAY AREA AIR QUALITY
MANAGEMENT DISTRICT

BEFORE THE HEARING BOARD
OF THE
BAY AREA AIR QUALITY MANAGEMENT DISTRICT
STATE OF CALIFORNIA

In the Matter of the Application of WASTE MANAGEMENT – REDWOOD LANDFILL, INCORPORATED For Emergency Variance from Regulation 8, Rule 34, Section 301.1; and Permit Condition #19867, Item 17.	Docket No.: 3718 ORDER GRANTING EMERGENCY VARIANCE

The above-entitled matter, being an Application for Emergency Variance (EV) from the provisions of Regulation 8, Rule 34, Section 301.1; and Permit Condition #19867, Item 17 was filed on October 29, 2019, after initial contact by telephone at 4:47 p.m. on October 28, 2019, and having been considered by the Hearing Board,

THE HEARING BOARD STATES as the reasons for its decision and FINDS as to those matters in which findings are required:

A. Applicant filed an application under the EV procedures, Hearing Board Rules, Section 2.5. Pursuant to Health and Safety Code Sections 42359 and 42359.5, and the Hearing Board determined that this Application properly could be ruled upon without notice and hearing. Prior to making this determination, and in accordance with Hearing Board Rules Section 2.5.d.2, the Hearing Board requested and received a response to this Application from the Executive Officer/Air Pollution Control Officer for the Bay Area Air Quality Management District (Air District). The Air District staff response recommended the Application for EV be granted.

B. Applicant operates a landfill gas collection and control system (GCCS) (Source #S-5), located at 8950 Redwood Highway, Novato, CA 94948.

C. On October 26, 2019, PG&E executed a Public Safety Power Shutoff (PSPS) due to extreme wind conditions and increased wildfire risks. This PSPS event lasted up to several days in some regions of the San Francisco Bay Area. As a result of this PSPS event, the applicant's facility experienced a power outage, and consequently the gas collection and flare shut down for approximately fifty-two (52) hours.

D. Applicant requested an emergency variance period of October 28, 2019 to November 27, 2019, (30 days).

E. Compliance is beyond Applicant's reasonable control.

F. Due to the extreme wildfire threat, additional PSPS events cannot be ruled out during the Emergency Variance period.

G. The Applicant does meet the good cause standard for issuance of an EV.

THEREFORE, THE HEARING BOARD ORDERS:

An Emergency Variance from Regulation 8, Rule 34, Section 301.1; and Permit Condition #19867, Item 17, is hereby granted from October 28, 2019, at 4:47 pm, to November 27, 2019 with the following conditions:

A. Notify Air District Compliance & Enforcement Division via email at Compliance@baaqmd.gov of the following: 1) Immediate notification to Air District that a PG&E Public Safety Power Shutoff (PSPS) would impact facility operations; and 2) Within 24 hours of PG&E power restoration, provide notification to the Air District of the total electrical service downtime, including the date and time power was restored at the facility; **(Air District Staff Condition 1)**

B. Explore and evaluate options to ensure continuous operation of landfill gas collection and emissions control system during PSPS events, and at the conclusion of the variance period, provide a summary of the options to prevent operational downtime and provide an estimated timeline to install backup power and/or other feasible option(s) evaluated. **(Air District Staff Condition 2)**

C. This Emergency Variance shall only apply to PSPS specific events.

Peter Y. Chiu

11/6/2019

Peter Y. Chiu, MD, PE
Hearing Board Member

Bay Area Air Quality Management District

Date

BEFORE THE HEARING BOARD
OF THE
BAY AREA AIR QUALITY MANAGEMENT DISTRICT
STATE OF CALIFORNIA

FILED
NOV 12 2019
HEARING BOARD
BAY AREA AIR QUALITY
MANAGEMENT DISTRICT

In the Matter of the Application of)
)
WASTE MANAGEMENT – REDWOOD LANDFILL, INCORPORATED) No. 3718
)
) CERTIFICATION OF SERVICE
For Emergency Variance from Regulation 8, Rule 34, Section 301.1; and Permit Condition #19867, Item 17.)
)

STATE OF CALIFORNIA)
) ss.
City and County of San Francisco)

I, Marcy Hiratzka, do hereby certify under penalty of perjury as follows:

That I am a citizen of the United States, over the age of eighteen years and not a party to the above entitled action; and that I served a true and correct copy of the attached Order Granting Emergency Variance on:

Michael Chan, Environmental Protection Air Quality Specialist
Waste Management
Redwood Landfill, Incorporated
172 98th Avenue
Oakland, CA 94603

by depositing same in the United States certified mail, return receipt requested, and via email, on November 12, 2019 on

Brian Bunger, District Counsel
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, California 94105

via email and by hand-delivery deposit of same in the in-box of the District Counsel's office, on November 12, 2019

11/12/19
Date

Marcy Hiratzka, Clerk of the Boards

Chan, Michael

From: Chan, Michael
Sent: Friday, December 20, 2019 2:11 PM
To: 'compliance@baaqmd.gov'
Cc: 'Richard Murray'; McCutcheon, Alisha
Subject: Redwood Emergency Variance 30-Day summary report
Attachments: Redwood 30day Emergency Variance Ltr 12-20-19.pdf

Attached is a copy of Redwood Landfill's Emergency Variance 30-Day Summary Report for the PG&E PSPS event (hardcopy being sent via UPS).

Mike Chan

Michael Chan
EP Air Quality Specialist
mchan2@wm.com

Waste Management
172 98th Avenue
Oakland, CA 94603
Office 510-613-2852

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FOLD HERE

MICHAEL CHAN
5102050410
WM OF N CALIFORNIA AREA OFFICE
172 98TH AVE
OAKLAND CA 946031004

0.5 LBS LTR 1 OF 1

SHIP TO:
DIRECTOR OF COMPLIANCE &ENFORCEMENT
4157494900 5032
BAY AREA AIR QUALITY MANAGEMENT DIS
STE 600
375 BEALE ST
SAN FRANCISCO CA 94105-2097

CA 941 9-22

UPS NEXT DAY AIR SAVER 1P

TRACKING #: 1Z 56E 1A0 13 1546 1731

BILLING: P/P

Reference # 1: NorCal
Reference # 2: Redwood Emergency Variance 30day

CS 21.5.48. WNTNV50 20.0A 10/2019

Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number

1Z56E1A01315461731

Weight

0.50 LBS

Service

UPS Next Day Air Saver®

Shipped / Billed On

12/20/2019

Delivered On

12/23/2019 12:35 P.M.

Delivered To

SAN FRANCISCO, CA, US

Received By

JAY

Left At

Mail Room

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Sincerely,

UPS

Tracking results provided by UPS: 12/23/2019 4:25 P.M. EST

REDWOOD LANDFILL, INC.
8950 Redwood Highway
P.O. Box 793
Novato, CA 94948
(415) 892-2851
(855) 242-0798 Fax

December 23, 2019

Ms. Simrun Dhoot
Senior Air Quality Engineer
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, California 94105

Re: Well Actions Letter
Title V Permit Condition Number 19867, Part 17, Facility A1179
Redwood Landfill, Inc., Novato, California

Dear Ms. Dhoot:

On behalf of Redwood Landfill, Inc. (RLI), this letter is to notify the Bay Area Air Quality Management District (BAAQMD) of the well actions recently performed at the RLI, pursuant to Title V Permit A1179 as modified by Application Number (AN) 30065. The well action is summarized below:

- Vertical well RLLC0218 was decommissioned on 12/23/2019.

AN 30065 allows installation of up to 100 new vertical wells, unlimited one-to-one replacement of vertical wells, installation of up to 50 new horizontal collectors, decommissioning of up to 50 vertical wells, and decommissioning of up to 15 horizontal collectors.

As stated in the September 20, 2019 Well Actions Letter, prior to the completion of this well action, RLI had 119 total collectors (110 vertical wells and 9 horizontal collectors) connected to the GCCS. With the completion of this well action, RLI's existing GCCS component count and permitted remaining actions per AN 30065 are listed in the following table:

	Install New Vertical Wells	Decommission Vertical Wells	Install New Horizontal Collectors	Decommission Horizontal Collectors	Replace Vertical Wells*
Actions Permitted Under AN 30065	100	50	50	15	Unlimited
Actions Performed by RLI per AN 30065	12	4	0	0	-
Actions Remaining Under AN 30065	88	46	50	15	Unlimited
Active Collector Count after Actions in this Letter	118 Total Collectors: 109 Vertical LFG Wells and 9 Horizontal Collectors				

*One-for-one well replacement at new optimal locations.

If you have any questions regarding this notification, please contact me at (510) 613-2852 or Alisha McCutcheon, Redwood Landfill Technical Manager, at (415) 373-8033.

Thank you,
Redwood Landfill, Inc.

Michael Chan

Michael Chan
Environmental Protection Specialist

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SAN LEANDRO ,CA 94577

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MICHAEL CHAN
5102050410
WM OF N CALIFORNIA AREA OFFICE
172 98TH AVE
OAKLAND CA 946031004

0.5 LBS LTR 1 OF 1

SHIP TO:
SIMRUN DHOOT
4157495074
BAY AREA AIR QUALITY MANAGEMENT DIS
STE 600
375 BEALE ST
SAN FRANCISCO CA 94105-2097

CA 941 9-22

UPS NEXT DAY AIR SAVER 1P

TRACKING #: 1Z 56E 1A0 13 1585 3755

BILLING: P/P

Reference # 1: NorCal
Reference # 2: Redwood Well Actions Decom RLLC0218

CS 21.5.48. WNTNV50 20.0A 10/2019

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Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number

1Z56E1A01315853755

Weight

0.50 LBS

Service

UPS Next Day Air Saver®

Shipped / Billed On

12/23/2019

Delivered On

12/26/2019 12:12 P.M.

Delivered To

SAN FRANCISCO, CA, US

Received By

CARLOS

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Mail Room

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 12/26/2019 8:24 P.M. EST

WASTE MANAGEMENT

REDWOOD LANDFILL, INC.
8950 Redwood Highway
P.O. Box 793
Novato, CA 94948
(415) 892-2851
(855) 242-0798 Fax

February 18, 2020

Ms. Simrun Dhoot
Senior Air Quality Engineer
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, California 94105

Re: Well Actions Letter
Title V Permit Condition Number 19867, Part 17, Facility A1179
Redwood Landfill, Inc., Novato, California

Dear Ms. Dhoot:

On behalf of Redwood Landfill, Inc. (RLI), this letter is to notify the Bay Area Air Quality Management District (BAAQMD) of the well actions recently performed at the RLI, pursuant to Title V Permit A1179 as modified by Application Number (AN) 30065. The well action is summarized below:

- Vertical well RLI0108A was decommissioned on 2/17/2020.

AN 30065 allows installation of up to 100 new vertical wells, unlimited one-to-one replacement of vertical wells, installation of up to 50 new horizontal collectors, decommissioning of up to 50 vertical wells, and decommissioning of up to 15 horizontal collectors.

As stated in the December 23, 2019 Well Actions Letter, prior to the completion of this well action, RLI had 118 total collectors (109 vertical wells and 9 horizontal collectors) connected to the GCCS. With the completion of this well action, RLI's existing GCCS component count and permitted remaining actions per AN 30065 are listed in the following table:

	Install New Vertical Wells	Decommission Vertical Wells	Install New Horizontal Collectors	Decommission Horizontal Collectors	Replace Vertical Wells*
Actions Permitted Under AN 30065	100	50	50	15	Unlimited
Actions Performed by RLI per AN 30065	12	5	0	0	-
Actions Remaining Under AN 30065	88	45	50	15	Unlimited
Active Collector Count after Actions in this Letter	117 Total Collectors: 108 Vertical LFG Wells and 9 Horizontal Collectors				

*One-for-one well replacement at new optimal locations.

If you have any questions regarding this notification, please contact me at (510) 613-2852 or Alisha McCutcheon, Redwood Landfill Technical Manager, at (415) 373-8033.

Thank you,
Redwood Landfill, Inc.

Michael Chan

Michael Chan
Environmental Protection Specialist

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MICHAEL CHAN
5102050410
WM OF N CALIFORNIA AREA OFFICE
172 98TH AVE
OAKLAND CA 946031004

0.5 LBS LTR 1 OF 1

SHIP TO:
SIMRUN DHOOT
4157495074
BAY AREA AIR QUALITY MANAGEMENT DIS
STE 600
375 BEALE ST
SAN FRANCISCO CA 94105-2097

CA 941 9-22

UPS NEXT DAY AIR SAVER 1P

TRACKING #: 1Z 56E 1A0 13 1274 2059

BILLING: P/P

Reference # 1: NorCal
Reference # 2: Redwood Well Actions DC RLI0108A

CS 22.0.11. WNTNV50 83.0A 12/2019

Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number

1Z56E1A01312742059

Weight

0.50 LBS

Service

UPS Next Day Air Saver®

Shipped / Billed On

02/18/2020

Delivered On

02/19/2020 12:45 P.M.

Delivered To

SAN FRANCISCO, CA, US

Received By

JEFF

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Mail Room

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Sincerely,

UPS

Tracking results provided by UPS: 02/19/2020 4:13 P.M. EST

REDWOOD LANDFILL, INC.
8950 Redwood Highway
P.O. Box 793
Novato, CA 94948
(415) 892-2851
(855) 242-0798 Fax

March 24, 2020

Ms. Simrun Dhoot
Senior Air Quality Engineer
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, California 94105

Re: Well Actions Letter
Title V Permit Condition Number 19867, Part 17, Facility A1179
Redwood Landfill, Inc., Novato, California

Dear Ms. Dhoot:

On behalf of Redwood Landfill, Inc. (RLI), this letter is to notify the Bay Area Air Quality Management District (BAAQMD) of the well actions recently performed at the RLI, pursuant to Title V Permit A1179 as modified by Application Number (AN) 30065. These well actions are summarized below:

- Vertical well RLI00138 was decommissioned on 3/24/2020.
- Vertical well RLI00139 was decommissioned on 3/24/2020.

AN 30065 allows installation of up to 100 new vertical wells, unlimited one-to-one replacement of vertical wells, installation of up to 50 new horizontal collectors, decommissioning of up to 50 vertical wells, and decommissioning of up to 15 horizontal collectors.

As stated in the February 18, 2020 Well Actions Letter, prior to the completion of these well actions, RLI had 117 total collectors (108 vertical wells and 9 horizontal collectors) connected to the GCCS. With the completion of these well actions, RLI's existing GCCS component count and permitted remaining actions per AN 30065 are listed in the following table:

	Install New Vertical Wells	Decommission Vertical Wells	Install New Horizontal Collectors	Decommission Horizontal Collectors	Replace Vertical Wells*
Actions Permitted Under AN 30065	100	50	50	15	Unlimited
Actions Performed by RLI per AN 30065	12	7	0	0	-
Actions Remaining Under AN 30065	88	43	50	15	Unlimited
Active Collector Count after Actions in this Letter	115 Total Collectors: 106 Vertical LFG Wells and 9 Horizontal Collectors				

*One-for-one well replacement at new optimal locations.

If you have any questions regarding this notification, please contact me at (510) 613-2852 or Alisha McCutcheon, Redwood Landfill Technical Manager, at (415) 373-8033.

Thank you,
Redwood Landfill, Inc.

Michael Chan

Michael Chan
Environmental Protection Specialist

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4157495074
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CA 941 9-22

UPS NEXT DAY AIR SAVER 1P

TRACKING #: 1Z 56E 1A0 13 2176 4036

BILLING: P/P

Reference # 1: NorCal
Reference # 2: Redwood DC RLI00138 RLI00139
CS 22.0.11. WNTNV50 83.0A 12/2019

Proof of Delivery

Dear Customer,

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1Z56E1A01321764036

Weight

0.50 LBS

Service

UPS Next Day Air Saver®

Shipped / Billed On

03/24/2020

Delivered On

03/25/2020 10:46 A.M.

Delivered To

SAN FRANCISCO, CA, US

Received By

FRONT DESK

Left At

Front Desk

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Sincerely,

UPS

Tracking results provided by UPS: 03/25/2020 1:57 P.M. EST

APPENDIX D

WELLFIELD SSM LOG

REDWOOD LANDFILL, INC.

COLLECTION SYSTEM DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
1		RLLC0178	9/27/19 13:30	9/27/19 13:32	0.03	3,169.87	Well raising, well located in active fill area	☐ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	2/6/2020
	☒ Shutdown							☒ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		2/6/20 15:22	2/6/20 15:24	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
2		RLLC0177	10/24/19 8:30	10/24/19 8:32	0.03	2,526.87	Well raising, well located in active fill area	☐ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	2/6/2020
	☒ Shutdown							☒ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		2/6/20 15:22	2/6/20 15:24	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
3		RLLC0185	10/24/19 8:30	10/24/19 8:32	0.03	821.00	Well raising, well located in active fill area	☐ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	11/27/2019
	☒ Shutdown							☒ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		11/27/19 13:30	11/27/19 13:32	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
4		RLI0103C	11/13/19 10:30	11/13/19 10:32	0.03	4,069.50	Well raising, well located in active fill area	☐ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	5/1/2020
	☒ Shutdown							☒ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☐ Startup		Well offline as of May 1, 2020					☐ 117: Gas Collection	☐ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☐ No	☐ No			
5		RLLC0175	11/18/19 8:40	11/18/19 8:42	0.03	337.50	Well raising, well located in active fill area	☐ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	12/2/2019
	☒ Shutdown							☒ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		12/2/19 10:10	12/2/19 10:12	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
6		RLLC0186	11/29/19 18:30	11/29/19 18:32	0.03	92.25	Well raising, well located in active fill area	☐ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	12/3/2019
	☒ Shutdown							☒ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		12/3/19 14:45	12/3/19 14:47	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
7		RLLC0218	12/23/19 10:45	12/23/19 10:47	0.03	N/A	Well decommissioned pursuant to AN #30065 on 12/23/19	☐ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	12/23/2019
	☒ Shutdown							☒ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☐ Startup		N/A					☐ 117: Gas Collection	N/A						
	☐ Malfunction							☐ 118: Construction Activities							
8		RLLC0242	2/5/20 11:33	2/5/20 11:35	0.03	27.82	Inspection/maintenance of well located in active fill area	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	2/6/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		2/6/20 15:22	2/6/20 15:24	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
9		RLI0108A	2/17/20 13:00	2/17/20 13:02	0.03	N/A	Well decommissioned pursuant to AN #30065 on 2/17/20	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	2/17/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☐ Startup		N/A					☐ 117: Gas Collection	N/A						
	☐ Malfunction							☐ 118: Construction Activities							
10		RLLC0178	3/12/20 7:45	3/12/20 7:47	0.03	457.92	Inspection/maintenance of well located in active fill area	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	3/31/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		3/31/20 9:40	3/31/20 9:42	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			
11		RLI00138	3/24/20 13:15	3/24/20 13:17	0.03	N/A	Well decommissioned pursuant to AN #30065 on 3/24/20	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	N/A
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☐ Startup		N/A					☐ 117: Gas Collection	N/A						
	☐ Malfunction							☐ 118: Construction Activities							
12		RLI00139	3/24/20 13:30	3/24/20 13:32	0.03	N/A	Well decommissioned pursuant to AN #30065 on 3/24/20	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	N/A
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☐ Startup		N/A					☐ 117: Gas Collection	N/A						
	☐ Malfunction							☐ 118: Construction Activities							

REDWOOD LANDFILL, INC.

COLLECTION SYSTEM DOWNTIME LOG

Event No.	Check Applicable Event	Device	(1) Event Start Date/Time	(2) Event End Date/Time	(3) Duration (Hrs)	Downtime (Hrs)	(4) Cause or Reason	(5) Applicable Regulation	(6) Type of Event	(7) Procedures Used (a),(b)	(8) Did Steps Taken Vary From (7)	(9) Did Event Cause Any Emission Limit Exceedance?	(10) Describe Emission Standard(s) Exceeded (b)	Completed By	(11) Date Entry Completed
13		RLLC0177	3/30/20 13:40	3/30/20 13:42	0.03	19.83	Inspection/maintenance of well located in active fill area	☒ 113: Inspection/Maintenance	☒ Manual (Go to 7)	Procedures 1 to 3	☐ Yes (Go to 9)	☐ Yes (Go to 10)		Mike Chan	3/31/2020
	☒ Shutdown							☐ 116: Well Raising	☐ Automatic (Go to 9)		☒ No	☐ No			
	☒ Startup		3/31/20 9:30	3/31/20 9:32	0.03			☐ 117: Gas Collection	☒ Manual (Go to 7)	Procedures 1 to 4	☐ Yes (Go to 9)	☐ Yes (Go to 10)			
	☐ Malfunction							☐ 118: Construction Activities	☐ Automatic (Go to 9)		☒ No	☐ No			

(a) **STANDARD OPERATING PROCEDURES**

Shutdown

Procedure No.	Procedure
1.	Ensure that there is no unsafe conditions present, contact manager immediately
2.	Initiate shutdown sequence below by one or more of the following (Note date and time in Section 1 of form above) a. Press Emergency Stop if necessary b. Close On/Off switch(es) or Push On/Off button(s) c. Close adjacent valves if necessary
3.	Observe that system achieves normal shutdown ranges for levels, pressures, and temperatures (Note date and time in Section 2 of form above)

Startup

Procedure No.	Procedure
1.	Ensure that there is no unsafe conditions present
2.	Ensure that the system is ready to start by one of the following: a. Valves are in correct position b. Levels, pressures, and temperatures are within normal starting range c. Alarms are cleared d. Power is on and available to control panel and ready to energized equipment. e. Emergency stop is de-energized
3.	Initiate start sequence (Note time and date in section 1 of form above)
4.	Observe that system achieves normal shutdown ranges for levels, pressures, and temperatures (Note time and date in Section 2 of form above)

Malfunction

EQUIPMENT	PURPOSE	MALFUNCTION EVENT	COMMON CAUSES	PROCEDURE NO. -TYPICAL RESPONSE ACTIONS
LFG Collection and Control System				
Blower or Other Gas Mover Equipment	Applies vacuum to wellfield to extract LFG and transport to control device	Loss of LFG Flow/Blower Malfunction	-Flame arrestor fouling/deterioration -Automatic valve problems -Blower failure (e.g., belt, motor, impeller, coupling, seizing, etc.) -Loss of power -Extraction piping failure -Condensate knock-out problems -Extraction piping blockages	1. Repair breakages in extraction piping 2. Clean flame arrestor 3. Repair blockages in extraction piping 4. Verify automatic valve operation, compressed air/nitrogen supply 5. Notify power utility, if appropriate 6. Provide/utilize auxiliary power source, if necessary 7. Repair Settlement in Collection Piping 8. Repair Blower 9. Activate back-up blower, if available 10. Clean knock-up pot/demister 11. Drain knock-out pot
Extraction Wells and Collection Piping	Conduits for extractions and movement of LFG flow	Collection well and pipe failures	-Break/crack in header or lateral piping -Leaks at wellheads, valves, flanges, Test ports, seals, couplings, etc. -Collection piping blockages -Problems due to settlement (e.g. pipe separation, deformation, development of low points	12. Repair leaks or breaks in lines or wellheads 13. Follow procedures for loss of LFG flow/blower malfunction 14. Repair blockages in collection piping 15. Repair settlement in collection piping 16. Re-install, repair, or replace piping
Blower or Other Gas Mover Equipment And Control Device	Collection and control of LFG	Loss of electrical power	- Force majeure/Act of God (e.g., lightning, flood, earthquake, etc.) -Area-wide or local blackout or brown-ou -Interruption in service (e.g. blown service fuse -Electrical line failure -Breaker trip -Transformer failure -Motor starter failure/trip -Overdraw of power -Problems in electrical panel -Damage to electrical equipment from on-site operations	17. Check/reset breaker 18. Check/repair electrical panel components 19. Check/repair transformer 20. Check/repair motor starter 21. Check/repair electrical line 22. Test amperage to various equipment 23. Contact electricity supplier 24. Contact/contract electrician 25.Provide auxiliary power (if necessary
LFG Control Device	Combusts LFG	Low temperature conditions at control device	-Problems with temperature -monitoring equipmen -Problems/failure of -thermocouple and/or thermocouple wiring -Change of LFG flow -Change of LFG quality -Problems with air louvers -Problems with air/fuel controls -Change in atmospheric conditions	26. Check/repair temperature monitoring equipment 27. Check/repair thermocouple and/or wiring 28. Follow procedures for loss of flow/blower malfunction 29. Check/adjust louvers 30. Check/adjust air/fuel controls
LFG Control Device	Combusts LFG	Loss of Flame	-Problems/failure of thermocouple -Loss/change of LFG flow -Loss/change of LFG quality -Problems with air/fuel controls -Problems/failure of flame sensor -Problems with temperature monitoring equipment	31. Check/repair temperature monitoring equipment 32. Check/repair thermocouple 33. Follow procedures for loss of flow/blower malfunction 34. Check/adjust air/fuel controls 35. Check/adjust/repair flame sensor 36. Check/adjust LFG collectors
Flow Monitoring/ Recording Device	Measures and records gas flow from collection system to control	Malfunctions of Flow Monitoring/Recording Device	-Problems with orifice plate, pitot tube, or other in-line flow measuring device -Problems with device controls and/or wiring -Problems with chart recorder	37. Check/adjust/repair flow measuring device and/or wiring 38. Check/repair chart recorder 39. Replace paper in chart recorder
Temperature Monitoring/ Recording Device	Monitors and records combustion temperature of enclosed combustion device	Malfunctions of Temperature Monitoring/Recording Device	-Problems with thermocouple -Problems with device controls and/or wiring -Problems with chart recorder	40. Check/adjust/repair thermocouple 41. Check/adjust/repair controller and/or wiring 42. Check/adjust/repair electrical panel components 43. Check/repair chart recorder 44. Replace paper in chart recorder
Control Device	Combusts LFG	Other Control Device Malfunctions	-Control device smoking (i.e. visible emissions) -Problems with flare insulation -Problems with pilot light system -Problems with air louvers -Problems with air/fuel controllers -Problems with thermocouple -Problems with burners -Problems with flame arrester -Alarmed malfunction conditions not covered above -Unalarmed conditions discovered during inspection not covered above	45. Site-specific diagnosis procedures 46. Site-specific responses actions based on diagnosis 47. Open manual louvers 48. Clean pitot orifice 49. Clean/drain flame arrestor 50. Refill propane supply 51. Check/repair pilot sparking system

(b) For each permit limit exceedance complete an "SSM Plan Departure Form".

APPENDIX E

A-51 AND A-60 FLARE TEMPERATURE REPORTS

Redwood Landfill, Novato, CA

A-51 Flare TEMPERATURE DEVIATION/ INOPERATIVE MONITOR REPORT **November 1, 2019 to April 30, 2020**

REPORT PREPARED BY: Michael Chan **DATE:** May 26, 2020

TEMPERATURE SENSING DEVICE: Thermocouple **MODEL:** Thermo-Electric

START DATE & TIME	END DATE & TIME	TEMP (°F) / FLOW	CAUSE	EXPLANATION	ACTION TAKEN
No deviations or inoperative monitors during the month of November 2019					
No deviations or inoperative monitors during the month of December 2019					
No deviations or inoperative monitors during the month of January 2020					
No deviations or inoperative monitors during the month of February 2020					
No deviations or inoperative monitors during the month of March 2020					
No deviations or inoperative monitors during the month of April 2020					

COMMENTS:

1 In accordance with Title V Permit Condition Number 19867, Part 22b, the A-51 Flare combustion zone 3-hour average temperature did not drop below 1,400 degrees Fahrenheit (°F) while the flare was in operation.

2 The A-51 Flare combustion zone 3-hour average temperature did not drop below the 1,400°F (3/28/19 to 3/15/20) or 1,400°F (3/16/2020 to current) limits established during the January 30, 2019 and January 22, 2020 Annual Source Tests, while the flare was in operation, pursuant to Title V Permit Condition Number 19867, Part 22, and 40 CFR 60.752 b(2)(iii)(B)(2) in Subpart WWW of the NSPS.

Redwood Landfill, Novato, CA

A-60 Flare TEMPERATURE DEVIATION/ INOPERATIVE MONITOR REPORT **November 1, 2019 to April 30, 2020**

REPORT PREPARED BY: Michael Chan **DATE:** May 26, 2020

TEMPERATURE SENSING DEVICE: Thermocouple **MODEL:** Thermo-Electric

START DATE & TIME	END DATE & TIME	TEMP (°F) / FLOW	CAUSE	EXPLANATION	ACTION TAKEN
No deviations or inoperative monitors during the month of November 2019					
No deviations or inoperative monitors during the month of December 2019					
No deviations or inoperative monitors during the month of January 2020					
No deviations or inoperative monitors during the month of February 2020					
No deviations or inoperative monitors during the month of March 2020					
No deviations or inoperative monitors during the month of April 2020					

COMMENTS:

1 In accordance with Authority To Construct (ATC) 19098 Condition Number 19867, Part 22b, the A-60 Flare combustion Zone A 3-hour average temperature did not drop below 1,400 degrees Fahrenheit (°F) while the flare was in operation, and the A-60 Flare combustion Zone B 3-hour average temperature did not drop below 1,400°F while the flare was in operation.

2 The A-60 Flare Zone A combustion zone three-hour average temperature did not drop below 1,559°F (4/4/2017 to 9/19/2019) or 1,535°F (9/20/2019 to current) limits established during the February 8, 2017 and July 25, 2019 Source Tests, pursuant to 40 CFR 60.752 b(2)(iii)(B)(2) in Subpart WWW of the NSPS.
Zone B of the A-60 Flare combustion zone 3-hour average temperature did not drop below the 1,497°F (1/1/2018 to 9/13/18) or 1,555°F (9/14/18 to current) limits established in the July 24, 2017 and July 17, 2018 Source Tests.
Pursuant to Title V Condition 19867 Part 30g, the Annual Source Test at A-60 may be conducted while it is operating in either zone, provided that each operating zone is tested at least once every five years.

APPENDIX F

MISSING A-51 AND A-60 FLOW AND TEMPERATURE RECORDS

Emission Control Devices

A-51 Flare Missing Data Summary

Redwood Landfill, Novato, CA

FLARE MISSING DATA REPORT November 1, 2019 to April 30, 2020

Date & Time	Date & Time	Total Missing Data Hours	Total Missing Data Days	Comments
There was no missing data for November 2019				
There was no missing data for December 2019				
There was no missing data for January 2020				
There was no missing data for February 2020				
There was no missing data for March 2020				
There was no missing data for April 2020				

Flare A-51	Hours	Days
Total Missing Data:	0.00	0.00
Total Complete Data:	4,368.00	182.00
Missing Data Percentage:	0.00%	0.00%

Emission Control Devices

A-60 Flare Missing Data Summary

Redwood Landfill, Novato, CA

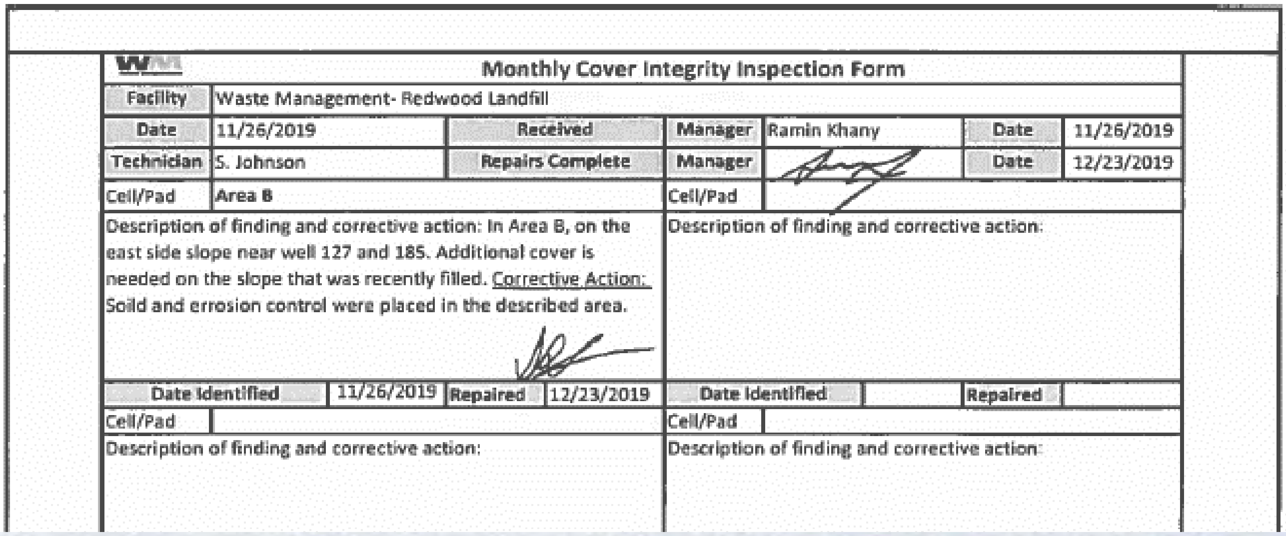
FLARE MISSING DATA REPORT November 1, 2019 to April 30, 2020

Date & Time	Date & Time	Total Missing Data Hours	Total Missing Data Days	Comments
There was no missing data for November 2019				
There was no missing data for December 2019				
There was no missing data for January 2020				
There was no missing data for February 2020				
There was no missing data for March 2020				
There was no missing data for April 2020				

Flare A-60	Hours	Days
Total Missing Data:	0.00	0.00
Total Complete Data:	4,368.00	182.00
Missing Data Percentage:	0.00%	0.00%

APPENDIX G

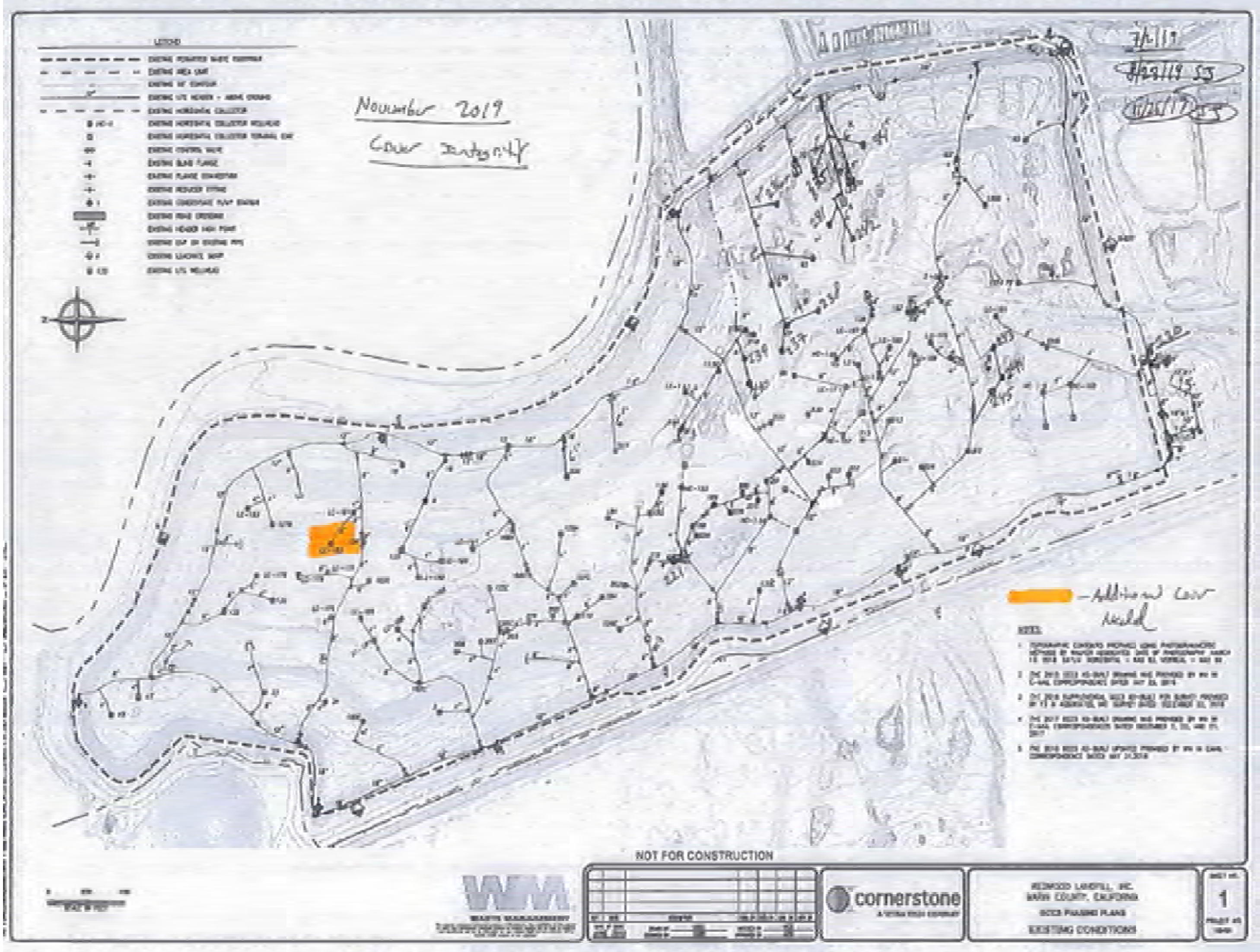
COVER INTEGRITY MONITORING REPORTS



Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill				
Date	11/26/2019	**Received**	**Manager**	Ramin Khany	**Date** 11/26/2019
Technician	S. Johnson	**Repairs Complete**	**Manager**		**Date** 12/23/2019

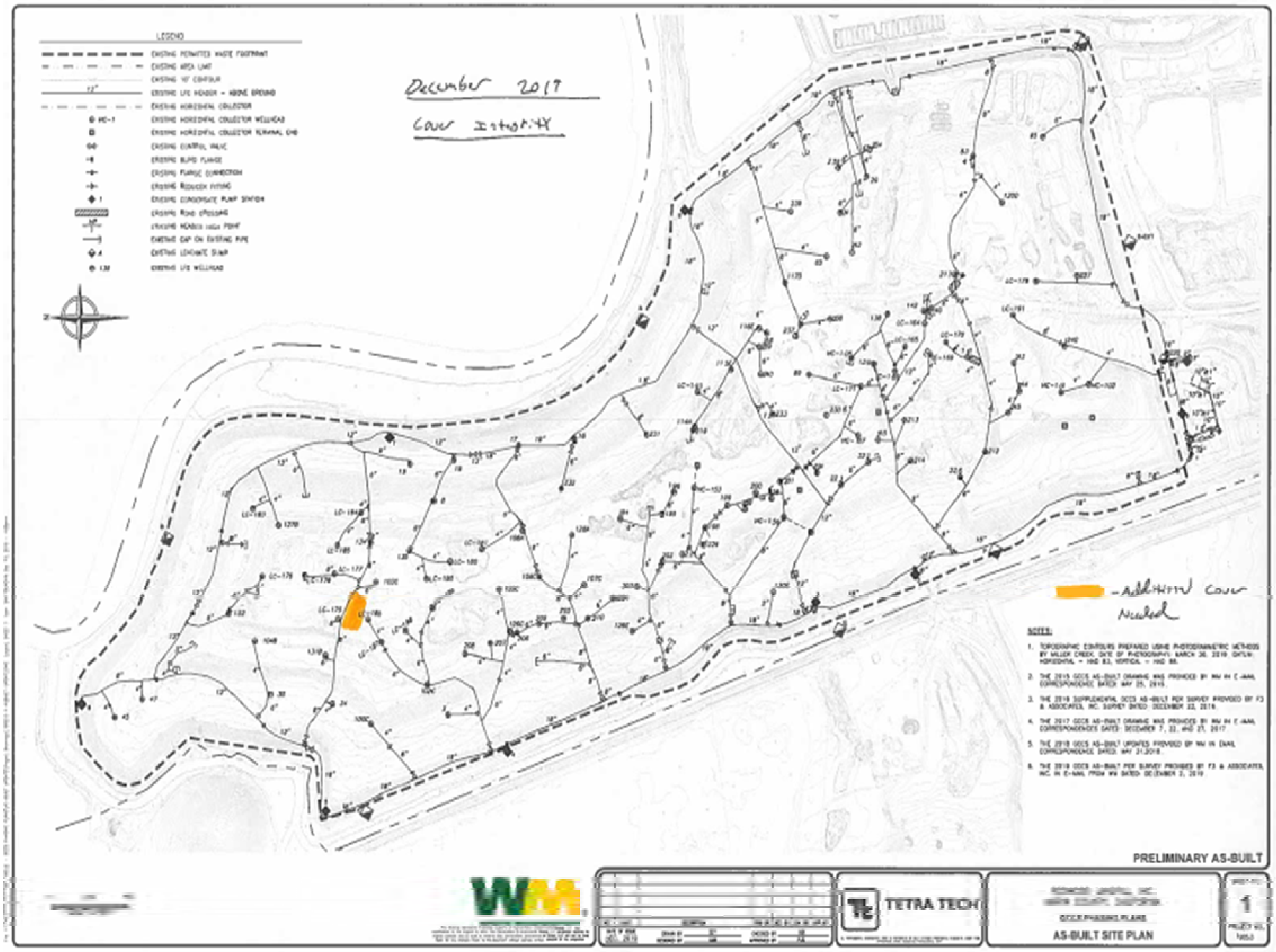
Cell/Pad	Area B	Cell/Pad	
Description of finding and corrective action: In Area B, on the east side slope near well 127 and 185. Additional cover is needed on the slope that was recently filled. Corrective Action: Soild and errosion control were placed in the described area.		Description of finding and corrective action:	
Date Identified 11/26/2019	**Repaired** 12/23/2019	**Date Identified**	**Repaired**
Cell/Pad		Cell/Pad	
Description of finding and corrective action:		Description of finding and corrective action:	



Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill				
Date	12/24/2019	**Received**	**Manager**	Ramin Khany	**Date** 12/24/2019
Technician	S. Johnson	**Repairs Complete**	**Manager**		**Date**

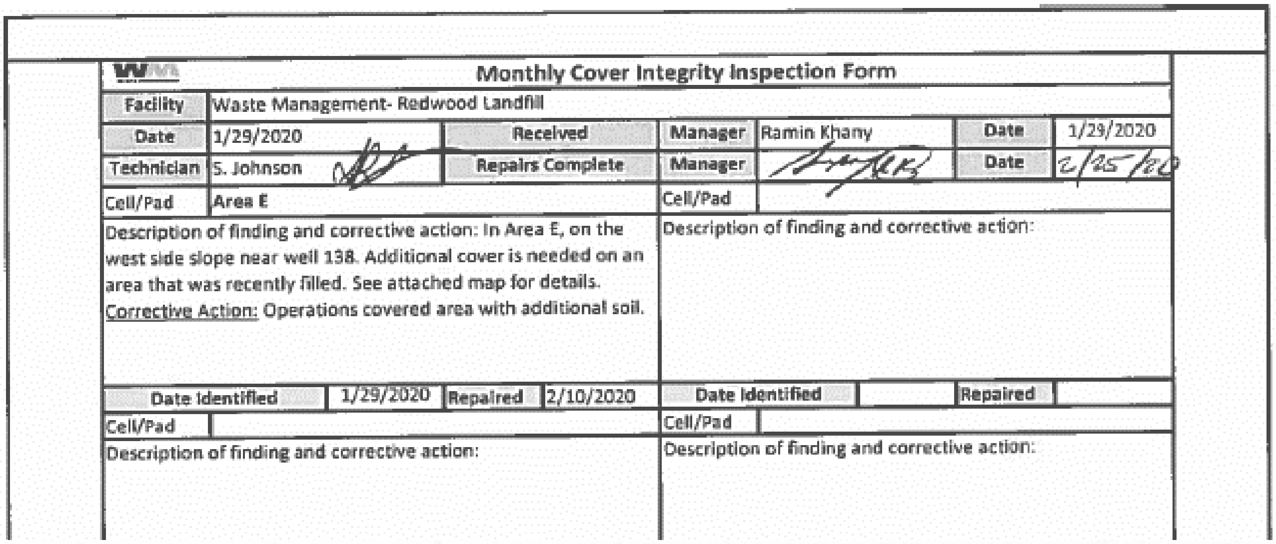
Cell/Pad	**Area B**	Cell/Pad	
Description of finding and corrective action: In Area B, on the west side slope near well186. Additional cover is needed on an area that was recently filled. See attached map for details. <u>Corrective Action:</u>		Description of finding and corrective action:	
Date Identified 12/24/2019	**Repaired**	**Date Identified**	**Repaired**
Cell/Pad		Cell/Pad	
Description of finding and corrective action:		Description of finding and corrective action:	



December 2019

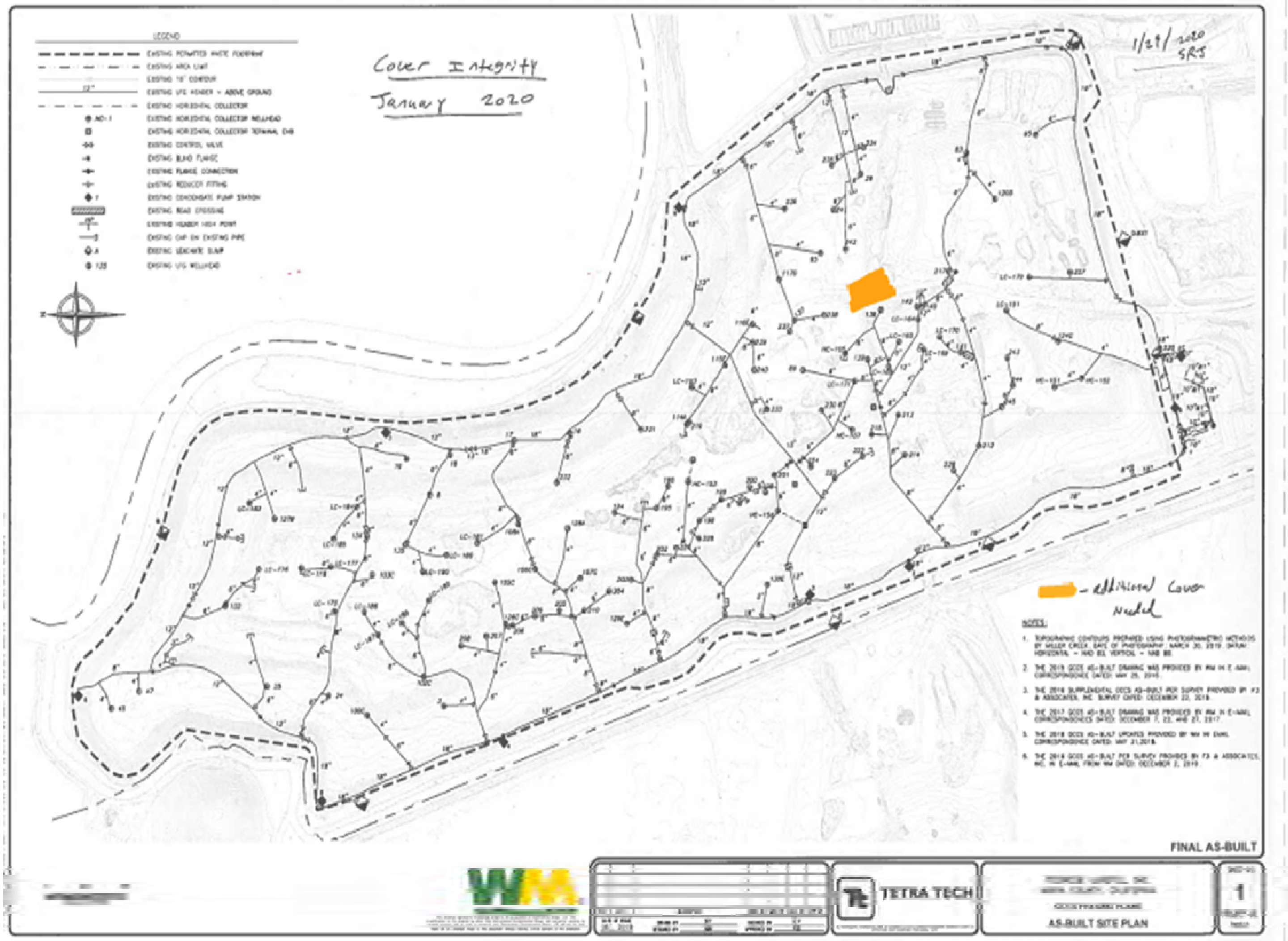
Cover Integrity

- Additional Cover Needed



Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill						
Date	1/29/2020	**Received**		**Manager**	Ramin Khany	**Date**	1/29/2020
Technician	S. Johnson	**Repairs Complete**		**Manager**		**Date**	2/25/20
Cell/Pad	**Area E**			Cell/Pad			
Description of finding and corrective action: In Area E, on the west side slope near well 138. Additional cover is needed on an area that was recently filled. See attached map for details. Corrective Action: Operations covered area with additional soil.				Description of finding and corrective action:			
Date Identified	1/29/2020	**Repaired**	2/10/2020	**Date Identified**		**Repaired**	
Cell/Pad				Cell/Pad			
Description of finding and corrective action:				Description of finding and corrective action:			

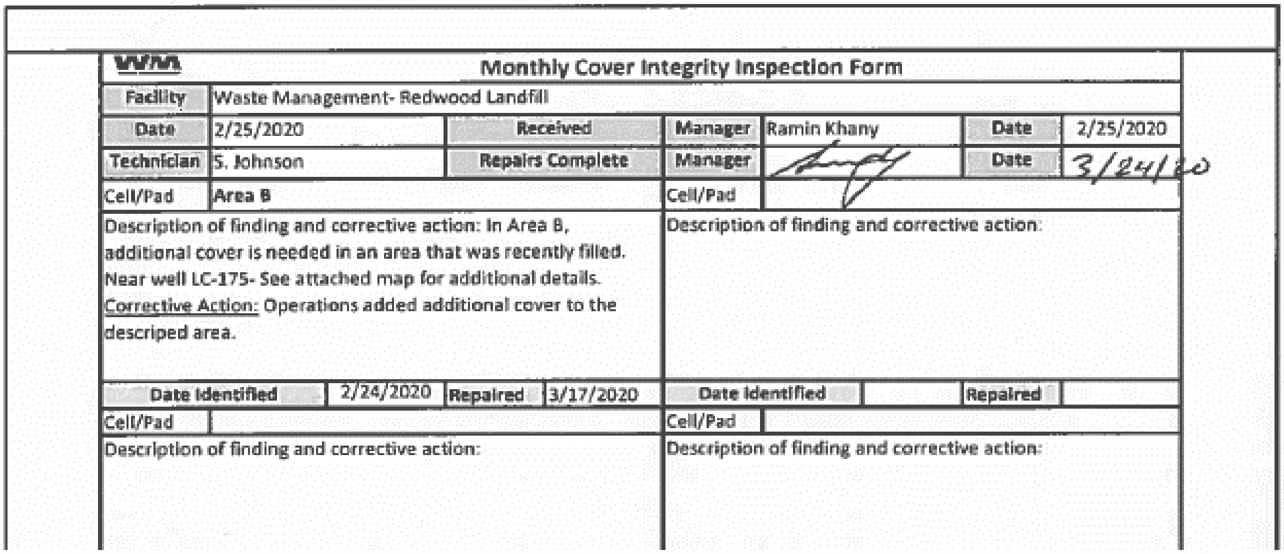


Cover Integrity

January 2020

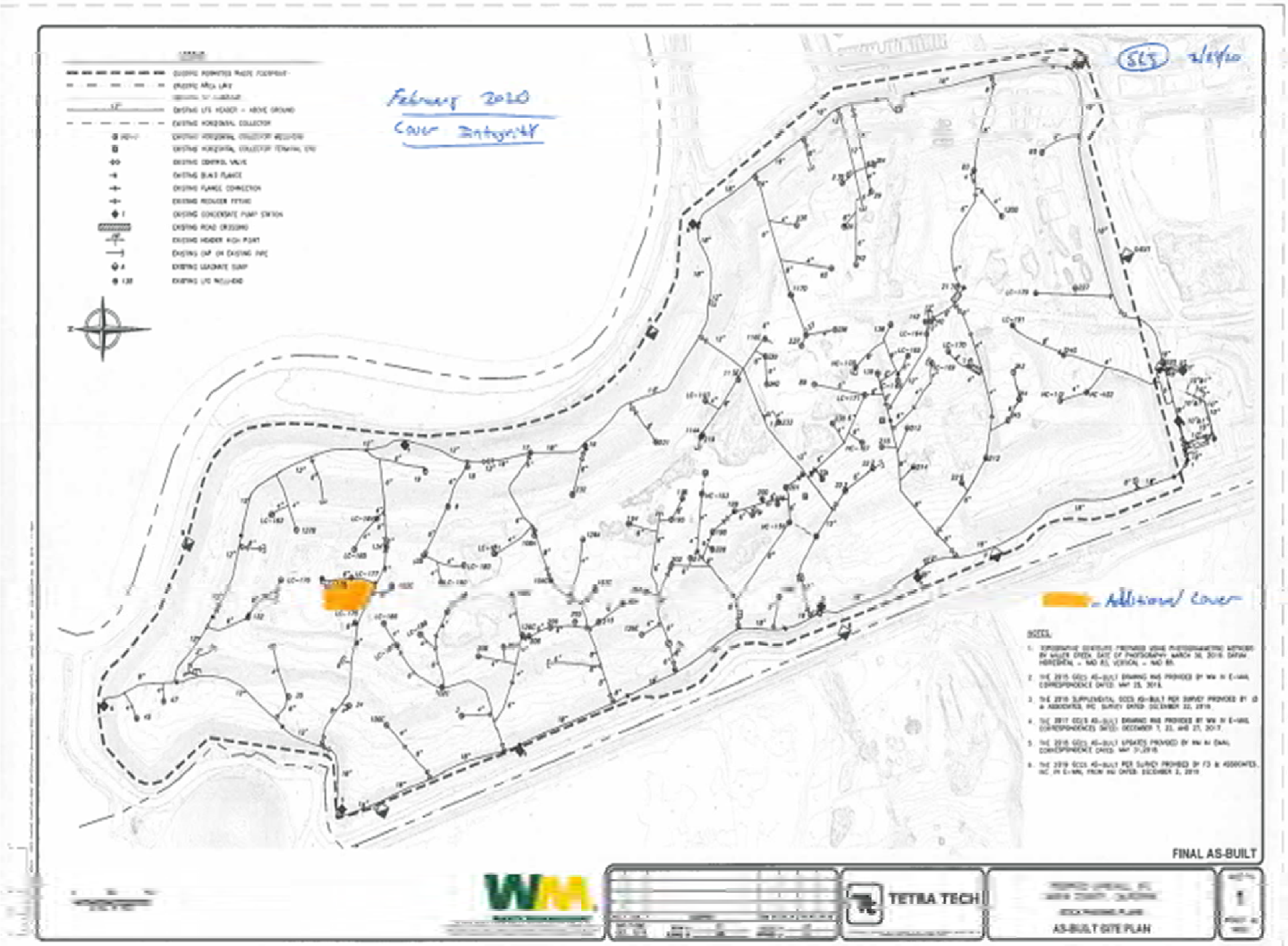
1/29/2020 SRJ

🟧 – Additional Cover Needed



Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill						
Date	2/25/2020	**Received**		**Manager**	Ramin Khany	**Date**	2/25/2020
Technician	S. Johnson	**Repairs Complete**		**Manager**		**Date**	3/24/20
Cell/Pad	Area B			Cell/Pad			
Description of finding and corrective action: In Area B, additional cover is needed in an area that was recently filled. Near well LC-175- See attached map for additional details. Corrective Action: Operations added additional cover to the descriped area.				Description of finding and corrective action:			
Date Identified	2/24/2020	**Repaired**	3/17/2020	**Date Identified**		**Repaired**	
Cell/Pad				Cell/Pad			
Description of finding and corrective action:				Description of finding and corrective action:			



February 2020
Cover Integrity

SLJ 3/24/20

▬ - Additional Cover

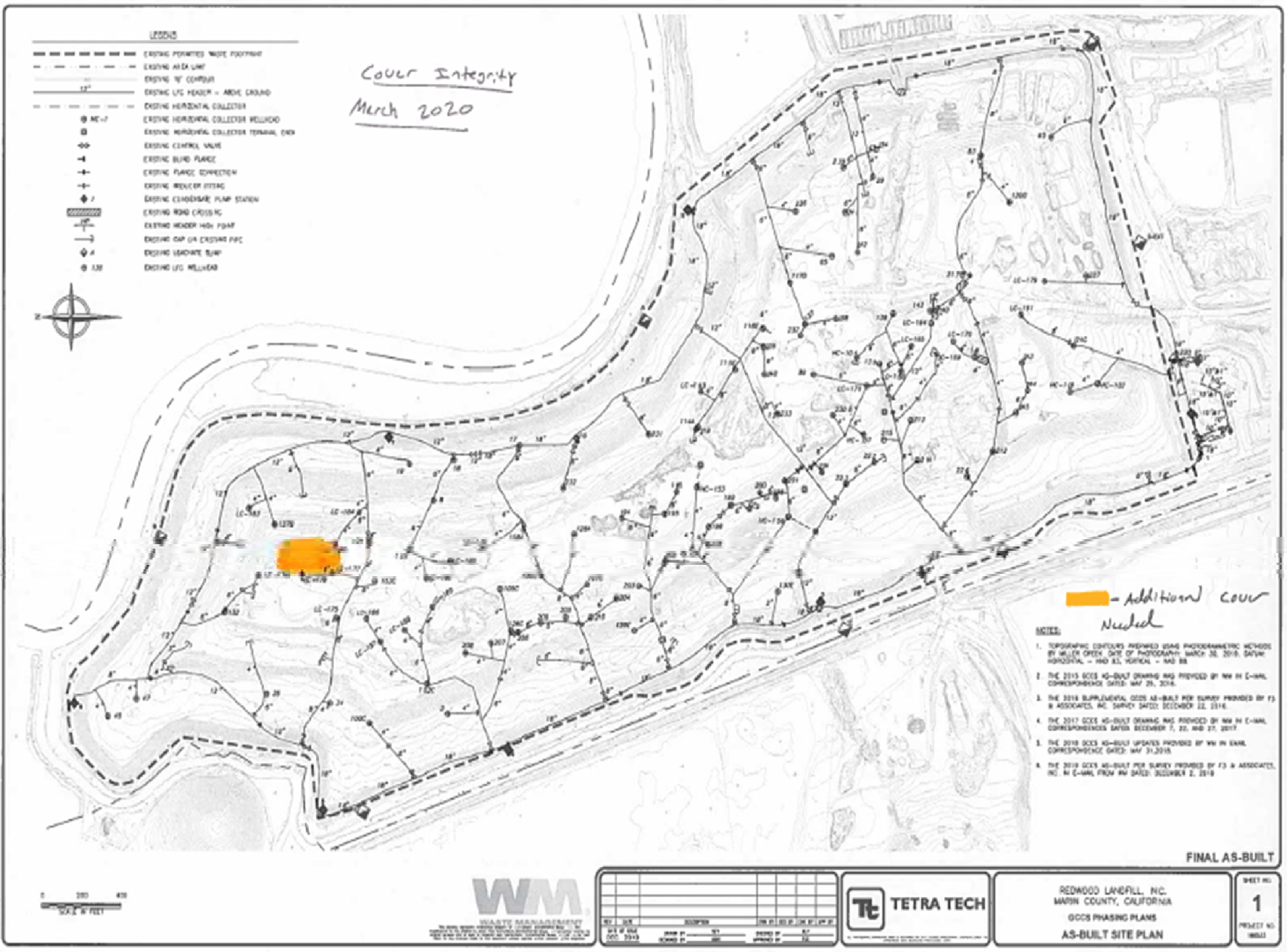
Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill					
Date	3/24/2020	Received	Manager	Ramin Yhany	Date	3/24/2020
Technician	S. Johnson	Repairs Complete	Manager		Date	4/13/20

Cell/Pad	Area B	Cell/Pad	
Description of finding and corrective action: In Area B, additional cover is needed in an area that was recently filled. On the East side of LC-178 and LC-177- See attached map for additional details. Corrective Action: Additional cover was Added to described Area		Description of findingand corrective action:	

Date Identified	3/23/2020	Repaired	4/6/20	Date Identified		Repaired	

Cell/Pad		Cell/Pad	
Description of finding and corrective action		Description of finding and corrective action	



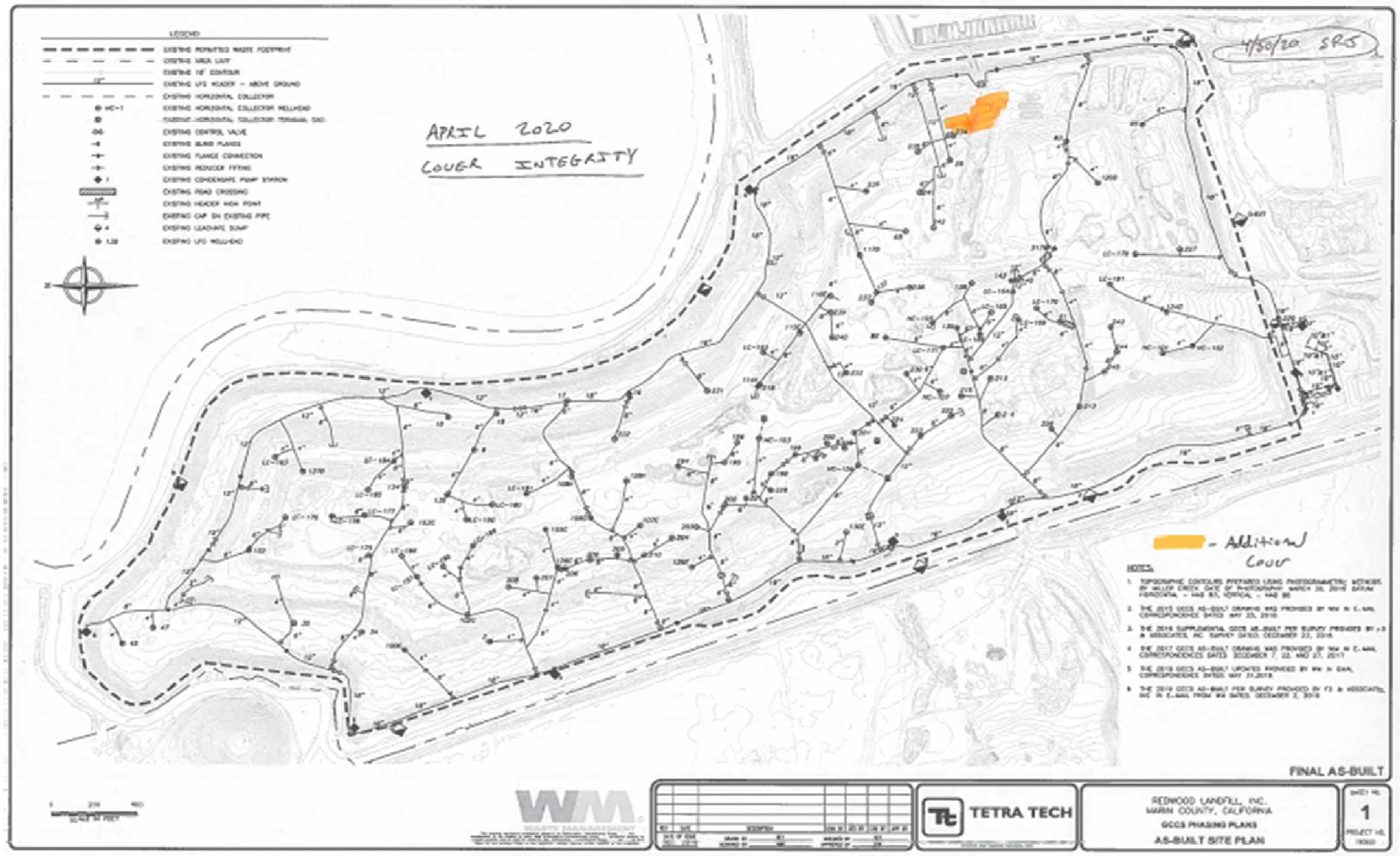
Cover Integrity
March 2020

🟧 - Additional Cover Needed

Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill					
Date	4/30/2020	**Received**	**Manager**	Ramin Khany	**Date**	4/30/2020
Technician	S. Johnson	**Repairs Complete**	**Manager**		**Date**	

Cell/Pad	**Area D**			Cell/Pad			
Description of finding and corrective action: In Area D, additional cover is needed on the slope and flat Southeast of well LC-234. See attached map for details. Corrective Action:				Description of finding and corrective action:			
Date Identified	3/23/2020	**Repaired**		**Date Identified**		**Repaired**	
Cell/Pad				Cell/Pad			
Description of finding and corrective action:				Description of finding and corrective action:			
Date Identified		**Repaired**		**Date Identified**		**Repaired**	
Cell/Pad				Cell/Pad			
Description of finding and corrective action:				Description of finding and corrective action:			



APPENDIX H

SURFACE EMISSIONS MONITORING / COMPONENT LEAK

WASTE MANAGEMENT
172 98th Avenue
Oakland, CA 94603
(510) 430-8509

January 13, 2020

Ms. Alisha McCutcheon
Redwood Landfill, Inc.
8590 Redwood Highway
Novato, California 94948

Re: Fourth Quarter 2019 Surface Emissions and Component Leak Monitoring Report for Redwood Landfill, Inc.

Dear Ms. McCutcheon:

This monitoring report for "**Redwood Landfill, Inc. (RLI)**" contains the results of the Fourth Quarter 2019 Integrated and Instantaneous Surface Emissions Monitoring (SEM) and Component Leak Monitoring. Initial surface emissions monitoring was performed by Roberts Environmental Services, LLC. (RES). Re-monitoring of surface emissions and site-wide component leak monitoring was conducted by RES and/or Waste Management (WM) personnel.

APPLICABLE REQUIREMENTS

The monitoring discussed in this report was conducted in accordance with the following requirements:

Surface Emission Monitoring (SEM)

- New Source Performance Standard (NSPS), Title 40 of the Code of Federal Regulations (CFR) §60.755 (c) and (d), 40 CFR 60, Appendix A Method 21, promulgated by the United States Environmental Protection Agency (USEPA).
- California Code of Regulations (CCR) Title 17, Subchapter 10, Article 4, Subarticle 6, §95460 to §95476, known as the Assembly Bill 32 (AB32) landfill methane rule (LMR).
- Bay Area Air Quality Management District (BAAQMD) Regulation 8, Rule 34, Section 303 (Landfill Surface Requirements) and Section 607 (Landfill Surface Inspection procedures).

Component Leak

- Bay Area Air Quality Management District (BAAQMD) Regulation 8, Rule 34, Section 301 (Landfill Gas Collection and Emission Control System Requirements) and Section 602 (Collection and Control System Leak Inspection procedures).

- California Code of Regulations (CCR) Title 17, Subchapter 10, Article 4, Subarticle 6, §95464, known as the Assembly Bill 32 (AB32) landfill methane rule (LMR).

RLI Plan and Alternative Compliance Measures

An Alternative Compliance Option (ACO) Request was submitted to the California Air Resources Board (CARB) on March 24, 2011. After receipt of comments, this ACO was amended, restated, and submitted to BAAQMD on July 1, 2016. SEM and Component Leak monitoring was conducted per the methods outlined in the July 1, 2016 ACO.

PROCEDURES

General

The surface of the RLI disposal area has been divided into two hundred-eight (208), approximately 50,000 square foot monitoring grids. The entire landfill surface is monitored with the exception of active portions of the Landfill, slope areas, and as requested in the approved ACO, areas containing only asbestos-containing waste, inert waste and/or non-decomposable waste which are excluded for safety as allowed by CCR Title 17 §95466.

Field personnel walked the surface of the landfill following the walking pattern as depicted the 2011 RLI AB-32 SEM Plan, which traverses each monitoring grid. Additionally, in accordance with the provisions of 40 CFR 60.753(d) and 60.755(c)(1-3), the entire perimeter of the landfill surface was monitored. During the event, special attention was given to monitoring unusual cover conditions (stressed vegetation, cracks, seeps, etc.) and any areas with unusual odors.

Instantaneous Surface Emissions Monitoring

The Instantaneous SEM was conducted using a Toxic Vapor Analyzer (TVA) 1000 flame ionization detector (FID), which was calibrated to 500 parts per million by volume (ppm_v) methane, which meets or exceeds all guidelines set forth in the CCR Title 17 §95471(a) and NSPS. The FID was calibrated prior to use in accordance with the United States Environmental Protection Agency (USEPA) Method 21 requirements. The Instantaneous SEM procedures followed the requirements of 40 CFR 60.755 (c) and (d) and CCR Title 17 §95471(c)(2).

RES personnel walked the surface of the landfill on a grid by grid basis with the wand tip held at 2 inches from the landfill surface. While sampling the grid; the technicians also checked any surface impoundments (wells or otherwise) for leaks. Technicians also checked any surface cracks, seeps, or other areas that show evidence of surface emissions (odors or distressed vegetation). Active and sloped areas excluded for safety were documented on field data sheets and maps.

All instantaneous surface monitoring was performed in accordance with the applicable requirements referenced in this report. Any detections of methane above 200 ppm_v (areas of concern) or 500 ppm_v (exceedances) for instantaneous were recorded, flagged, and marked on an SEM Map, which, wherever required, is included in the Appendices of this report. Applicable corrective action and re-monitoring timelines are listed below:

- Corrective actions must be initiated within 5 days of the initial exceedance and re-monitoring shall be conducted within 10 days of the initial exceedance.
    - If the re-monitoring event shows the exceedance is corrected, the location shall be re-monitored within 1 month of the initial exceedance.
    - If the 1-month re-monitoring event shows the location is still corrected, all re-monitoring requirements have been completed.
- If either the first 10-day or 1-month re-monitoring events show a second exceedance, additional corrective actions shall be completed and a second re-monitoring event shall be conducted within 10 days of the second exceedance.
- If the second 10-day re-monitoring event shows the second exceedance is corrected, the location shall be re-monitored within 1 month of the initial exceedance. If the 1-month re-monitoring event shows the area is still corrected, monitoring requirements have been completed.

If any location shows three exceedances, an additional well shall be installed within 120 days of the initial exceedance.

Integrated Surface Emissions Monitoring

The Integrated surface monitoring was conducted using a TVA 1000 calibrated to 25 ppm_v for the integrated monitoring, which meets or exceeds all guidelines set forth in the CCR Title 17 §95471(a). The field technician traversed the grid walking path over a continuous 25-minute period using the TVA 1000 held at 3 inches above the landfill surface. The Integrated monitoring procedures followed the requirements of CCR Title 17 §95471(c)(2).

Grids with results greater than 25 ppm_v were recorded, marked on the SEM map, and flagged for remediation. Any grids with integrated concentrations greater than 25 ppm_v are subject to the following re-monitoring timeline:

- Re-monitoring shall be conducted within 10 days of the initial exceedance.
- If the 10-day re-monitoring event shows the exceedance is corrected, all re-monitoring requirements have been completed.
- If either the first 10-day re-monitoring event shows a second grid exceedance, additional corrective actions shall be completed and a second re-monitoring event shall be conducted within 10 days of the second exceedance.
- If the second 10-day re-monitoring event shows the second exceedance is corrected, all re-monitoring requirements have been completed.
- The second 10-day re-monitoring event shows a third grid exceedance, an additional well shall be installed within 120 days of the third exceedance.

Component Leak Monitoring Procedures

RES personnel monitored the exposed LFG components under positive pressure (pipes, wellheads, valves, blowers, and other mechanical appurtenances) using a TVA 1000 calibrated to 500 ppm_v. All leaks measured one half inch or less from the component exceeding the compliance limit of 500 ppm_v per requirements outlined in pursuant to CARB Title 17 of California Code of Regulations Subchapter 10, Article 4, Subarticle 6, Section 95464(b)(1)(B) and 1,000 ppm_v per requirements outlined in BAAQMD 8-34-303 were recorded. Applicable corrective action and re-monitoring timelines are listed below:

- Leaks between 500 and 999 ppm_v must be corrected and re-monitored within 10 days of the initial exceedance.

- Leaks at or above 1000 ppm_v must be corrected and re-monitored within 7 days of the initial exceedance.

FOURTH QUARTER 2019 SEM AND COMPONENT LEAK RESULTS

The following is a summary of the SEM and component leak monitoring results completed for the Fourth Quarter 2019.

Instantaneous Surface Emissions Monitoring Results

The Instantaneous surface monitoring was performed on November 5, 2019 in accordance with the NSPS, BAAQMD 8-34, and CCR Title 17 §95469 and ACO. Results and data from the monitoring are presented in Attachment A

Initial Monitoring Event Exceedances of 500 ppm_v

There were three (3) exceedances of 500 ppm_v as methane detected on November 5, 2019. Corrective actions to initiate repairs of the exceedances were completed within five days for all locations.

First Ten-Day Re-Monitoring Results

The first 10-day re-monitoring event was completed on November 14, 2019. All locations were observed at less than 500 ppm_v.

One-Month Re-Monitoring Results

The 1-month re-monitoring event was completed on December 4, 2019. All locations were observed at less than 500 ppm_v.

Readings between 200 ppm_v and 499 ppm_v (Initial and Re-monitored)

There were no readings between 200 ppm_v and 499 ppm_v as methane detected during the initial monitoring event on November 5, 2019. Pursuant to CCR Title 17 §95471(c), instantaneous surface emissions exceeding 200 ppm_v but below 500 ppm_v are required to be recorded.

Integrated Surface Emissions Monitoring Results

The Integrated surface sampling (ISS) was performed on November 4, 5, and 6, 2019 in accordance with the ACO and requirements outlined in CCR Title 17 §95469.

Initial Monitoring Event Exceedances of 25 ppm$_v$

There were 0 grids with exceedances of 25 ppm$_v$ as methane detected during the initial monitoring event.

The average methane concentration of each grid was recorded during the monitoring event per applicable requirements. See Attachment B, Integrated SEM 25 ppm$_v$ Exceedances and Monitoring Log, and SEM Map included in Attachment B, for details.

Component Leak Monitoring Results

Component leak monitoring was conducted per the applicable requirements on November 5, 2019. No leaks greater than 500 ppm$_v$ were identified. Please see Attachment C, for details.

WEATHER CONDITIONS

Wind Speed Conductions during the Surface Emission Monitoring Events

Wind speeds during initial monitoring were monitored using a portable weather station. The station has a strip chart that records the wind speed and direction. After completion of monitoring, the strip chart is reviewed by RES office staff to determine the average and maximum wind speeds during the monitoring and the average wind direction during each grid and ensure that the wind speed requirements are met (no gusts greater than 20 mph, average wind speed cannot exceed 10 mph). These values are documented in the field data sheets. The chart data is scanned and included in Attachment D.

Precipitation Requirements

Per the RLI's ACO, the initial monitoring event was carefully scheduled so that it could be conducted in compliance with the precipitation requirements (no precipitation ≥0.01" within 24 hours, ≥0.16" within 48 hours, nor ≥0.25" within 72 hours). Re-monitoring events are required to adhere to strict timelines. Any conflicts with precipitation requirements are discussed in the results section of this document.

EQUIPMENT CALIBRATION

The portable analyzers were calibrated to meet the instrument specifications requirements of U.S. EPA Method 21. The calibration gas used was methane, diluted to a nominal concentration of 25 ppm$_v$ in air for integrated sample analyses and 500 ppm$_v$ in air for instantaneous monitoring to comply with the requirements.

All analyzers were calibrated prior to use with required response time and precision related instrument checks. Calibration records include the following: One time response time test record;

One time response factor determination for methane; Calibration Precision test records (test to be performed every 3 months); and Daily Instrument Calibration and Background test records for each gas meter that was used during the quarterly monitoring event. The calibration log records are included in Attachment E.

All monitoring was completed in accordance with the applicable regulatory requirements or approved alternatives. If you have any questions regarding this report, please do not hesitate to contact me at (510) 613-2852.

Thank you,
Waste Management

Michael Chan
Environmental Protection Specialist

Attachment A – Instantaneous Surface Emission Monitoring Event Records

- Monitoring Logs and Exceedances
- Surface Monitoring Weather Data
- SEM Map

Attachment B – Integrated Surface Emission Monitoring Event Records

- Monitoring Logs and Exceedances
- Surface Monitoring Weather Data
- SEM Map

Attachment C – Component Leak Monitoring Event Records

- Component Leak Exceedances and Monitoring Logs

Attachment D – Weather Station Data

- Strip Chart Data

Attachment E – Calibration Records

- Instrument and Gas Calibration Records

Attachment A

Instantaneous Surface Emission Monitoring Event Records

Table A.1
Instantaneous Landfill Surface Emissions Monitoring
Initial Monitoring Event Areas of Concern

2019 QUARTER: 4

PERFORMED BY: RES and S. Johnson

LANDFILL NAME: **Redwood Landfill, Inc.**

Grid Number	Flag Number	Date of Monitoring	Concentration of Emission (ppm_v)	Comments
199	O41	11/5/2019	3,000	Well 3
89	O42	11/5/2019	3,500	Well 219
15	O61	11/5/2019	4,700	Surface
Notes: Please refer to field data sheets for details				

Table A.2
Instantaneous Landfill Surface Emissions Monitoring Exceedance and Monitoring Logs (NSPS/BAAQMD 8-34)

2019 QUARTER: 4

INITIAL MONITORING PERFORMED BY: RES and S. Johnson

FOLLOW-UP MONITORING PERFORMED BY: S. Johnson

LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			Corrective Action		1st 10-day Follow-Up			1st 30-day Follow-Up			Comments
Flag Number	Monitoring Date	Reading ppm	Repair Date	Action Taken	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	
O41	11/5/2019	3,000	11/6/2019	Increased BECS/ Vacuum/ Re-Applied Cover and Compact	11/14/2019	9		12/4/2019	32		Well 3
O42	11/5/2019	3,500	11/6/2019	Increased BECS/ Vacuum/ Re-Applied Cover and Compact	11/14/2019	60		12/4/2019	3		Well 219
O61	11/5/2019	4,700	11/6/2019	Re-Applied Cover/ Compact/ Watered	11/14/2019	106		12/4/2019	94		Surface

Table A.3
Instantaneous Landfill Surface Emissions Monitoring Exceedance and Monitoring Logs (AB-32)

2019 QUARTER: 4

INITIAL MONITORING PERFORMED BY: RES and S. Johnson

FOLLOW-UP MONITORING PERFORMED BY: S. Johnson

LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			**1st Re-mon Event - 10 Days**			**2nd Re-mon Event - 10 Days**			
Flag Number	Monitoring Date	Reading ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	**Comments**
O41	11/5/2019	3,000	11/14/2019	9					Well 3
O42	11/5/2019	3,500	11/14/2019	60					Well 219
O61	11/5/2019	4,700	11/14/2019	106					Surface

Table A.4
Instantaneous Landfill Surface Emissions Monitoring Areas of Concern Greater than 200 ppmv

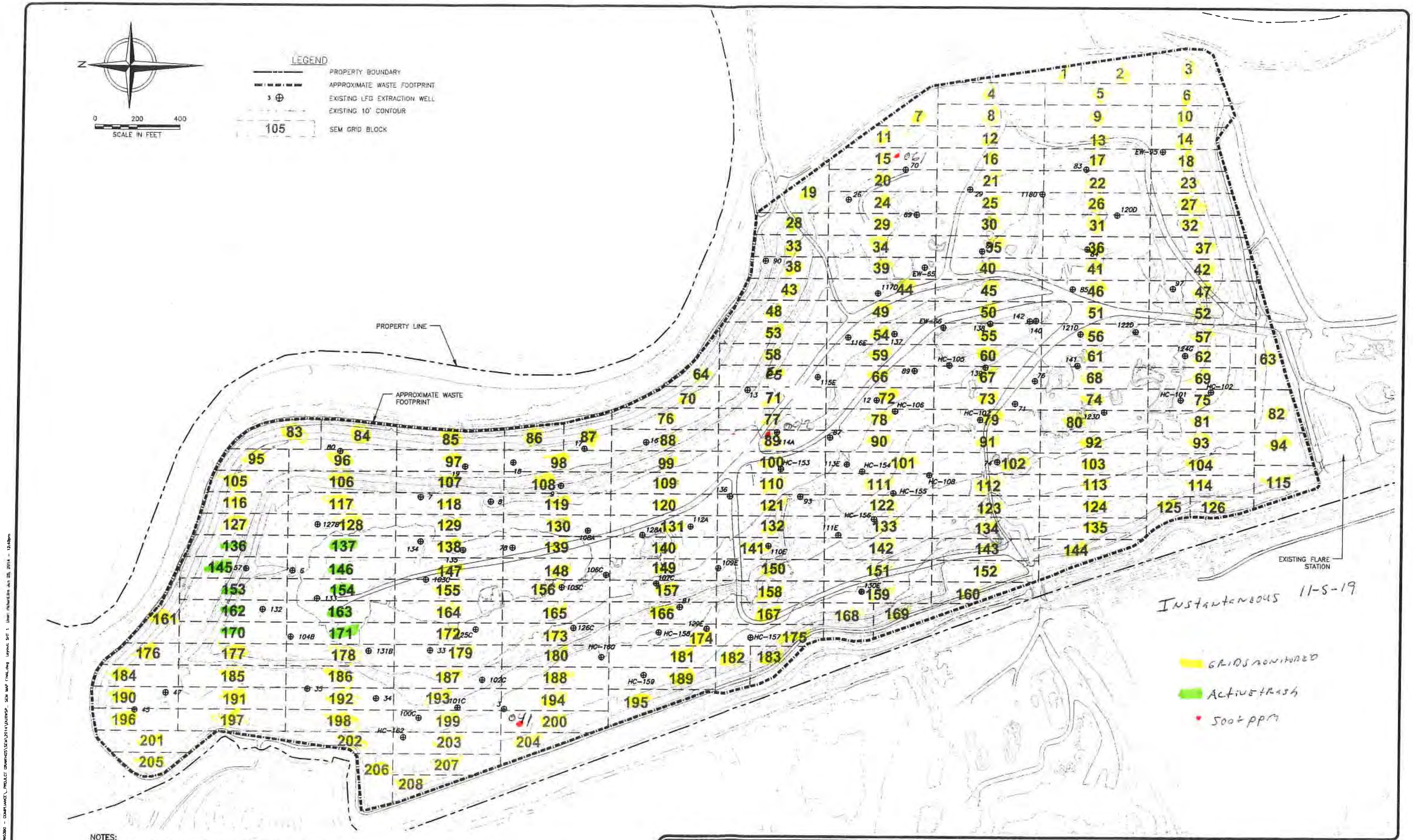
2019 QUARTER: 4

INITIAL MONITORING PERFORMED BY: RES

FOLLOW-UP MONITORING PERFORMED BY: S. Johnson

LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			Re-mon Event		Comments
Flag Number	Monitoring Date	Reading ppm	Monitoring Date	Reading ppm	
No 200-499 ppmv locations					



Instantaneous 11-5-19

🟨 GRIDS monitored

🟩 Active trash

● 500+ ppm

NOTES:
1. TOPOGRAPHIC CONTOURS PREPARED USING PHOTOGRAMMETRIC METHODS BY MILLER CREEK AERIAL MAPPING. DATE OF PHOTOGRAPHY: FEBRUARY 14, 2014
2. LOCATION OF WASTE FOOTPRINT IS APPROXIMATE
3. SUPPLEMENTAL AS-BUILT WELL LOCATIONS PER FIELD SURVEY PERFORMED BY F3 AND ASSOCIATES (DATE OF SURVEY: AUGUST 13, 2013) AND NOTES FROM WASTE MANAGEMENT DATED OCTOBER 2, 2013 AND JUNE 19, 2014

WASTE MANAGEMENT

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

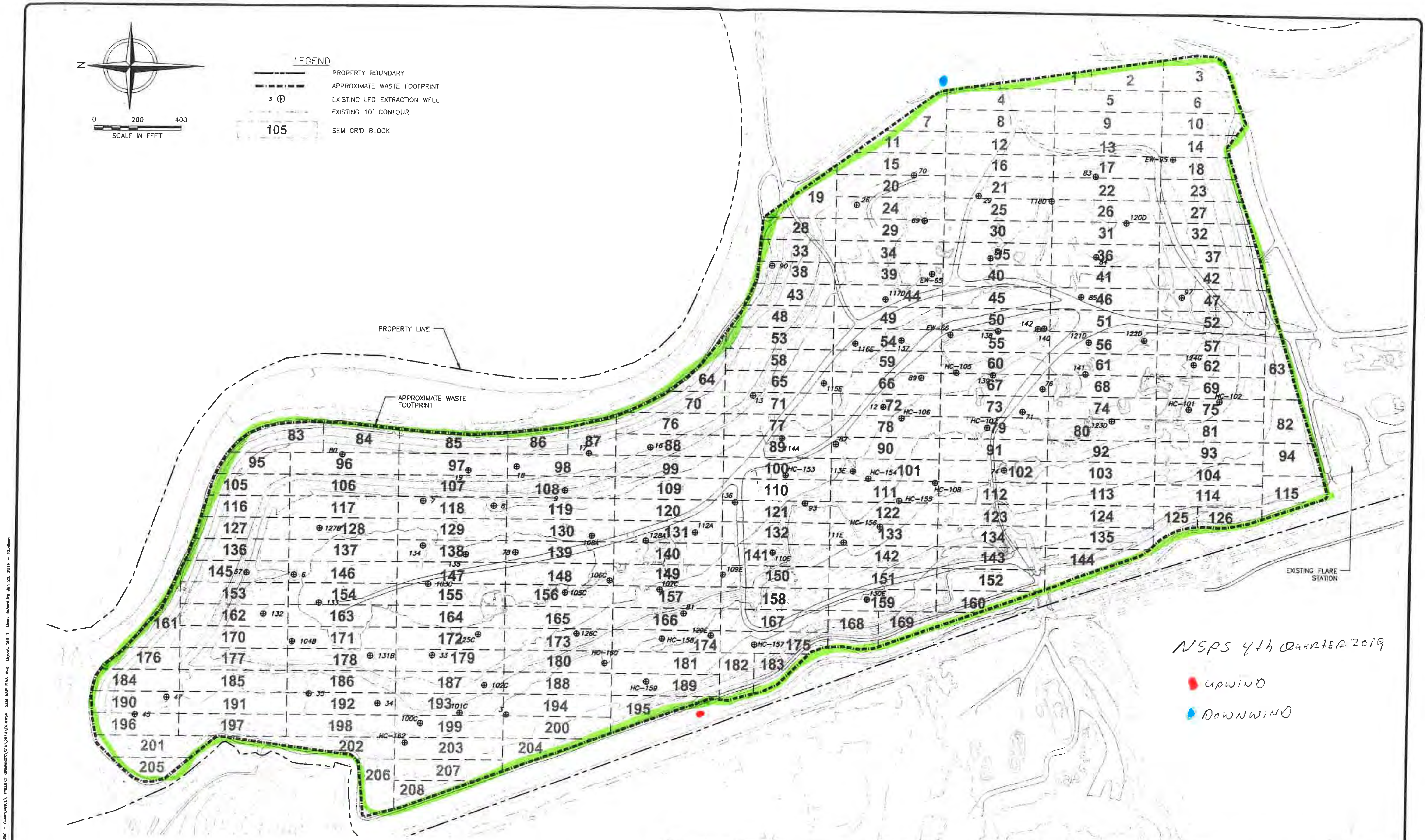
DATE OF ISSUE 6/24/2014
DRAWN BY RL
DESIGNED BY MLH
CHECKED BY MED
APPROVED BY PJS

cornerstone environmental
PREPARED BY:
CORNERSTONE ENVIRONMENTAL GROUP, LLC

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

SURFACE EMISSIONS MONITORING
GRID MAP

SHEET NO.
1
PROJECT NO
140521



NSPS 4th Quarter 2019

● upwind

● Downwind

NOTES:

1 TOPOGRAPHIC CONTOURS PREPARED USING PHOTOGRAMMETRIC METHODS BY MILLER CREEK AERIAL MAPPING. DATE OF PHOTOGRAPHY: FEBRUARY 14, 2014
2 LOCATION OF WASTE FOOTPRINT IS APPROXIMATE.
3 SUPPLEMENTAL AS-BUILT WELL LOCATIONS PER FIELD SURVEY PERFORMED BY F3 AND ASSOCIATES (DATE OF SURVEY: AUGUST 13, 2013) AND NOTES FROM WASTE MANAGEMENT DATED OCTOBER 2, 2013 AND JUNE 19, 2014

WASTE MANAGEMENT

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 6/24/2014
DRAWN BY RL
DESIGNED BY MLH
CHECKED BY MED
APPROVED BY PJS

cornerstone environmental
PREPARED BY:
CORNERSTONE ENVIRONMENTAL GROUP LLC

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

SURFACE EMISSIONS MONITORING
GRID MAP

SHEET NO.
1

PROJECT NO
140521

Orange Flag Landfill Surface Emissions Monitoring
Exceedances and Monitoring Log

Site: REDwooD

Quarter / Year: 4th 2019
Technician: LEighWAdE
Instrument: tvA1000
Calibration Standard: 500

Page of Pages

Initial Monitoring Event				First Re-Monitoring Event - 10 Days			Second Re-Monitoring Event - 10 Days			30-Day Follow-up Monitoring			Comments
Flag Number	Grid Number	Field Reading (ppm)	Date Monitored	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	
O- 41	200	3,000	11-5-19										WEll 3
O- 42	89	3,500	↓										WEll 219
O- 61	15	4,700	↓										SuRFace
O-													
O-													
O-													
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REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEISHWADE   ERNEST RAMIREZ
ARRIEN JONES   Anthony PERSCER
AARON MCBRIDE

Date: 11-5-19 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 39 Precip: 0 Upwind BG: 1.6 Downwind BG: 2.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
161	LW	0545	0600	11	1	2	13	
176	AJ	0545	0600	14	1	2	13	
184	AM	0545	0600	16	1	2	13	
190	ER	0545	0600	14	1	2	13	
196	AP	0545	0600	22	1	2	13	
201	LW	0600	0615	31	1	2	12	
205	AJ	0600	0615	18	1	2	12	
206	AM	0600	0615	24	1	2	12	
232	ER	0600	0615	20	1	2	12	
197	AP	0600	0615	36	1	2	12	
198	LW	0615	0630	29	1	2	12	
191	AJ	0615	0630	34	1	2	12	
192	AM	0615	0630	22	1	2	12	
185	ER	0615	0630	46	1	2	12	
186	AP	0615	0630	41	1	2	12	
177	LW	0630	0645	56	1	2	11	
178	AJ	0630	0645	79	1	2	11	
127	AM	0630	0645	24	1	2	11	
128	ER	0630	0645	39	1	2	11	
116	AP	0630	0645	46	1	2	11	
117	LW	0645	0700	34	1	2	12	
105	AJ	0645	0700	30	1	2	12	
106	AM	0645	0700	25	1	2	12	
95	ER	0645	0700	18	1	2	12	
96	AP	0645	0700	14	1	2	12	
83	LW	0700	0715	29	1	2	12	
84	AJ	0700	0715	17	1	2	12	
85	AM	0700	0715	15	1	2	12	
86	ER	0700	0715	12	1	2	12	
87	AP	0700	0715	16	1	2	12	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 2

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEISHWADE ERNEST REMREZ
AARIEN JONES ANTHONY PERALTA
AARON MCBRIDE

Date: 11-5-19 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 42 Precip: 0 Upwind BG: 1.6 Downwind BG: 2.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
97	LW	0715	0730	35	1	2	9	
98	AT	0715	0730	21	1	2	9	
107	AM	0715	0730	30	1	2	9	
108	ER	0715	0730	64	1	2	9	
118	AP	0715	0730	60	1	2	9	
119	LW	0730	0745	47	1	2	9	
129	AT	0730	0745	32	1	2	9	
130	AM	0730	0745	40	1	2	9	
138	ER	0730	0745	29	1	2	9	
139	AP	0730	0745	58	1	2	9	
147	LW	0745	0800	72	1	2	9	
148	AT	0745	0800	48	1	2	9	
155	AM	0745	0800	84	1	2	9	
156	ER	0745	0800	70	1	2	9	
164	AP	0745	0800	65	1	2	9	
165	LW	0800	0815	114	1	2	11	
172	AT	0800	0815	49	1	2	11	
173	AM	0800	0815	55	1	2	11	
179	ER	0800	0815	74	1	2	11	
180	AP	0800	0815	99	1	2	11	
187	LW	0815	0830	61	1	2	11	
188	AP	0815	0830	38	1	2	11	
193	AM	0815	0830	57	1	2	11	
194	ER	0815	0830	27	1	2	11	
199	AP	0815	0830	83	1	2	11	
200	LW	0830	0845	3,000	1	2	12	WELL 3
203	AT	0830	0845	45	1	2	12	
204	AM	0830	0845	71	1	2	12	
207	ER	0830	0845	34	1	2	12	
208	AP	0830	0845	60	1	2	12	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE | ERNEST RAMIREZ
ADRIEN JONES | ANTHONY PERALTA
AARON MCBRINE

Date: 11-5-19 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 45 Precip: 0 Upwind BG: 1.6 Downwind BG: 2.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
195	LW	0845	0900	24	1	2	12	
189	AJ	0845	0900	37	1	2	12	
181	AM	0845	0900	20	1	2	12	
182	ER	0845	0900	41	1	2	12	
183	AP	0845	0900	36	1	2	12	
174	LW	0900	0915	24	1	2	9	
175	AJ	0900	0915	57	1	2	9	
166	AM	0900	0915	42	1	2	9	
167	ER	0900	0915	54	1	2	9	
157	AP	0900	0915	39	1	2	9	
158	LW	0915	0930	74	1	2	9	
149	AJ	0915	0930	96	1	2	9	
150	AM	0915	0930	102	1	2	9	
140	ER	0915	0930	35	1	2	9	
141	AP	0915	0930	22	1	2	9	
131	LW	0930	0945	47	1	2	9	
132	AJ	0930	0945	29	1	2	9	
120	AM	0930	0945	38	1	2	9	
121	ER	0930	0945	46	1	2	9	
109	AP	0930	0945	52	1	2	9	
110	LW	0945	1000	38	1	2	16	
99	AJ	0945	1000	41	1	2	16	
100	AM	0945	1000	30	1	2	16	
88	ER	0945	1000	61	1	2	16	
89	AP	0945	1000	3,500	1	2	16	WELL 219
76	LW	1000	1015	59	1	2	1	
77	AJ	1000	1015	64	1	2	1	
70	AM	1000	1015	81	1	2	1	
77	ER	1000	1015	53	1	2	1	
64	AP	1000	1015	28	1	2	1	

Attach Calibration Sheet
Attach site map showing grid ID

Page 3 of 7

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE, ERNEST RAMIREZ, ARRIEN JONES, ANTHONY PERELL, AARON MCBRIDE

Date: 11-5-19 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 57 Precip: 0 Upwind BG: 1.6 Downwind BG: 2.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
65	LW	1015	1030	31	1	2	1	
58	AJ	1015	1030	27	1	2	1	
53	AM	1015	1030	40	1	2	1	
48	ER	1015	1030	29	1	2	1	
43	AP	1015	1030	26	1	2	1	
38	LW	1030	1045	181	1	2	1	
33	AJ	1030	1045	45	1	2	1	
28	AM	1030	1045	62	1	2	1	
19	ER	1030	1045	25	1	2	1	
7	AP	1030	1045	18	1	2	1	
4	LW	1045	1100	16	1	2	3	
1	AJ	1045	1100	11	1	2	3	
8	AM	1045	1100	75	1	2	3	
11	ER	1045	1100	94	1	2	3	
12	AP	1045	1100	58	1	2	3	
15	LW	1100	1115	4,700	1	2	4	SURFACE
16	AJ	1100	1115	66	1	2	4	
20	AM	1100	1115	55	1	2	4	
21	ER	1100	1115	72	1	2	4	
24	AP	1100	1115	146	1	2	4	
25	LW	1115	1130	58	1	2	4	
29	AJ	1115	1130	66	1	2	4	
30	AM	1115	1130	47	1	2	4	
34	ER	1115	1130	139	1	2	4	
35	AP	1115	1130	87	1	2	4	
39	LW	1130	1145	49	1	2	4	
40	AJ	1130	1145	58	1	2	4	
44	AM	1130	1145	67	1	2	4	
45	ER	1130	1145	38	1	2	4	
49	AP	1130	1145	55	1	2	4	

Attach Calibration Sheet
Attach site map showing grid ID

Page 4 of 7

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEISL WADE; ERNEST RAMIREZ; ADRIEN JONAS; AARON MCBRIDE

Date: 11-5-19 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 62 Precip: 0 Upwind BG: 1.6 Downwind BG: 2.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
50	LW	1145	1200	39	1	2	3	
54	AJ	1145	1200	70	1	2	3	
55	AM	1145	1200	46	1	2	3	
59	ER	1145	1200	52	1	2	3	
60	AD	1145	1200	40	1	2	3	
66	LW	1200	1215	32	1	2	3	
67	AJ	1200	1215	71	1	2	3	
72	AM	1200	1215	48	1	2	3	
73	ER	1200	1215	34	1	2	3	
78	AD	1200	1215	51	1	2	3	
79	LW	1215	1230	78	1	2	4	
90	AJ	1215	1230	64	1	2	4	
91	AM	1215	1230	81	1	2	4	
101	ER	1215	1230	42	1	2	4	
102	AD	1215	1230	59	1	2	4	
111	LW	1230	1245	77	1	2	4	
112	AJ	1230	1245	45	1	2	4	
122	AM	1230	1245	61	1	2	4	
123	ER	1230	1245	57	1	2	4	
133	AD	1230	1245	39	1	2	4	
134	LW	1245	1300	26	1	2	4	
142	AJ	1245	1300	34	1	2	4	
143	AM	1245	1300	49	1	2	4	
151	ER	1245	1300	28	1	2	4	
152	AD	1245	1300	32	1	2	4	
159	LW	1300	1315	46	1	2	4	
160	AJ	1300	1315	21	1	2	4	
168	AM	1300	1315	27	1	2	4	
169	ER	1300	1315	15	1	2	4	
144	AD	1300	1315	37	1	2	4	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wade; Ernest Ramirez; Arrien Jones; Anthony Peralta; Aaron McBride

Date: 11-5-19 Instrument Used: TVA000 Grid Spacing: 25'

Temperature: 65 Precip: 0 Upwind BG: 1.6 Downwind BG: 2.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
135	LW	1315	1330	125	1	2	4	
124	AJ	1315	1330	119	1	2	4	
125	AM	1315	1330	127	1	2	4	
126	ER	1315	1330	145	1	2	4	
113	AP	1315	1330	22	1	2	4	
114	LW	1330	1345	160	1	2	4	
115	AJ	1330	1345	137	1	2	4	
103	AM	1330	1345	122	1	2	4	
104	ER	1330	1345	135	1	2	4	
92	AP	1330	1345	27	1	2	4	
93	LW	1345	1400	24	1	2	3	
94	AJ	1345	1400	31	1	2	3	
80	AM	1345	1400	25	1	2	3	
81	ER	1345	1400	16	1	2	3	
82	AP	1345	1400	30	1	2	3	
74	LW	1400	1415	22	1	2	4	
75	AJ	1400	1415	19	1	2	4	
68	AM	1400	1415	24	1	2	4	
69	ER	1400	1415	17	1	2	4	
61	AP	1400	1415	26	1	2	4	
62	LW	1415	1430	31	1	2	3	
63	AJ	1415	1430	21	1	2	3	
56	AM	1415	1430	78	1	2	3	
57	ER	1415	1430	31	1	2	3	
51	AP	1415	1430	24	1	2	3	
52	LW	1430	1445	20	1	2	4	
46	AJ	1430	1445	34	1	2	4	
47	AM	1430	1445	27	1	2	4	
41	ER	1430	1445	45	1	2	4	
42	AP	1430	1445	36	1	2	4	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE / ARRIEN JONES / AARON MCBRIDE / ERNEST RAMIREZ / ANTHONY PINEDA

Date: 11-5-19 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 69 Precip: 0 Upwind BG: 1.6 Downwind BG: 2.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
36	LW	1445	1500	28	1	2	4	
37	AJ	1445	1500	34	1	2	4	
31	AM	1445	1500	19	1	2	4	
32	ER	1445	1500	22	1	2	4	
26	AP	1445	1560	47	1	2	4	
27	LW	1500	1515	18	1	2	3	
22	AJ	1500	1515	26	1	2	3	
23	AM	1500	1515	45	1	2	3	
17	ER	1500	1515	22	1	2	3	
18	AP	1500	1515	15	1	2	3	
13	LW	1515	1530	27	1	2	3	
14	AJ	1515	1530	34	1	2	3	
9	AM	1515	1530	18	1	2	3	
10	ER	1515	1530	15	1	2	3	
5'	AP	1515	1530	17	1	2	3	
6	LW	1530	1545	11	1	2	3	
2	AJ	1530	1545	14	1	2	3	
3	AM	1530	1545	16	1	2	3	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 2

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE

Date: 11-5-19 Instrument Used: ________ Grid Spacing: ________

Temperature: ________ Precip: ________ Upwind BG: ________ Downwind BG: ________

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
136								Active-trash
145								↓
153								
162								
170								
171								
163								
154								
146								
137								

Attach Calibration Sheet
Attach site map showing grid ID

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Attachment B

Integrated Surface Emission Monitoring Event Records

Table B.1
Integrated Landfill Surface Monitoring
Exceedances and Monitoring Log

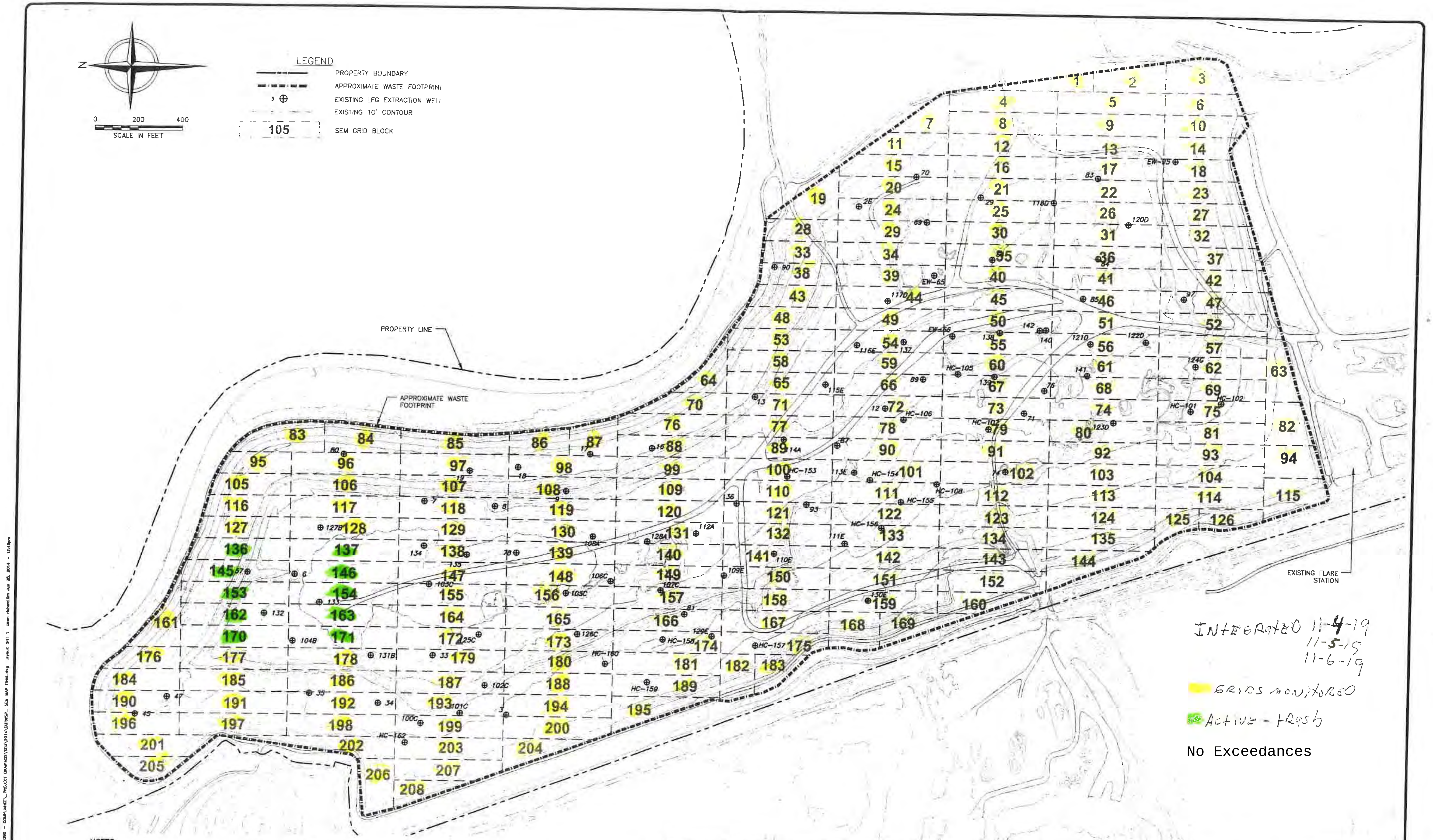
2019 QUARTER: 4

INITIAL MONITORING PERFORMED BY: RES

FOLLOW-UP MONITORING PERFORMED BY: S. Johnson

LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			1st Re-mon Event - 10 Days			2nd Re-mon Event - 10 Days			Comments
Exceedance Grid ID No.	Monitoring Date	Reading ppm	Monitoring Date	No Exced. <25 ppm	No Exced. >25 ppm	Monitoring Date	No Exced. <25 ppm	No Exced. >25 ppm	
No Exceedances									



INTEGRATED 11-4-19
11-5-19
11-6-19

🟨 GRIDS MONITORED

🟩 Active - TRash

No Exceedances

NOTES:

1. TOPOGRAPHIC CONTOURS PREPARED USING PHOTOGRAMMETRIC METHODS BY MILLER CREEK AERIAL MAPPING. DATE OF PHOTOGRAPHY: FEBRUARY 14, 2014.
2. LOCATION OF WASTE FOOTPRINT IS APPROXIMATE.
3. SUPPLEMENTAL AS-BUILT WELL LOCATIONS PER FIELD SURVEY PERFORMED BY F3 AND ASSOCIATES (DATE OF SURVEY: AUGUST 13, 2013) AND NOTES FROM WASTE MANAGEMENT DATED OCTOBER 2, 2013 AND JUNE 19, 2014.

WASTE MANAGEMENT

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 6/24/2014
DRAWN BY RL
DESIGNED BY MLH
CHECKED BY MED
APPROVED BY PJS

cornerstone environmental
PREPARED BY:
CORNERSTONE ENVIRONMENTAL GROUP, LLC

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

SURFACE EMISSIONS MONITORING
GRID MAP

SHEET NO.
1

PROJECT NO
140521

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WARD, ERNEST RAMIREZ, ADRIEN JONES, ANTHONY PERALTA, AARON MCBRIDE

Cal. Gas Exp. Date: 9-21-20

Date: 11-4-19 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 65 Precip: 0 Upwind BG: 1.6 Downwind BG: 2.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
161	LW	1305	1330	4.22	1	2	11	
176	AJ	1305	1330	4.10	1	2	11	
184	AM	1305	1330	3.65	1	2	11	
150	ER	1305	1330	4.21	1	2	11	
196	AP	1305	1330	5.16	1	2	11	
201	LW	1330	1355	4.92	1	2	11	
205	AJ	1330	1355	4.50	1	2	11	
206	AM	1330	1355	3.79	1	2	11	
202	ER	1330	1355	4.24	1	2	11	
197	AP	1330	1355	5.18	1	2	11	
198	LW	1355	1420	5.27	1	2	11	
191	AJ	1355	1420	4.82	1	2	11	
192	AM	1355	1420	5.06	1	2	11	
185	ER	1355	1420	4.97	1	2	11	
186	AP	1355	1420	5.40	1	2	11	
177	LW	1420	1445	8.12	1	2	12	
178	AJ	1420	1445	9.46	1	2	12	
127	AM	1420	1445	6.84	1	2	12	
128	ER	1420	1445	6.20	1	2	12	
116	AP	1420	1445	5.52	1	2	12	
117	LW	1445	1510	5.11	1	2	12	
105	AJ	1445	1510	5.41	1	2	12	
106	AM	1445	1510	4.65	1	2	12	
95	ER	1445	1510	4.29	1	2	12	
96	AP	1445	1510	5.13	1	2	12	
83	LW	1510	1535	4.80	1	2	12	
84	AJ	1510	1535	4.16	1	2	12	
85	AM	1510	1535	4.43	1	2	12	
86	ER	1510	1535	3.97	1	2	12	
87	AP	1510	1535	4.19	1	2	12	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 2

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE ERNEST RAMIREZ
ARRION JONES ANTHONY PERALTA
AARON MCBRIDE

Cal. Gas Exp. Date: 9-21-20

Date: 11-4-19 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 65 Precip: 0 Upwind BG: 1.6 Downwind BG: 2.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
97	LW	1535	1600	5.38	1	2	12	
98	AJ	1535	1600	4.72	1	2	12	
107	AM	1535	1600	4.60	1	2	12	
108	ER	1535	1600	6.13	1	2	12	
118	AP	1535	1600	5.79	1	2	12	
119	LW	1600	1625	5.45	1	2	12	
129	AJ	1600	1625	7.28	1	2	12	
130	AM	1600	1625	6.42	1	2	12	
138	ER	1600	1625	5.17	1	2	12	
139	AP	1600	1625	5.44	1	2	12	
147	LW	1625	1650	5.82	1	2	12	
148	AJ	1625	1650	6.13	1	2	12	
155	AM	1625	1650	4.96	1	2	12	
156	ER	1625	1650	5.30	1	2	12	
164	AP	1625	1650	5.15	1	2	12	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE

Cal. Gas Exp. Date:

Date: 11-4-19 Instrument Used: Grid Spacing:

Temperature: Precip: Upwind BG: Downwind BG:

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
136								Active-Frost
145								
153								
162								
170								
137								
146								
154								
163								
171								

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE; ERNEST RAMIREZ
ARRIAN JONES; ANTHONY PERALTA
AARON MCBRIDE

Cal. Gas Exp. Date: 9-21-20

Date: 11-5-19 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 70 Precip: 0 Upwind BG: 1.6 Downwind BG: 2.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
165	LW	1555	1620	8.64	1	2	11	
172	AT	1555	1620	9.12	1	2	11	
173	AM	1555	1620	8.28	1	2	11	
179	ER	1555	1620	6.87	1	2	11	
180	AP	1555	1620	7.35	1	2	11	
187	LW	1620	1645	6.92	1	2	11	
188	AT	1620	1645	7.35	1	2	11	
193	AM	1620	1645	6.80	1	2	11	
194	ER	1620	1645	8.35	1	2	11	
199	AP	1620	1645	7.42	1	2	11	
200	LW	1645	1710	6.16	1	2	11	
203	AT	1645	1710	5.48	1	2	11	
204	AM	1645	1710	5.21	1	2	11	
207	ER	1645	1710	4.54	1	2	11	
208	AP	1645	1710	4.79	1	2	11	
195	LW	1710	1735	5.86	1	2	15	
189	AT	1710	1735	5.22	1	2	15	
181	AM	1710	1735	6.14	1	2	15	
182	ER	1710	1735	5.31	1	2	15	
183	AP	1710	1735	5.66	1	2	15	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LOIS WADE ERNEST RAMIREZ
ARRIEN JONES ANTHONY PERALTA
AARON MCBRIDE

Cal. Gas Exp. Date: 9-21-20

Date: 11-6-19 Instrument Used: LUA1000 Grid Spacing: 25'

Temperature: 40 Precip: 0 Upwind BG: 1.6 Downwind BG: 2.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
174	LW	0545	0610	7.12	1	2	4	
175	AJ	0545	0610	9.14	1	2	4	
166	AM	0545	0610	6.57	1	2	4	
167	ER	0545	0610	7.14	1	2	4	
157	AP	0545	0610	7.04	1	2	4	
158	LW	0610	0635	10.28	1	2	4	
149	AJ	0610	0635	13.67	1	2	4	
150	AM	0610	0635	15.54	1	2	4	
140	ER	0610	0635	6.89	1	2	4	
141	AP	0610	0635	6.13	1	2	4	
131	LW	0635	0700	5.95	1	2	16	
132	AJ	0635	0700	6.07	1	2	16	
120	AM	0635	0700	6.45	1	2	16	
121	ER	0635	0700	7.22	1	2	16	
109	AP	0635	0700	5.40	1	2	16	
110	LW	0700	0725	6.58	1	2	9	
99	AJ	0700	0725	6.17	1	2	9	
100	AM	0700	0725	7.08	1	2	9	
88	ER	0700	0725	6.94	1	2	9	
89	AP	0700	0725	7.12	1	2	9	
76	LW	0725	0750	8.19	1	2	9	
77	AJ	0725	0750	7.23	1	2	9	
70	AM	0725	0750	7.05	1	2	9	
71	ER	0725	0750	6.82	1	2	9	
64	AP	0725	0750	5.20	1	2	9	
65	LW	0750	0815	6.89	1	2	11	
58	AJ	0750	0815	6.94	1	2	11	
53	AM	0750	0815	7.25	1	2	11	
48	ER	0750	0815	6.81	1	2	11	
43	AP	0750	0815	6.21	1	2	11	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Lois Wade | Ernest Ramirez
Aaron Jones | Anthony Penella
Aaron McBride

Cal. Gas Exp. Date: 9-21-20

Date: 11-6-19 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 45 Precip: 0 Upwind BG: 1.6 Downwind BG: 2.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
38	LW	0815	0840	7.45	1	2	12	
33	AJ	0815	0840	6.92	1	2	12	
28	AM	0815	0840	8.39	1	2	12	
19	ER	0815	0840	3.78	1	2	12	
7	AP	0815	0840	3.51	1	2	12	
4	LW	0840	0905	3.28	1	2	12	
1	AJ	0840	0905	4.65	1	2	12	
8	AM	0840	0905	5.12	1	2	12	
11	ER	0840	0905	4.91	1	2	12	
12	AP	0840	0905	4.68	1	2	12	
15	LW	0905	0930	5.27	1	2	12	
16	AJ	0905	0930	5.80	1	2	12	
20	AM	0905	0930	7.54	1	2	12	
21	ER	0905	0930	13.10	1	2	12	
24	AP	0905	0930	20.65	1	2	12	
25	LW	0930	0955	19.10	1	2	12	
29	AJ	0930	0955	15.71	1	2	12	
30	AM	0930	0955	11.42	1	2	12	
34	ER	0930	0955	5.88	1	2	12	
35	AP	0930	0955	8.27	1	2	12	
39	LW	0955	1020	5.85	1	2	9	
40	AJ	0955	1020	5.39	1	2	9	
44	AM	0955	1020	5.36	1	2	9	
45	ER	0955	1020	16.55	1	2	9	
49	AP	0955	1020	6.15	1	2	9	
50	LW	1020	1045	2.69	1	2	12	
54	AJ	1020	1045	5.75	1	2	12	
55	AM	1020	1045	5.12	1	2	12	
59	ER	1020	1045	6.31	1	2	12	
60	AP	1020	1045	5.47	1	2	12	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIS WADE | ERNEST RAMIREZ
ARRIEN JONES | ANTHONY PERALTA
AARON MCBRIDE

Cal. Gas Exp. Date: 9-21-20

Date: 11-6-19 Instrument Used: TVA1000 Grid Spacing: 25

Temperature: 52 Precip: 0 Upwind BG: 1.6 Downwind BG: 2.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
66	LW	1045	1110	5.84	1	2	12	
67	AJ	1045	1110	6.12	1	2	12	
72	AM	1045	1110	5.56	1	2	12	
73	ER	1045	1110	5.12	1	2	12	
78	AP	1045	1110	5.74	1	2	12	
79	LW	1110	1135	6.19	1	2	4	
90	AJ	1110	1135	6.57	1	2	4	
91	AM	1110	1135	5.43	1	2	4	
101	ER	1110	1135	6.78	1	2	4	
102	AP	1110	1135	5.44	1	2	4	
111	LW	1135	1200	7.39	1	2	12	
112	AJ	1135	1200	5.82	1	2	12	
122	AM	1135	1200	5.26	1	2	12	
123	ER	1135	1200	8.64	1	2	12	
133	AP	1135	1200	7.79	1	2	12	
134	LW	1200	1225	6.55	1	2	11	
142	AJ	1200	1225	5.78	1	2	12	
143	AM	1200	1225	7.21	1	2	12	
151	ER	1200	1225	5.65	1	2	12	
152	AP	1200	1225	7.80	1	2	12	
159	LW	1225	1250	5.39	1	2	12	
160	AJ	1225	1250	5.12	1	2	12	
168	AM	1225	1250	5.07	1	2	12	
169	ER	1225	1250	6.13	1	2	12	
144	AP	1225	1250	6.57	1	2	12	
135	LW	1250	1315	8.46	1	2	12	
124	AJ	1250	1315	7.15	1	2	12	
125	AM	1250	1315	10.11	1	2	12	
126	ER	1250	1315	9.75	1	2	12	
113	AP	1250	1315	6.40	1	2	12	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE | ERNEST RAMIREZ
ARRIEN JONES | ANTHONY PERALTA
AARON MCBRIDE

Cal. Gas Exp. Date: 9-21-20

Date: 11-6-19 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 60 Precip: 0 Upwind BG: 1.6 Downwind BG: 2.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
114	LW	1315	1340	11.45	1	2	10	
115	AJ	1315	1340	13.77	1	2	10	
103	AM	1315	1340	8.65	1	2	10	
104	ER	1315	1340	5.39	1	2	10	
92	AP	1315	1340	5.12	1	2	10	
93	LW	1340	1405	6.14	1	2	10	
94	AJ	1340	1405	5.51	1	2	10	
80	AM	1340	1405	5.80	1	2	10	
81	ER	1340	1405	4.65	1	2	10	
82	AP	1340	1405	5.18	1	2	10	
74	LW	1405	1430	5.37	1	2	11	
75	AJ	1405	1430	6.11	1	2	11	
68	AM	1405	1430	5.42	1	2	11	
69	ER	1405	1430	5.15	1	2	11	
61	AP	1405	1430	5.50	1	2	11	
62	LW	1430	1455	5.44	1	2	11	
63	AJ	1430	1455	5.17	1	2	11	
56	AM	1430	1455	4.20	1	2	11	
57	ER	1430	1455	5.89	1	2	11	
51	AP	1430	1455	6.17	1	2	11	
52	LW	1455	1520	3.25	1	2	11	
46	AJ	1455	1520	4.77	1	2	11	
47	AM	1455	1520	3.22	1	2	11	
41	ER	1455	1520	4.50	1	2	11	
42	AP	1455	1520	3.28	1	2	11	
36	LW	1520	1545	4.77	1	2	11	
37	AJ	1520	1545	5.16	1	2	11	
31	AM	1520	1545	4.21	1	2	11	
32	ER	1520	1545	3.45	1	2	11	
26	AP	1520	1545	4.18	1	2	11	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE ERNEST RAMIREZ
ADRIAN JONES ANTHONY PERALTA
AARON MCBRIDE

Cal. Gas Exp. Date: 9-27-26

Date: 11-6-19 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 64 Precip: 0 Upwind BG: 1.6 Downwind BG: 2.2

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
27	LW	1545	1610	5.41	1	2	H	
22	AJ	1545	1610	4.60	1	2	H	
23	AM	1545	1610	4.12	1	2	H	
17	ER	1545	1610	5.14	1	2	H	
18	AP	1545	1610	4.79	1	2	H	
13	LW	1610	1635	4.52	1	2	H	
14	AJ	1610	1635	3.61	1	2	H	
9	AM	1610	1635	3.20	1	2	H	
10	ER	1610	1635	4.07	1	2	H	
5	AP	1610	1635	3.85	1	2	H	
6	LW	1635	1700	4.12	1	2	H	
2	AJ	1635	1700	5.15	1	2	H	
3	AM	1635	1700	4.79	1	2	H	

Attach Calibration Sheet
Attach site map showing grid ID

Page 5 of 5

Attachment C

Component Leak Monitoring Event Records

Table C.1
AB-32 Component Leak Monitoring
Summary of Component Leaks Greater than 500 ppmv

2019 QUARTER: 4

INITIAL MONITORING PERFORMED BY: RES, WM, and BAAQMD

FOLLOW-UP MONITORING PERFORMED BY: S. Johnson and F. Parker

LANDFILL NAME: Redwood Landfill, Inc.

Location	Initial Monitoring			Corrective Action		10-Day Remonitoring		
	Date	TOC (ppmv)	Tech	Date	Description	Date	TOC (ppmv)	Tech
No Exceedances Detected								

Table C.2
BAAQMD Component Leak Monitoring
Summary of Component Leaks Greater than 1,000 ppmv

2019 QUARTER: 4

INITIAL MONITORING PERFORMED BY: RES, WM, and BAAQMD

FOLLOW-UP MONITORING PERFORMED BY: S. Johnson and F. Parker

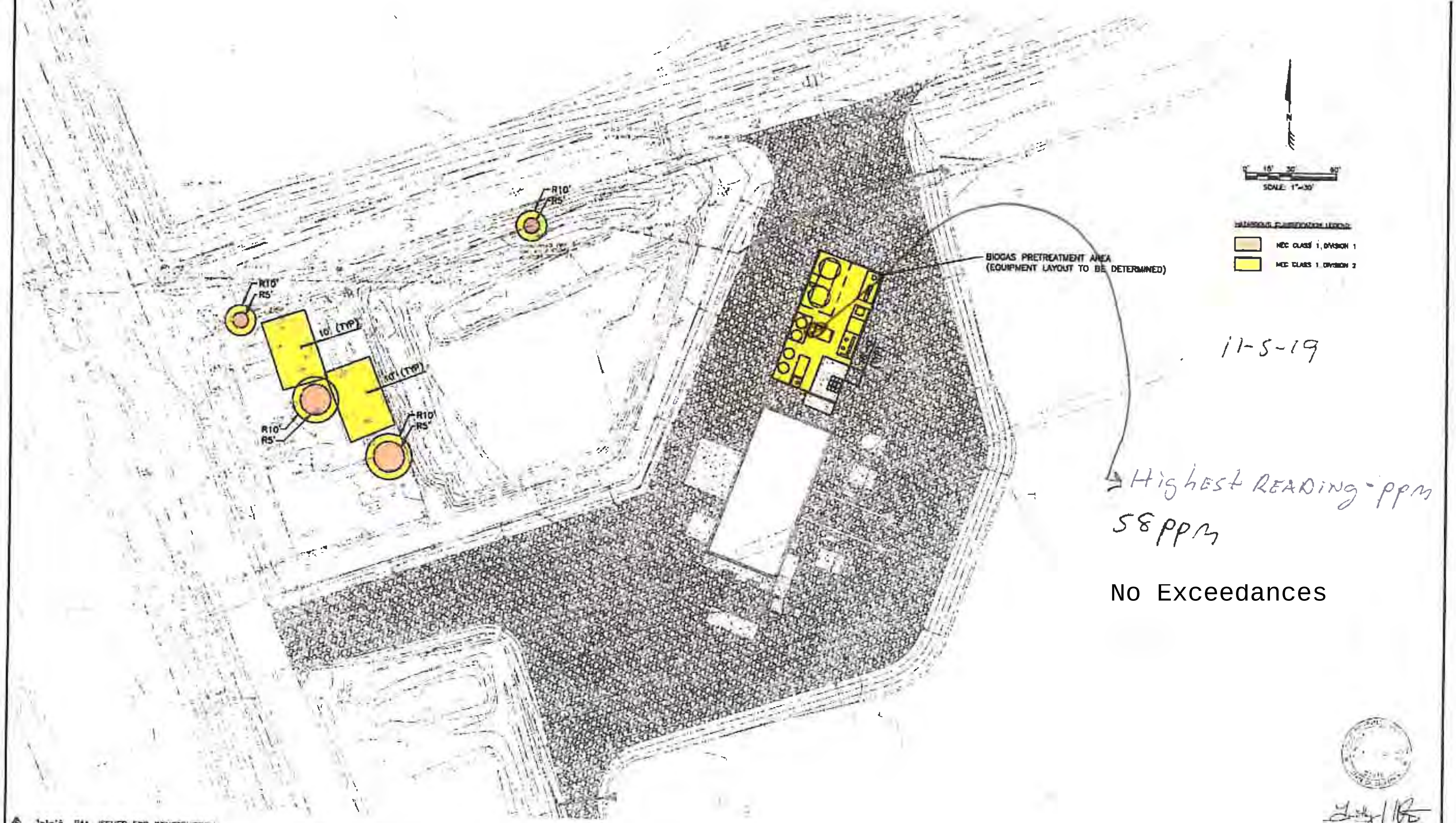
LANDFILL NAME: Redwood Landfill, Inc.

Location	Initial Monitoring			Corrective Action		7-Day Remonitoring		
	Date	TOC (ppmv)	Tech	Date	Description	Date	TOC (ppmv)	Tech
No Exceedances Detected								

REDWOOD 3520+ ENGINE PLANT, CA

Site Map

8950 Redwood Hwy, Novato, CA 94948



11-5-19

Highest READing - ppm

58 ppm

No Exceedances

REV	DATE	BY	DESCRIPTION
6	3-1-16	RAA	ISSUED FOR CONSTRUCTION
5	10-26-15	RAA	BUILDING PERMIT APPLICATION SET
4	10-2-15	RAA	95% DESIGN RESUBMITTAL
3	8-7-15	RAA	ISSUED FOR GAS TREATMENT SKID BID
2	6-12-15	RAA	95% DESIGN SUBMITTAL
1	5-6-15	RAA	50% DESIGN SUBMITTAL

SCALE: AS SHOWN
DATE: 5-5-15
DRAWN: JFD
CHECKED: RFC
APPROVED: RAA

www.ac-engineering.com

CLIENT
WASTE MANAGEMENT RENEWABLE ENERGY
LANDFILL TO GAS ENERGY PROJECT
REDWOOD LANDFILL, NOVATO, CA

DESCRIPTION
PROPOSED CONDITIONS AND
HAZARDOUS AREA CLASSIFICATIONS

PROJECT NO.
1003 005 001

SHEET:
G-5

7/25/2017

LANDFILL NAME: REDWOOD

QUARTERLY LFG COMPONENT LEAK MONITORING

INSTRUMENT FID
MAKE: Thermo Environr
MODEL: TVA 1000
S/N: 1036346773

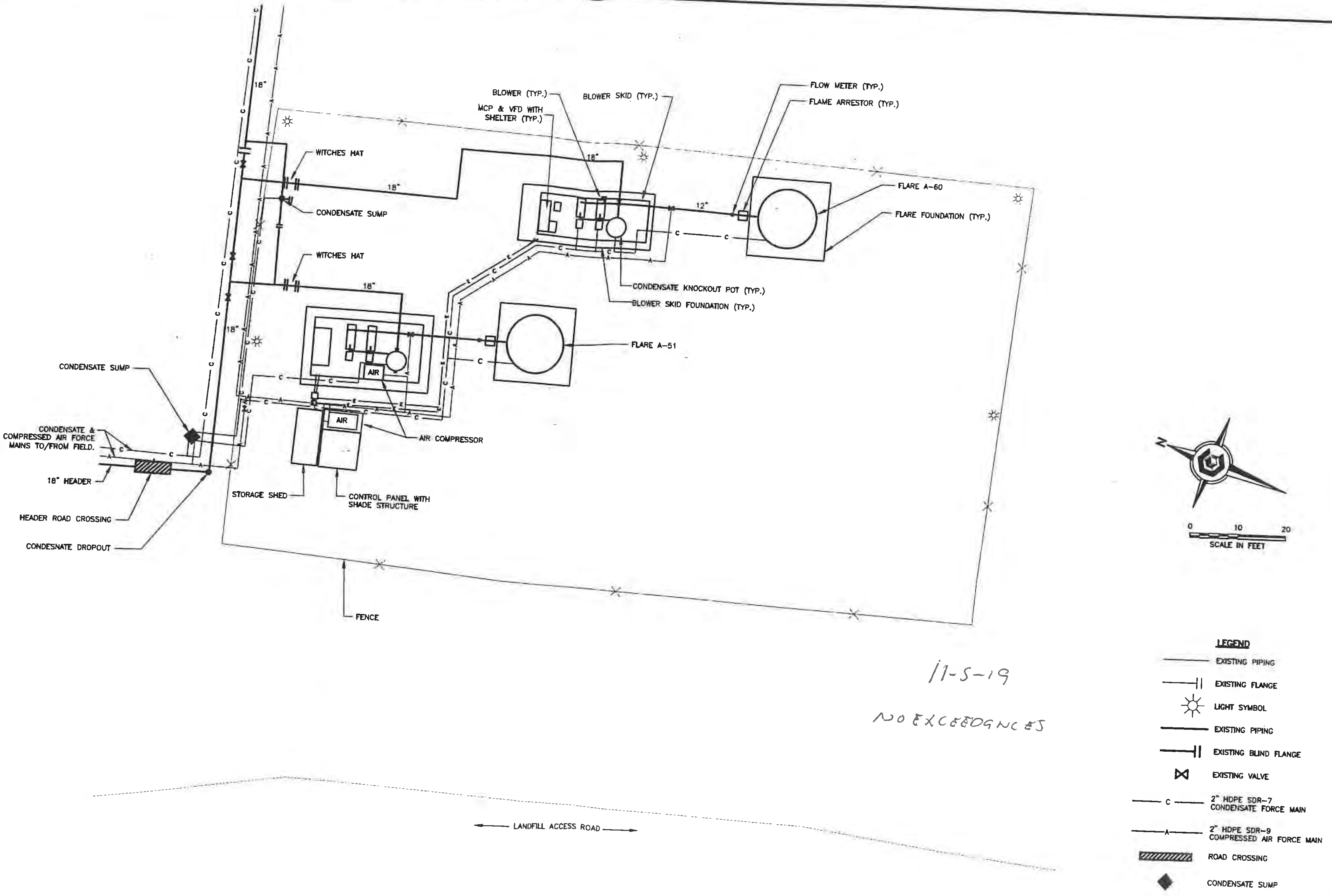
DATE OF SAMPLING: 11-5-19
TECHNICIAN: LEIGH WADE

LOCATION OF LEAK	LEAK CONCENTRATION (ppmv)	DATE OF DISCOVERY	TECHNICIAN	ACTION TAKEN TO REPAIR LEAK	DATE OF REPAIR	DATE OF ANY REQUIRED RE-MONITORING	RE-MONITORED CONCENTRATION (ppmv)
NO EXCEEDANCES							

In the event that an exceedance is detected, please intiate corrective action and re-monitor the exceedance location within 7 days of the initial exceedance.

NOTE: Leaks over 500 ppmv methane are exceedances at any component containing landfill gas, pursuant to CARB Title 17 of California Code of Regulations Subchapter 10, Article 4, Subarticle 6, Section 95464(b)(1)(B).

NOTE: Leaks over 1,000 ppmv methane are exceedances at any component containing landfill gas, pursuant to BAAQMD Regulation 8-34-301.2.



11-5-19

NO EXCEEDANCES

DRAFT

PAUL J STOUT, P.E

P.E. Llc. No. C52827 Date

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE
DRAWN BY
DESIGNED BY
CHECKED BY
APPROVED BY

WASTE MANAGEMENT

CORNERSTONE
Environmental Group, LLC

WASTE MANAGEMENT OF CALIFORNIA, INC.
REDWOOD LANDFILL, INC.
NOVATO, MARIN COUNTY, CALIFORNIA

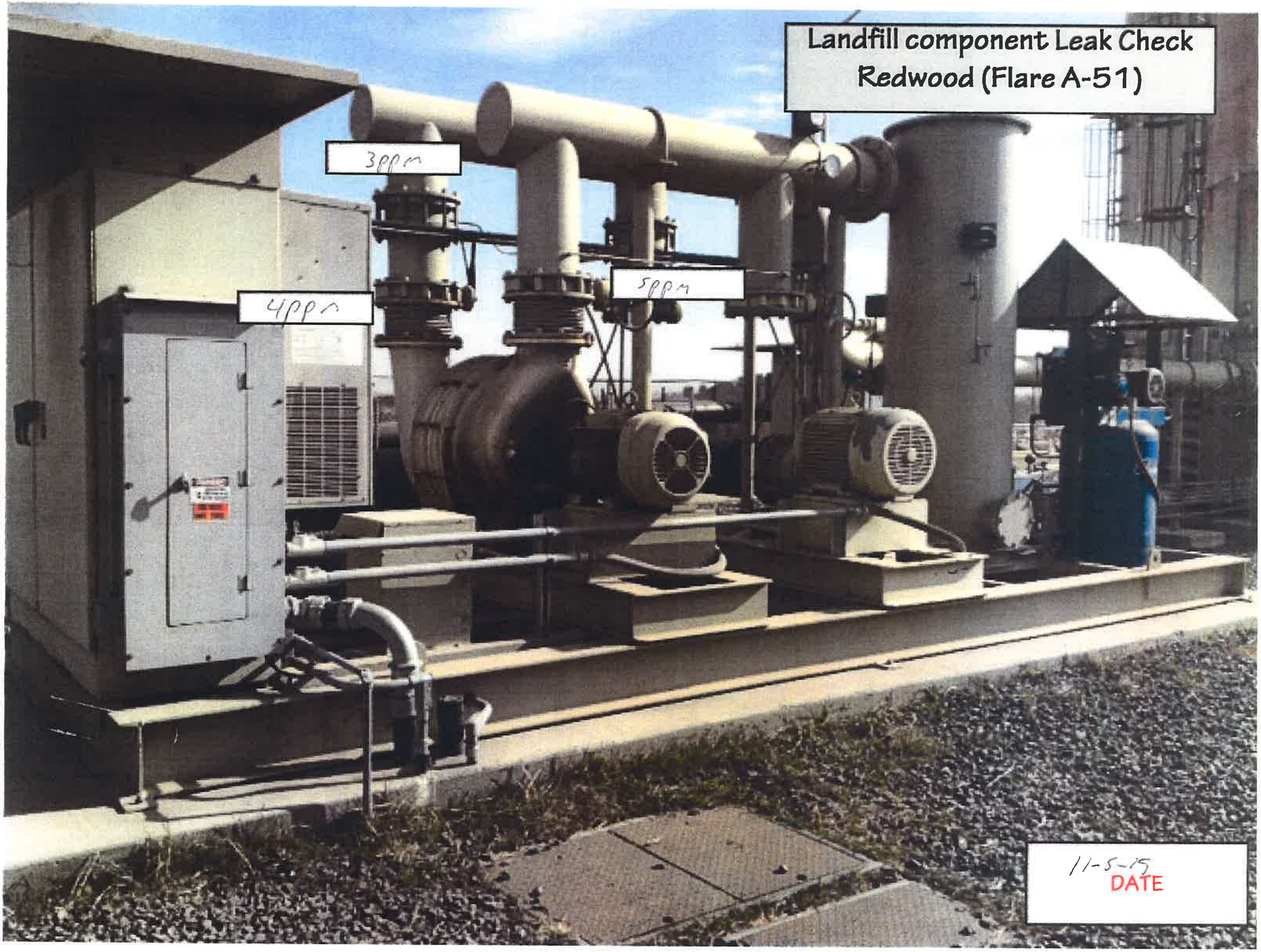
LFG FLARE AND GCCS AS-BUILT FACILITY SITE PLAN

SHEET NO.
1

PROJECT NO
70314

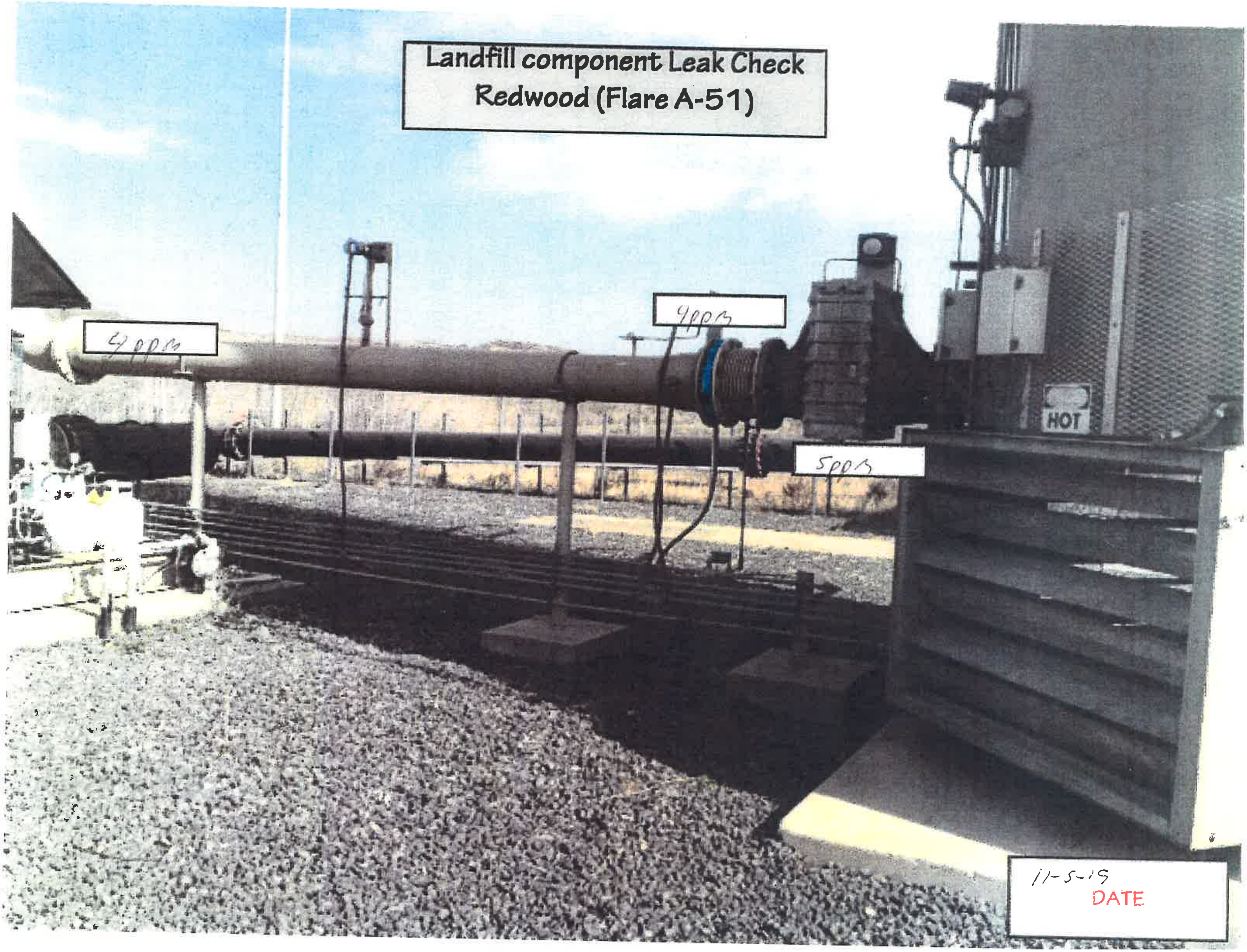
1/2" 0" 1"

File: N:\PROJECTS\REDWOOD\120222 - 2012 GCCS Improvements_PROJECT DRAWINGS\[illegible] Layout\FIGURE-02-FACILITY_[illegible].dwg Layout: FACILITY SITE - 11x17 User: [illegible] Aug 17, 2012 - 10:48am



Landfill component Leak Check
Redwood (Flare A-51)

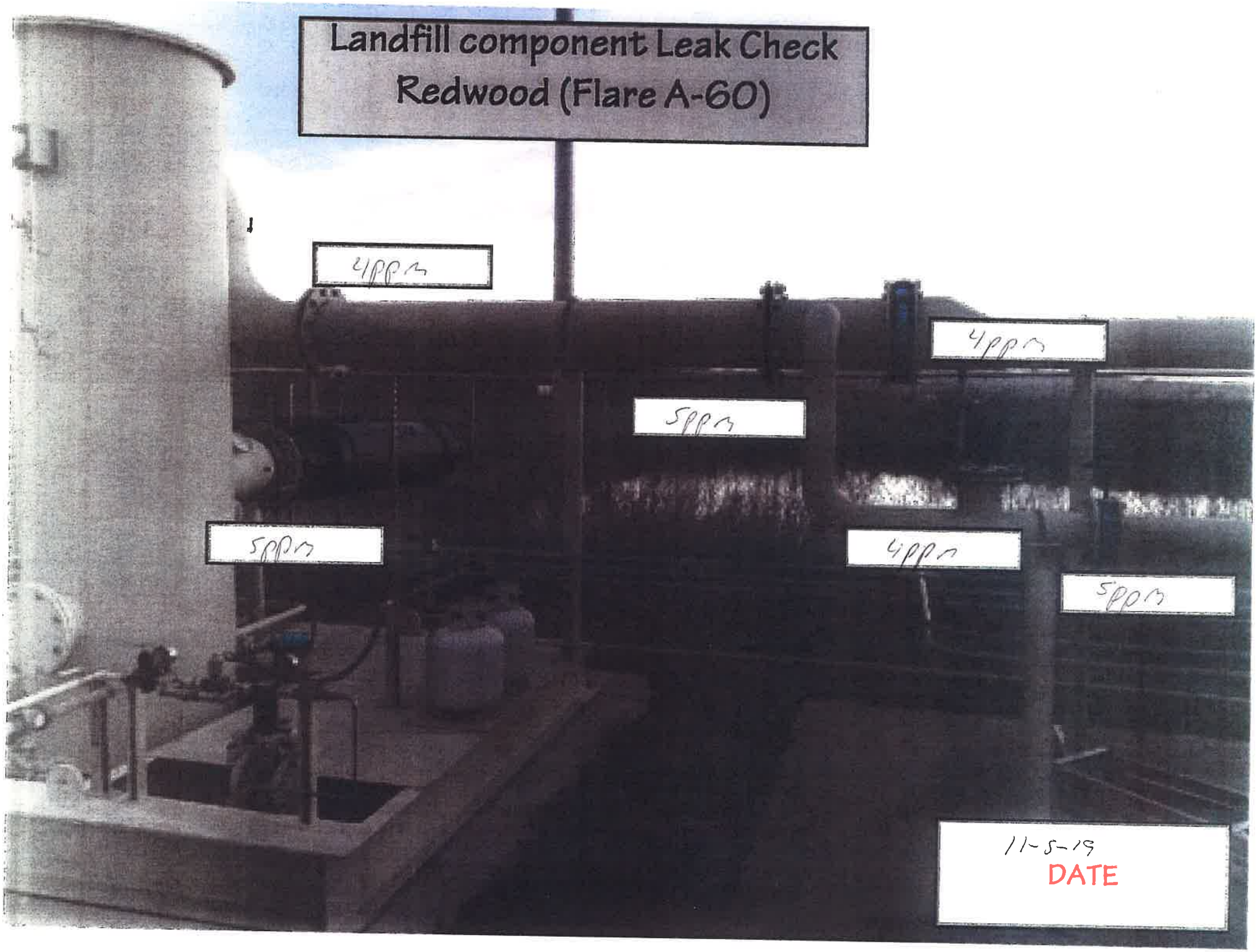
11-5-15
DATE



Landfill component Leak Check
Redwood (Flare A-51)

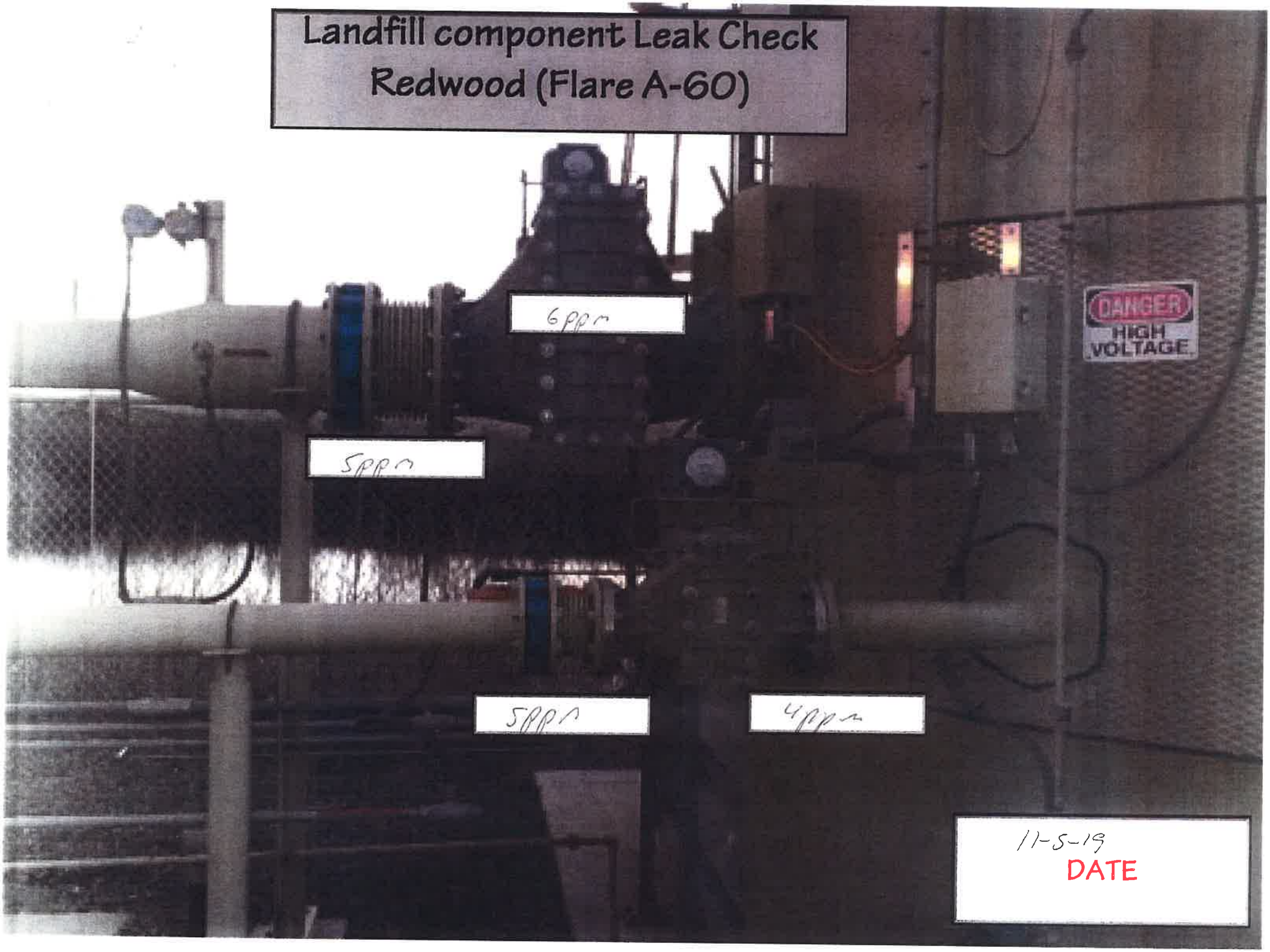
11-5-19
DATE

Landfill component Leak Check
Redwood (Flare A-60)



11-5-19
DATE

Landfill component Leak Check
Redwood (Flare A-60)



6ppm

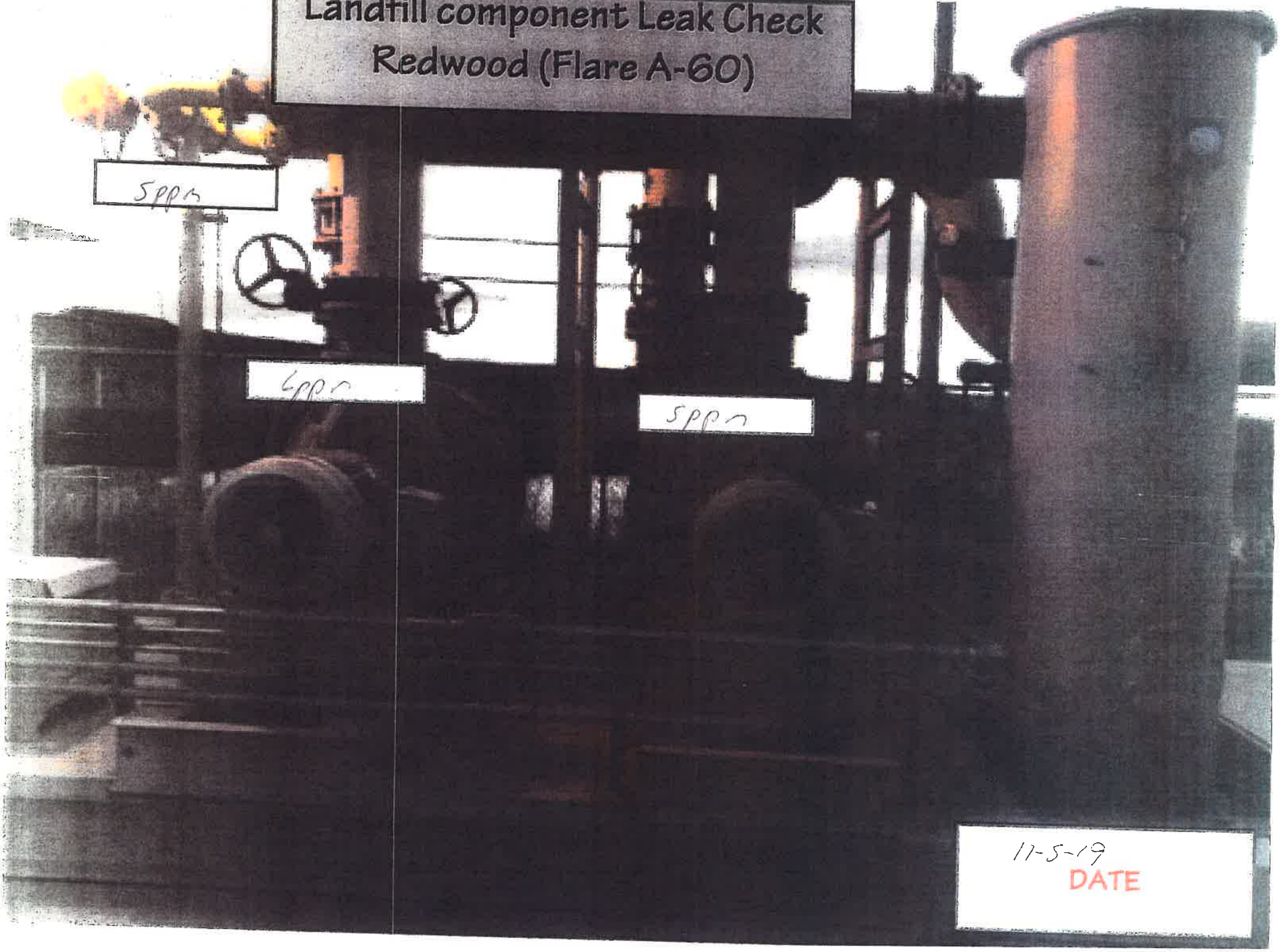
5ppm

5ppm

4ppm

11-5-19
DATE

Landfill component Leak Check
Redwood (Flare A-60)



11-5-19
DATE

Attachment D

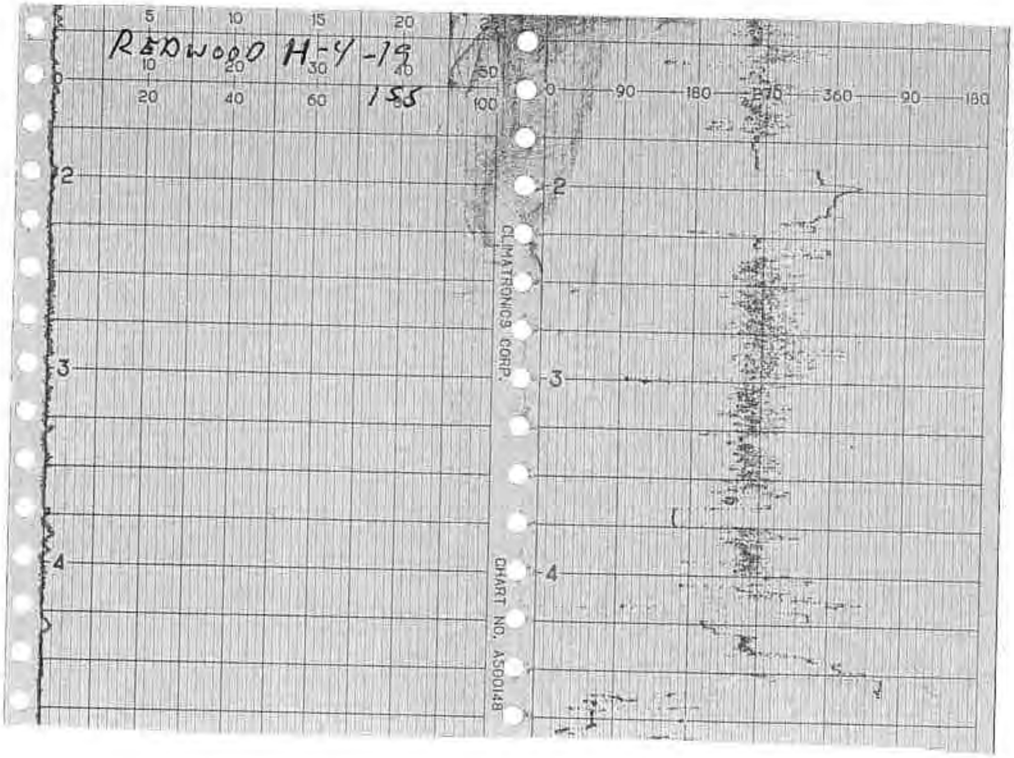
Weather Station Data

RES
Environmental Inc.

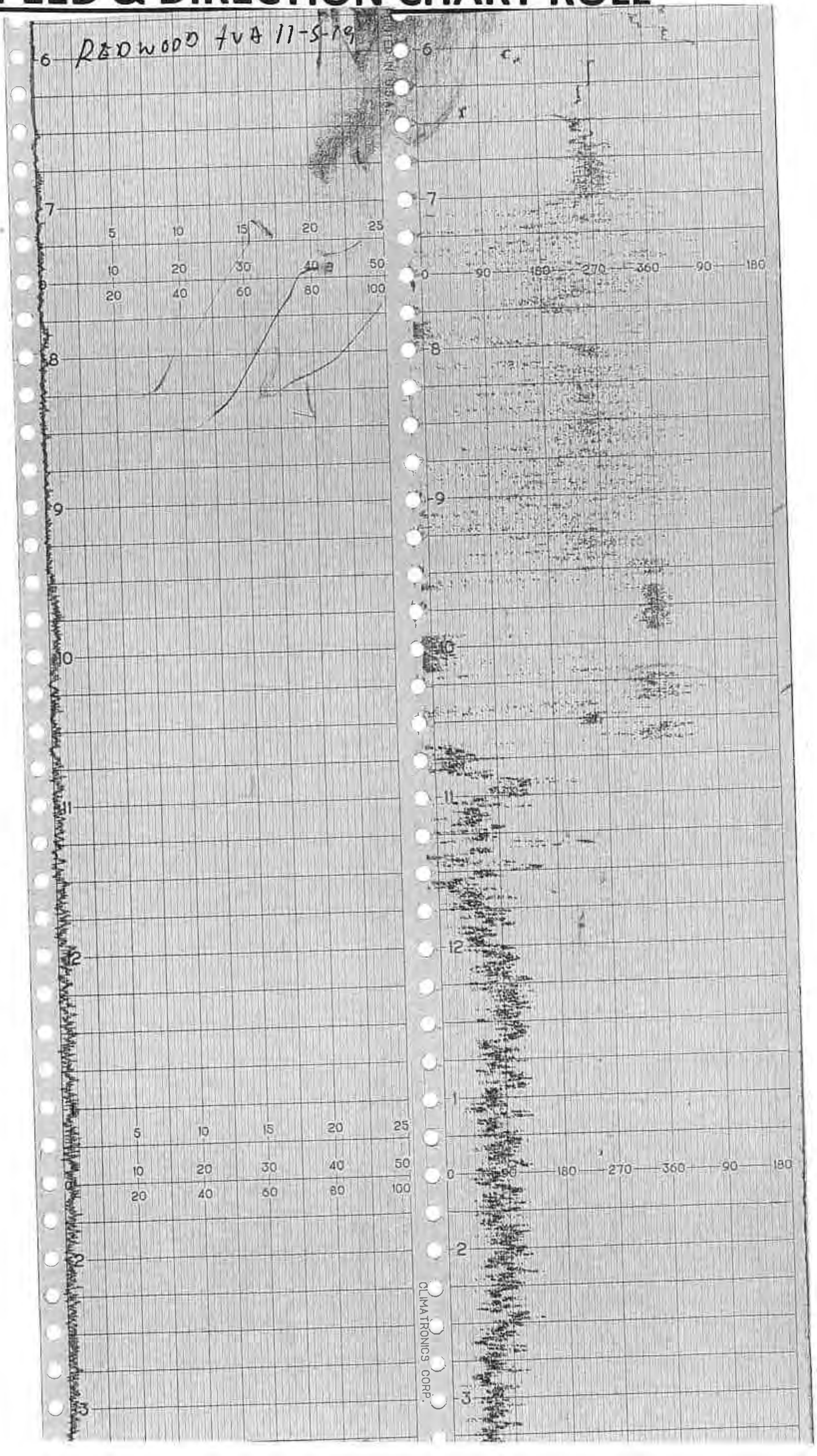
16-POINT WIND DIRECTION INDEX

NO	DIRECTION	DEGREES FROM	 CENTER	 TO
16	NORTH (N)	348.8	369.0	011.3
1	NORTH-NORTHEAST (NNE)	011.3	022.5	033.8
2	NORTHEAST (NE)	033.8	045.0	056.3
3	EAST-NORTHEAST (ENE)	056.3	067.5	078.8
4	EAST (E)	078.8	090.0	101.3
5	EAST-SOUTHEAST (ESE)	101.3	112.5	123.8
6	SOUTHEAST (SE)	123.8	135.0	146.3
7	SOUTH-SOUTHEAST (SSE)	146.3	157.5	168.8
8	SOUTH (S)	168.8	180.0	191.3
9	SOUTH-SOUTHWEST (SSW)	191.3	202.5	213.8
10	SOUTHWEST (SW)	213.8	225.0	236.3
11	WEST-SOUTHWEST (WSW)	236.3	247.5	258.8
12	WEST (W)	258.8	270.0	281.3
13	WEST-NORTHWEST (WNW)	281.3	292.5	303.8
14	NORTHWEST (NW)	303.8	315.0	326.3
15	NORTH-NORTHWEST (NNW)	326.3	337.5	348.8

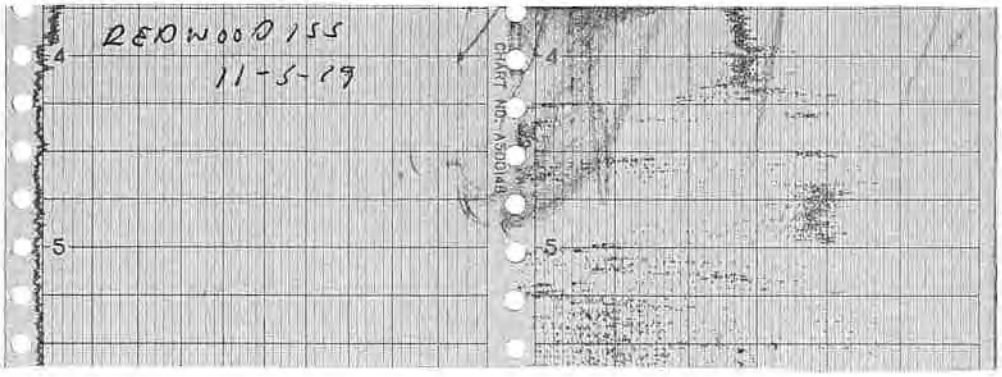
WIND SPEED & DIRECTION CHART ROLL



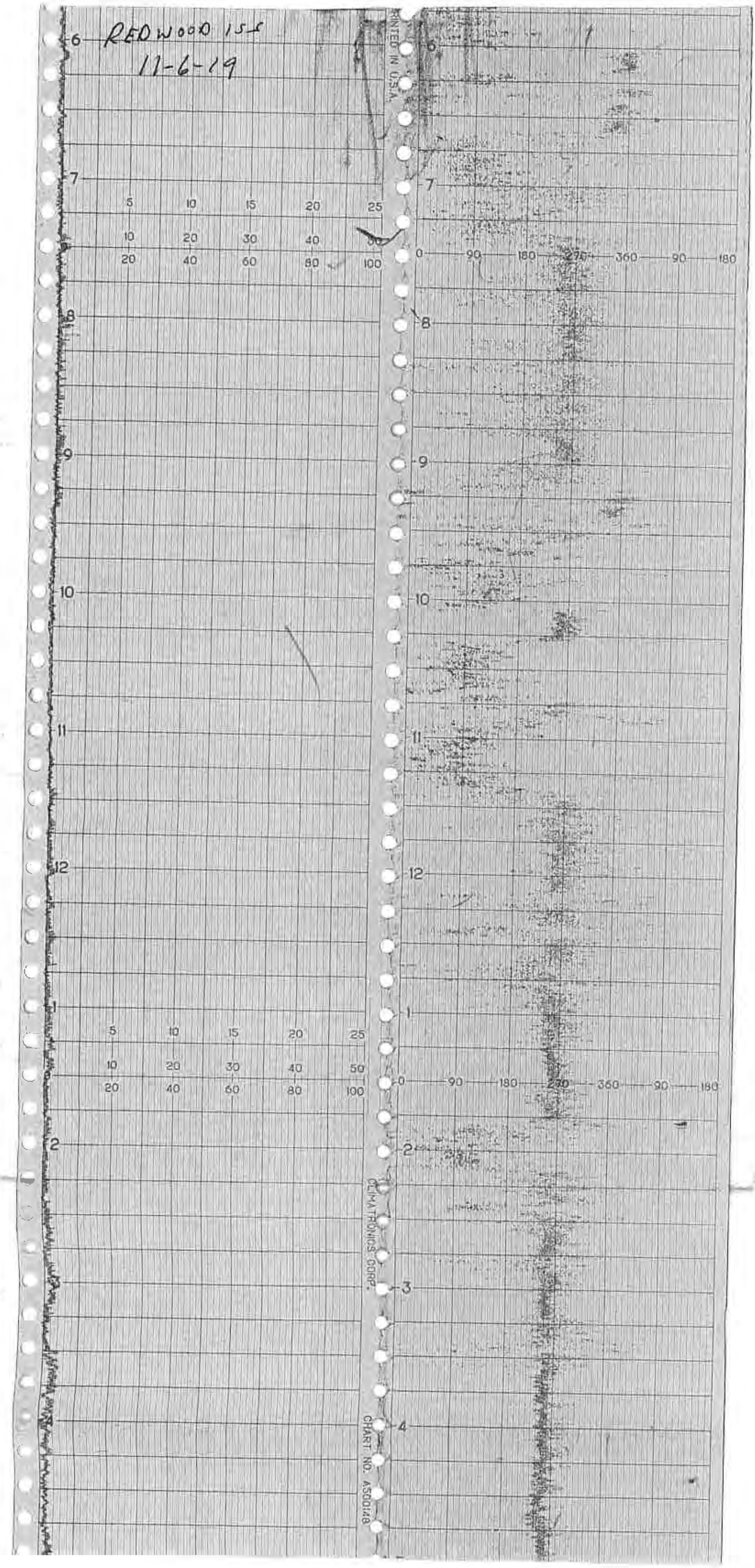
WIND SPEED & DIRECTION CHART ROLL



WIND SPEED & DIRECTION CHART ROLL



WIND SPEED & DIRECTION CHART ROLL



Attachment E

Calibration Records

CALIBRATION PRECISION TEST RECORD

Date: 11/14/19

Expiration Date (3 months): 2/14/~~19~~ 20

Time: — AM 1315 PM

Instrument Make: Photovac Model: Micro FID S/N: C2KF340

Measurement #1:

Meter Reading for Zero Air: 0.0 ppm (a)

Meter Reading for Calibration Gas: 500.2 ppm (b)

Measurement #2:

Meter Reading for Zero Air: 0.5 ppm (c)

Meter Reading for Calibration Gas: 503.1 ppm (d)

Measurement #3:

Meter Reading for Zero Air: 0.3 ppm (e)

Meter Reading for Calibration Gas: 505.1 ppm (f)

Calculate Precision:

$$\frac{\{|(500)-(b)| + |(500)-(d)| + |(500)-(f)|\}}{3} \times \frac{1}{500} \times 100$$

0.56 % (must be < than 10%)

Performed By:

RESPONSE TIME TEST RECORD

Date: 11/14/19

Expiration Date (3 months): 2/14/~~19~~ 20

Time: — AM 1315 PM

Instrument Make: Photovac Model: MicroFID S/N: CBMF340

Measurement #1:

Stabilized Reading Using Calibration Gas: 499.6 ppm
90% of the Stabilized Reading: 449.64 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 3,0 seconds (a)

Measurement #2:

Stabilized Reading Using Calibration Gas: 503.8 ppm
90% of the Stabilized Reading: 453.42 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 4.0 seconds (b)

Measurement #3:

Stabilized Reading Using Calibration Gas: 501.7 ppm
90% of the Stabilized Reading: 451,53 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 3.0 seconds (c)

Calculate Response Time:

$\frac{(a) + (b) + (c)}{3} =$ 3.33 seconds (must be less than 30 seconds)

Performed By:

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Landfill Date: 11/14/19

Time: — AM 1315 PM

Instrument Make: Photovac Model: MicroFID S/N: C8MF340

Calibration Procedure

1. Allow instrument to internally zero itself while introducing zero air.
2. Introduce the calibration gas into the probe.

   Stable Reading = 500.2 ppm
3. Adjust meter to read 500 ppm. ✓

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 0.0 ppm (a)
2. Downwind Reading (highest in 30 seconds): 0.4 ppm (b)

Calculate Background Value:

$\frac{(a) + (b)}{2}$ Background = 0.2 ppm

Performed By:

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Landfill Date: 12/4/19

Time: 0815 AM — PM

Instrument Make: Photovac Model: MicroFID S/N: LZMF340

Calibration Procedure

1. Allow instrument to internally zero itself while introducing zero air.
2. Introduce the calibration gas into the probe.

   Stable Reading = 502.5 ppm
3. Adjust meter to read 500 ppm. ✓

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 0.0 ppm (a)
2. Downwind Reading (highest in 30 seconds): 0.4 ppm (b)

Calculate Background Value:

$\frac{(a) + (b)}{2}$ Background = 0.2 ppm

Performed By:

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO
MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1036346773
MONITORING DATE: 11-5-19 TIME: 0540

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** (Upwind + Downwind) / 2
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	502 ppm	452 ppm	6
#2	495 ppm	449 ppm	6
#3	500 ppm	450 ppm	6
Calculate Response Time $\frac{(1+2+3)}{3}$			#DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.41 ppm	502 ppm	2
#2	0.26 ppm	499 ppm	1
#3	0.18 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.20 #DIV/0! Must be less than 10%

Performed By: GEISHWADE Date/Time: 11-5-19 - 0540

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 11 SERIAL #: 1636346774

MONITORING DATE: 11-5-19 TIME: 0540

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: $\frac{(\text{Upwind} + \text{Downwind})}{2}$
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	491 ppm	441 ppm	7
#2	496 ppm	446 ppm	7
#3	500 ppm	450 ppm	7
Calculate Response Time $\frac{(1+2+3)}{3}$			7 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.34 ppm	491 ppm	9
#2	0.16 ppm	496 ppm	4
#3	0.11 ppm	500 ppm	0
Calculate Precision	$\frac{[\text{STD-B1}] + [\text{STD-B2}] + [\text{STD-B3}]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.86 #DIV/0! Must be less than 10%

Performed By: Anthony Peralta Date/Time: 11-5-19 - 0540

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO
MODEL: TVA 1000 EQUIPMENT #: 12 SERIAL #: 1036246741
MONITORING DATE: 11-5-19 TIME: 0540

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** $\frac{\text{(Upwind + Downwind)}}{2}$
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	**Stabilized Reading Using Calibration Gas**	**90% of the Stabilized Reading**	**Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas**
#1	492 ppm	442 ppm	5
#2	498 ppm	448 ppm	5
#3	500 ppm	450 ppm	5
	Calculate Response Time $\frac{(1+2+3)}{3}$		5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	**Meter Reading for Zero Air (A)**	**Meter Reading for Calibration Gas (B)**	**Calculate Precision [STD – (B)]**
#1	0.26 ppm	492 ppm	8
#2	0.18 ppm	498 ppm	2
#3	0.14 ppm	500 ppm	0
Calculate Precision	$\frac{\text{[STD-B1] + [STD-B2] + [STD-B3]}}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.66 #DIV/0! Must be less than 10%

Performed By: AARON MCBRIDE Date/Time: 11-5-19 - 0540

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO
MODEL: TVA1000 EQUIPMENT #: 13 SERIAL #: 1102746775
MONITORING DATE: 11-5-19 TIME: 0540

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	505 ppm	455 ppm	6
#2	493 ppm	443 ppm	6
#3	500 ppm	450 ppm	6
Calculate Response Time (1+2+3) / 3			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.39 ppm	505 ppm	5
#2	0.22 ppm	493 ppm	7
#3	0.09 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.80 #DIV/0! Must be less than 10%

Performed By: ERNEST RAMIREZ Date/Time: 11-5-19-0540

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO
MODEL: TVA1000 EQUIPMENT #: 15 SERIAL #: 1036346772
MONITORING DATE: 11-5-19 TIME: 0540

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: $\frac{\text{(Upwind + Downwind)}}{2}$
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	489 ppm	439 ppm	7
#2	495 ppm	445 ppm	7
#3	500 ppm	450 ppm	7
	Calculate Response Time $\frac{(1+2+3)}{3}$		7 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.20 ppm	489 ppm	11
#2	0.14 ppm	495 ppm	5
#3	0.07 ppm	500 ppm	0
Calculate Precision	$\frac{[\text{STD-B1}] + [\text{STD-B2}] + [\text{STD-B3}]}{3} \times \frac{1}{500} \times \frac{100}{1}$		1.06 #DIV/0! Must be less than 10%

Performed By: Arrien Jones Date/Time: 11-5-19 - 0540

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 11-4-19 TIME: 1300

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** (Upwind + Downwind) / 2
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	**Stabilized Reading Using Calibration Gas**	**90% of the Stabilized Reading**	**Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas**
#1	23 ppm	20.7 ppm	6
#2	24 ppm	21.6 ppm	6
#3	25 ppm	22.5 ppm	6
Calculate Response Time (1+2+3) / 3			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 **ppm**

Measurement #	**Meter Reading for Zero Air (A)**	**Meter Reading for Calibration Gas (B)**	**Calculate Precision [STD – (B)]**
#1	0.25 ppm	23 ppm	2
#2	0.16 ppm	24 ppm	1
#3	0.11 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		4.0 #DIV/0! Must be less than 10%

Performed By: LEIGH WADE Date/Time: 11-4-19 1300

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 11 SERIAL #: 1036396774

MONITORING DATE: 11-4-19 TIME: 1300

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: $\frac{\text{(Upwind + Downwind)}}{2}$
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	7
#2	25 ppm	22.5 ppm	7
#3	25 ppm	22.5 ppm	7
	Calculate Response Time $\frac{(1+2+3)}{3}$		7 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.31 ppm	24 ppm	1
#2	0.19 ppm	25 ppm	0
#3	0.14 ppm	25 ppm	0
Calculate Precision	$\frac{\text{[STD-B1] + [STD-B2] + [STD-B3]}}{3} \times \frac{1}{25} \times \frac{100}{1}$		1.3 #DIV/0! Must be less than 10%

Performed By: Anthony Perella Date/Time: 11-4-19 - 1300

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 11-4-19 TIME: 1300

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	5
#2	25 ppm	22.5 ppm	5
#3	25 ppm	22.5 ppm	5
	Calculate Response Time $\frac{(1+2+3)}{3}$		5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.27 ppm	23 ppm	2
#2	0.14 ppm	25 ppm	0
#3	0.09 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.6 #DIV/0! Must be less than 10%

Performed By: AARON MCBRIDE Date/Time: 11-4-19 - 1300

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO
MODEL: TVA1000 EQUIPMENT #: 13 SERIAL #: 1102746775
MONITORING DATE: 11-4-19 TIME: 1300

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** (Upwind + Downwind) / 2
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	**Stabilized Reading Using Calibration Gas**	**90% of the Stabilized Reading**	**Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas**
#1	24 ppm	21.6 ppm	6
#2	25 ppm	22.5 ppm	6
#3	25 ppm	22.5 ppm	6
	Calculate Response Time **(1+2+3)** / **3**		6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	**Meter Reading for Zero Air (A)**	**Meter Reading for Calibration Gas (B)**	**Calculate Precision [STD – (B)]**
#1	0.41 ppm	24 ppm	1
#2	0.25 ppm	25 ppm	0
#3	0.18 ppm	25 ppm	0
Calculate Precision	**[STD-B1] + [STD-B2] + [STD-B3]** / **3** **X** **1** / **25** **X** **100** / **1**		1.3 #DIV/0! Must be less than 10%

Performed By: ERNEST RAMIREZ Date/Time: 11-4-19 ~1300

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 15 SERIAL #: 1036346772

MONITORING DATE: 11-4-19 TIME: 1300

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** (Upwind + Downwind) / 2
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	5
#2	24 ppm	21.6 ppm	5
#3	25 ppm	22.5 ppm	5
	Calculate Response Time (1+2+3) / 3		5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 **ppm**

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.36 ppm	24 ppm	1
#2	0.21 ppm	24 ppm	1
#3	0.13 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.6 #DIV/0! Must be less than 10%

Performed By: ARRIEN JONES Date/Time: 11-4-19 - 1300

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 11-5-19 TIME: 1550

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: $\frac{\text{(Upwind + Downwind)}}{2}$
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	5
#2	24 ppm	21.6 ppm	5
#3	25 ppm	22.5 ppm	5
Calculate Response Time $\frac{(1+2+3)}{3}$			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.39 ppm	23 ppm	2
#2	0.26 ppm	24 ppm	1
#3	0.15 ppm	25 ppm	0
Calculate Precision $\frac{\text{[STD-B1] + [STD-B2] + [STD-B3]}}{3} \times \frac{1}{25} \times \frac{100}{1}$			. 4.0 #DIV/0! Must be less than 10%

Performed By: LEIGH WADE Date/Time: 11-5-19 - 1550

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 11 SERIAL #: 1032396774

MONITORING DATE: 11-5-19 TIME: 1550

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** $\frac{\text{(Upwind + Downwind)}}{2}$
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	**Stabilized Reading Using Calibration Gas**	**90% of the Stabilized Reading**	**Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas**
#1	24 ppm	21.6 ppm	5
#2	24 ppm	21.6 ppm	5
#3	25 ppm	22.5 ppm	5
	Calculate Response Time $\frac{(1+2+3)}{3}$		5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	**Meter Reading for Zero Air (A)**	**Meter Reading for Calibration Gas (B)**	**Calculate Precision [STD – (B)]**
#1	0.25 ppm	24 ppm	1
#2	0.16 ppm	24 ppm	1
#3	0.09 ppm	25 ppm	0
Calculate Precision	$\frac{\text{[STD-B1] + [STD-B2] + [STD-B3]}}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.6 #DIV/0! Must be less than 10%

Performed By: ANTHONY PERALTA Date/Time: 11-5-19-1550

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 11-5-19 TIME: 1550

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	7
#2	25 ppm	22.5 ppm	7
#3	25 ppm	22.5 ppm	7
Calculate Response Time $\frac{(1+2+3)}{3}$			7 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.34 ppm	24 ppm	1
#2	0.21 ppm	25 ppm	0
#3	0.13 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		1.3 #DIV/0! Must be less than 10%

Performed By: AARON MCBRIDE Date/Time: 11-5-19 - 1550

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 13 SERIAL #: 1102796725

MONITORING DATE: 11-5-19 TIME: 1550

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** (Upwind + Downwind) / 2
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	6
#2	25 ppm	22.5 ppm	6
#3	25 ppm	22.5 ppm	6
Calculate Response Time (1+2+3) / 3			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.45 ppm	23 ppm	2
#2	0.27 ppm	25 ppm	0
#3	0.12 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.6 #DIV/0! Must be less than 10%

Performed By: ERNEST RAMIREZ Date/Time: 11-5-19 – 1550

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 15 SERIAL #: 1036346772

MONITORING DATE: 11-5-19 TIME: 1550

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	5
#2	25 ppm	22.5 ppm	5
#3	25 ppm	22.5 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.33 ppm	24 ppm	1
#2	0.21 ppm	25 ppm	0
#3	0.14 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1 / 25 X 100 / 1		.1-3 #DIV/0! Must be less than 10%

Performed By: ARRIEN JONES Date/Time: 11-5-19 - 1550

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO
MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1036346773
MONITORING DATE: 11-6-19 TIME: 0540

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** (Upwind + Downwind) / 2
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	**Stabilized Reading Using Calibration Gas**	**90% of the Stabilized Reading**	**Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas**
#1	24 ppm	21.6 ppm	6
#2	25 ppm	22.5 ppm	6
#3	25 ppm	22.5 ppm	6
Calculate Response Time (1+2+3) / 3			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	**Meter Reading for Zero Air (A)**	**Meter Reading for Calibration Gas (B)**	**Calculate Precision [STD – (B)]**
#1	0.31 ppm	24 ppm	1
#2	0.26 ppm	25 ppm	0
#3	0.11 ppm	25 ppm	0
Calculate Precision	**[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1 / 25 X 100 / 1**		1.3 #DIV/0! Must be less than 10%

Performed By: LEIGH WADE Date/Time: 11-6-19 – 0545

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 11 SERIAL #: 1056546774

MONITORING DATE: 11-6-19 TIME: 0540

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	5
#2	24 ppm	21.6 ppm	5
#3	25 ppm	22.5 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.27 ppm	24 ppm	1
#2	0.14 ppm	24 ppm	1
#3	0.09 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		. 2.6 #DIV/0! Must be less than 10%

Performed By: Anthony Peralta Date/Time: 11-6-19 - 0545

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 11-6-19 TIME: 0540

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** (Upwind + Downwind) / 2
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	6
#2	24 ppm	21.6 ppm	6
#3	25 ppm	22.5 ppm	6
	Calculate Response Time (1+2+3) / 3		6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.24 ppm	23 ppm	2
#2	0.16 ppm	24 ppm	1
#3	0.10 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		4.0 #DIV/0! Must be less than 10%

Performed By: AARON MCBRIDE Date/Time: 11-6-19-0545

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 11-6-19 TIME: 0545

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** (Upwind + Downwind) / 2
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	**Stabilized Reading Using Calibration Gas**	**90% of the Stabilized Reading**	**Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas**
#1	23 ppm	20.7 ppm	7
#2	25 ppm	22.5 ppm	7
#3	25 ppm	22.5 ppm	7
	Calculate Response Time (1+2+3) / 3		7 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	**Meter Reading for Zero Air (A)**	**Meter Reading for Calibration Gas (B)**	**Calculate Precision [STD – (B)]**
#1	0.34 ppm	23 ppm	2
#2	0.25 ppm	25 ppm	0
#3	0.17 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.6 #DIV/0! Must be less than 10%

Performed By: ERNEST RAMIREZ Date/Time: 11-6-19 - 0545

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 15 SERIAL #: 1036346772

MONITORING DATE: 11-6-19 TIME: 0540

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: $\frac{\text{(Upwind + Downwind)}}{2}$
1.6 ppm	2.2 ppm	1.9 ppm

Background Value = 1.9 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	6
#2	25 ppm	22.5 ppm	6
#3	25 ppm	22.5 ppm	6
Calculate Response Time $\frac{(1+2+3)}{3}$			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.41 ppm	24 ppm	1
#2	0.28 ppm	25 ppm	0
#3	0.22 ppm	25 ppm	0
Calculate Precision $\frac{\text{[STD-B1] + [STD-B2] + [STD-B3]}}{3} \times \frac{1}{25} \times \frac{100}{1}$			1.3 #DIV/0! Must be less than 10%

Performed By: ARRIEN JONES Date/Time: 11-6-19-0545

RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 11-2-19 **Time:** 0830

Model # TVA 1000B

Serial # #10 1036346773

INSTRUMENT INTEGRITY CHECKLIST

Battery test [✓ Pass] / Fail

Reading following ignition 2.0 ppm

Leak test [✓ Pass] / Fail / NA

Clean system check (check valve chatter) [✓ Pass] / Fail / NA

H_2 supply pressure gauge (acceptable range 9.5 - 12) [✓ Pass] / Fail / NA

Date of last factory calibration 10-5-19

Factory calibration record w/instrument within 3 months [✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 6
2. 7
3. 7

Average 6.6

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

465

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 11-2-19 **Time:** 0845

Model # TVA 1000B

Serial # #11 1036346774

INSTRUMENT INTEGRITY CHECKLIST

Battery test	[✓ Pass] / Fail
Reading following ignition	2.7 ppm
Leak test	[✓ Pass] / Fail / NA
Clean system check (check valve chatter)	[✓ Pass] / Fail / NA
H_2 supply pressure gauge (acceptable range 9.5 - 12)	[✓ Pass] / Fail / NA
Date of last factory calibration	10-5-19
Factory calibration record w/instrument within 3 months	[✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%,

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 7
2. 7
3. 7

Average 7.0

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH_4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 11-2-19 **Time:** 0900

Model # TVA 1000B

Serial # #12 1036246741

INSTRUMENT INTEGRITY CHECKLIST	
Battery test	[✓ Pass] / Fail
Reading following ignition	2.3 ppm
Leak test	[✓ Pass] / Fail / NA
Clean system check (check valve chatter)	[✓ Pass] / Fail / NA
H_2 supply pressure gauge (acceptable range 9.5 - 12)	[✓ Pass] / Fail / NA
Date of last factory calibration	10-5-19
Factory calibration record w/instrument within 3 months	[✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500
90% of Calibration Gas, ppm 450
Time required to attain 90% of Cal Gas ppm
1. 6
2. 6
3. 9

Average 7.0
Equal to or less than 30 seconds? [✓ Y] N
Instrument calibrated to CH_4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT

CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 11-2-19 **Time:** 0915

Model # TVA-1000B

Serial # #13 1102796775

INSTRUMENT INTEGRITY CHECKLIST	
Battery test	[✓ Pass] / Fail
Reading following ignition	1.5 ppm
Leak test	[✓ Pass] / Fail / NA
Clean system check (check valve chatter)	[✓ Pass] / Fail / NA
H_2 supply pressure gauge (acceptable range 9.5 - 12)	[✓ Pass] / Fail / NA
Date of last factory calibration	10-5-19
Factory calibration record w/instrument within 3 months	[✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 6
2. 5
3. 9

Average 6.6

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 11-2-19 **Time:** 0945

Model # tVA 1000B

Serial # #15 1036346772

INSTRUMENT INTEGRITY CHECKLIST

Battery test [✓ Pass] / Fail

Reading following ignition 2.0 ppm

Leak test [✓ Pass] / Fail / NA

Clean system check (check valve chatter) [✓ Pass] / Fail / NA

H_2 supply pressure gauge (acceptable range 9.5 - 12) [✓ Pass] / Fail / NA

Date of last factory calibration 10-5-19

Factory calibration record w/instrument within 3 months [✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 9
2. 8
3. 8

Average 8.3

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

P.O. Box 748 • Colton, California 92324 •
(909) 422-1001 Toll Free (888) 325-1098 Fax (909) 422-0707 www.resenvironmental.com

RES
Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES UNIT # 10

SERIAL NUMBER: 1036346773

TECHNICIAN:

DATE: 10-5-19

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID

METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	503	+/- 125
10000	10000	10,003	+/- 2500
< 1	ZERO GAS	0.077	< 3

PID

ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #11

SERIAL NUMBER: 1036346779

TECHNICIAN:

DATE: 10-5-19

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID

METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	500	+/- 125
10000	10000	10,001	+/- 2500
< 1	ZERO GAS	0.81	< 3

PID

ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #12

SERIAL NUMBER: 1036246741

TECHNICIAN:

DATE: 10-5-19

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	500	+/- 125
10000	10000	10,000	+/- 2500
< 1	ZERO GAS	0.46	< 3

PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

RES
Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES UNIT #13

SERIAL NUMBER: 1102796775

TECHNICIAN:

DATE: 10-5-19

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID

METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	99	+/- 25
500	500	498	+/- 125
10000	10000	10113	+/- 2500
< 1	ZERO GAS	0.72	< 3

PID

ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

RES
Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES unit # 15

SERIAL NUMBER: 1036346772

TECHNICIAN:

DATE: 10-5-19

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID

METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	503	+/- 125
10000	10000	10,069	+/- 2500
< 1	ZERO GAS	0.68	< 3

PID

ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

INTERMOUNTAIN SPECIALTY GASES

520 N. Kings Road ● Nampa ● Idaho ● 83687
800-552-5003 ● www.isgases.com

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Air - Zero		
THC	< 2 PPM	
Oxygen	20.9%	± 2%
Nitrogen	Balance	

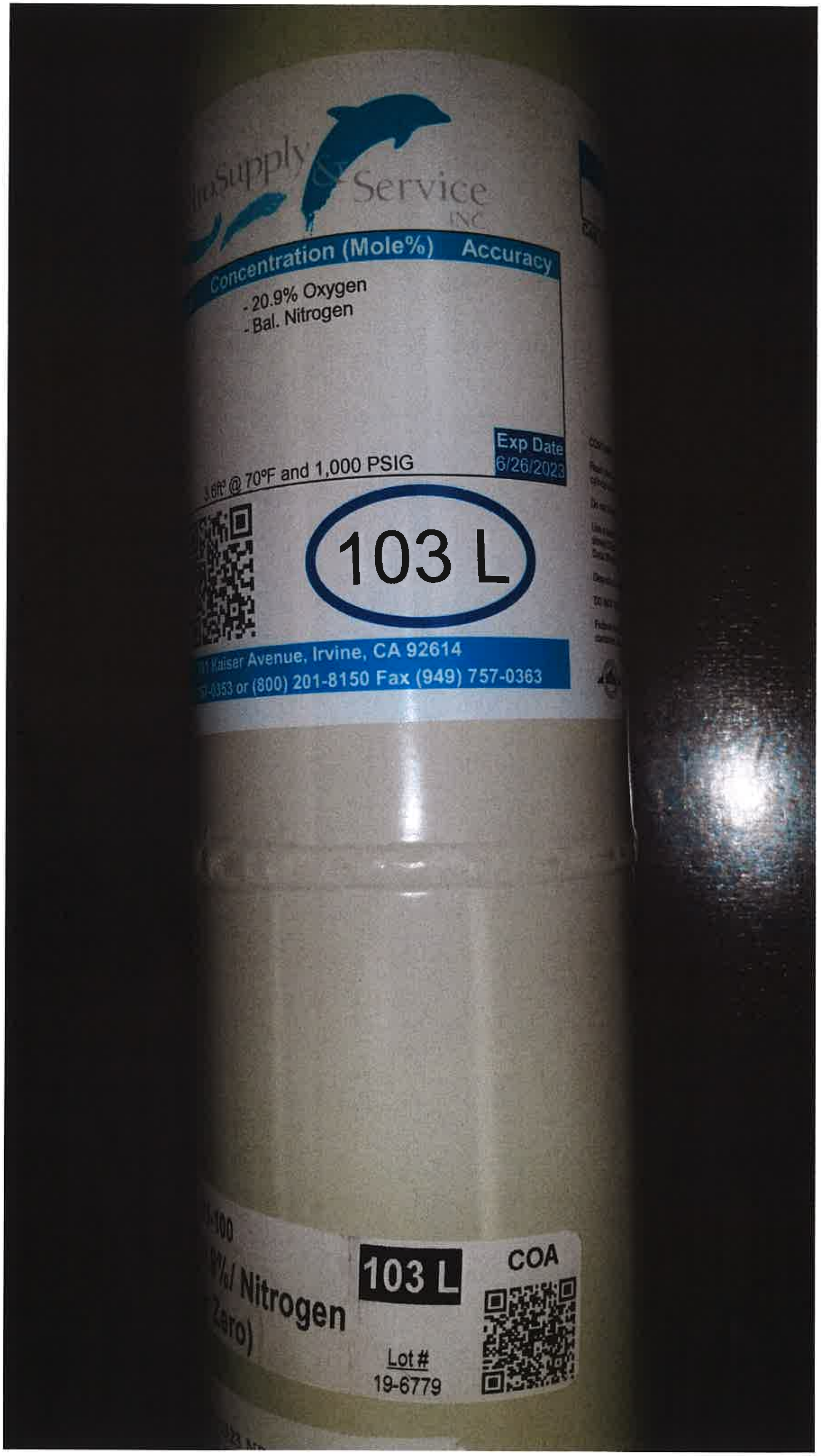
Lot # 19-6779

Mfg. Date:	4/3/2019
Parent Cylinder ID Number:	001739, 02268

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
This mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 4/3/2019


Supply & Service INC
Concentration (Mole%)
Accuracy
- 20.9% Oxygen
- Bal. Nitrogen
Exp Date
6/26/2023
ft³ @ 70ºF and 1,000 PSIG
103 L
Kaiser Avenue, Irvine, CA 92614
or (800) 201-8150 Fax (949) 757-0363
Nitrogen
Zero)
103 L
COA
Lot #
19-6779

INTERMOUNTAIN SPECIALTY GASES
520 N. Kings Road • Nampa • Idaho • 83687
800-552-5003 • www.isgases.com

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Methane	500 ppm	± 2%
Air	Balance	

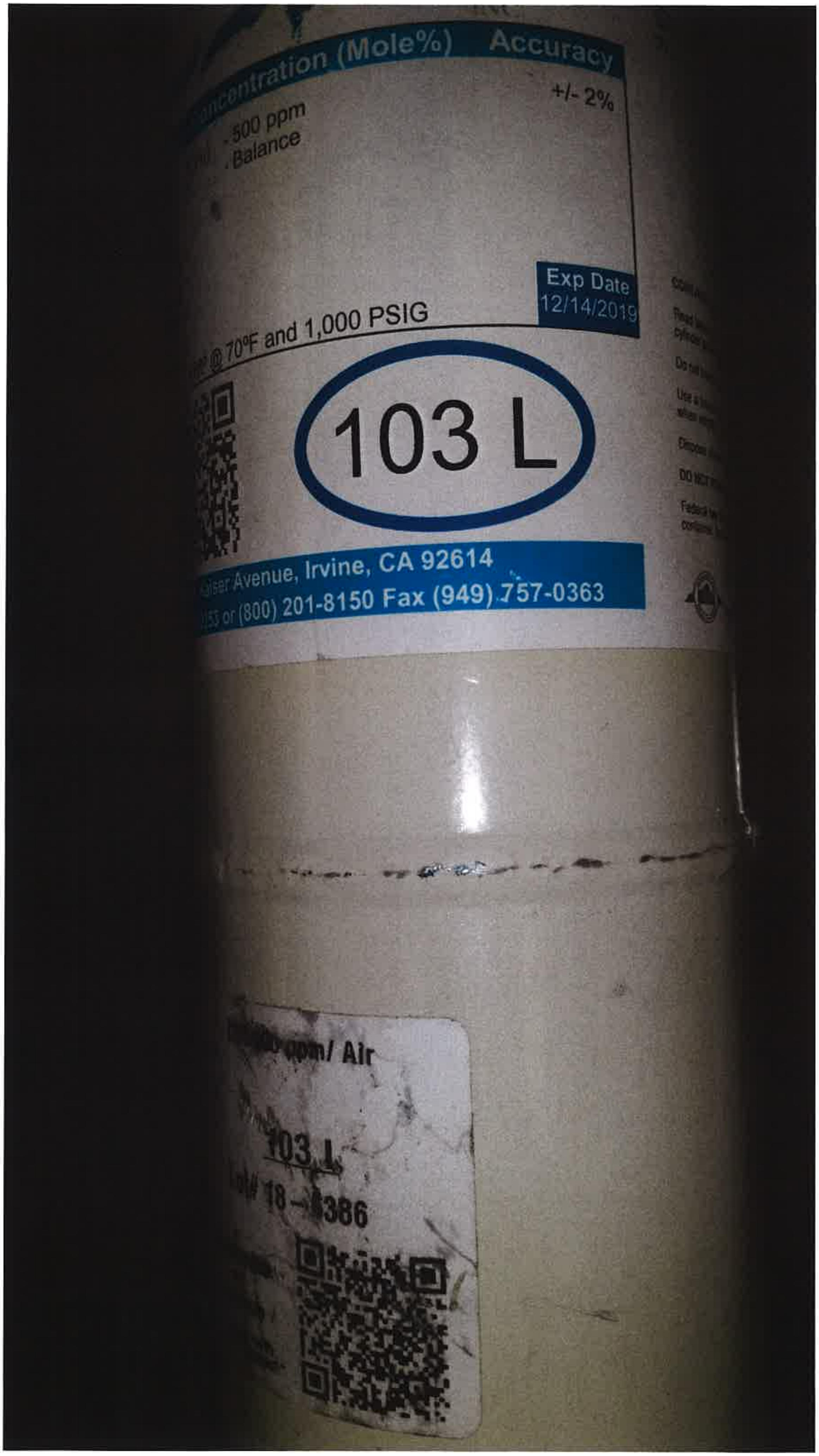
Lot # 18-6386

Mfg. Date: 6/4/2018
Parent Cylinder ID Number: 001763

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 6/4/2018


oncentration (Mole%)
Accuracy
+/- 2%
500 ppm
Balance
Exp Date
12/14/2019
@ 70ºF and 1,000 PSIG
103 L
aiser Avenue, Irvine, CA 92614
or (800) 201-8150 Fax (949) 757-0363
ppm/ Air
103 L
18 – 386

Intermountain Specialty Gases
520 N. Kings Road
Nampa, ID 83687 (USA)
Phone (800) 552-5003, Fax (208) 466-9143
www.isgases.com

"Your calibration gas manufacturer since 1992"

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy (+/-)
Methane	500 ppm	2%
Oxygen	20.9 %	2%
Nitrogen	Balance UHP	

Lot #	**18-6641**
Mfg. Date:	12/18/2018
Expiration Date:	
Transfill Date:	see cylinder
Parent Cylinder ID Number:	001763

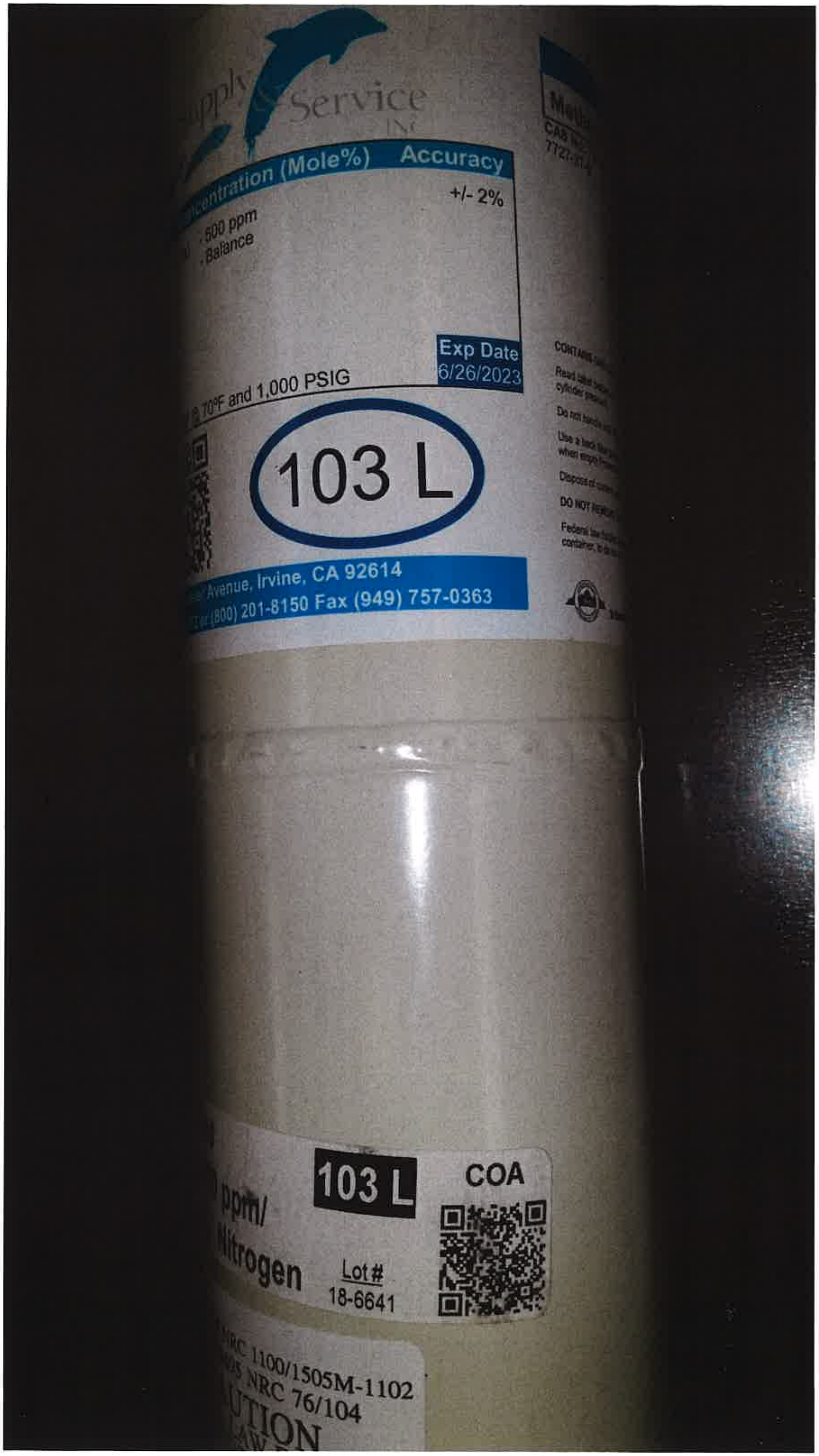
Method of Preparation:

Gravimetric/Pressure Transfilled

Method of Analysis:

The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By:	Tony Janquart
Title:	Quality Assurance Manager
Certificate Date:	12/18/2018


Supply & Service
INC
Concentration (Mole%)
Accuracy
+/- 2%
500 ppm
Balance
Exp Date
6/26/2023
@ 70°F and 1,000 PSIG
103 L
Avenue, Irvine, CA 92614
or (800) 201-8150 Fax (949) 757-0363
CONTAINS
Read label
cylinder
Do not handle
Use a back
when empty
Dispose of
DO NOT REMOVE
Federal law
container
103 L
COA
ppm/
Nitrogen
Lot#
18-6641
NRC 1100/1505M-1102
05 NRC 76/104
UTION
ON

INTERMOUNTAIN SPECIALTY GASES
520 N. Kings Road • Nampa • Idaho • 83687
800-552-5003 • www.isgases.com

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Methane	25 ppm	± 5%
Air	Balance	

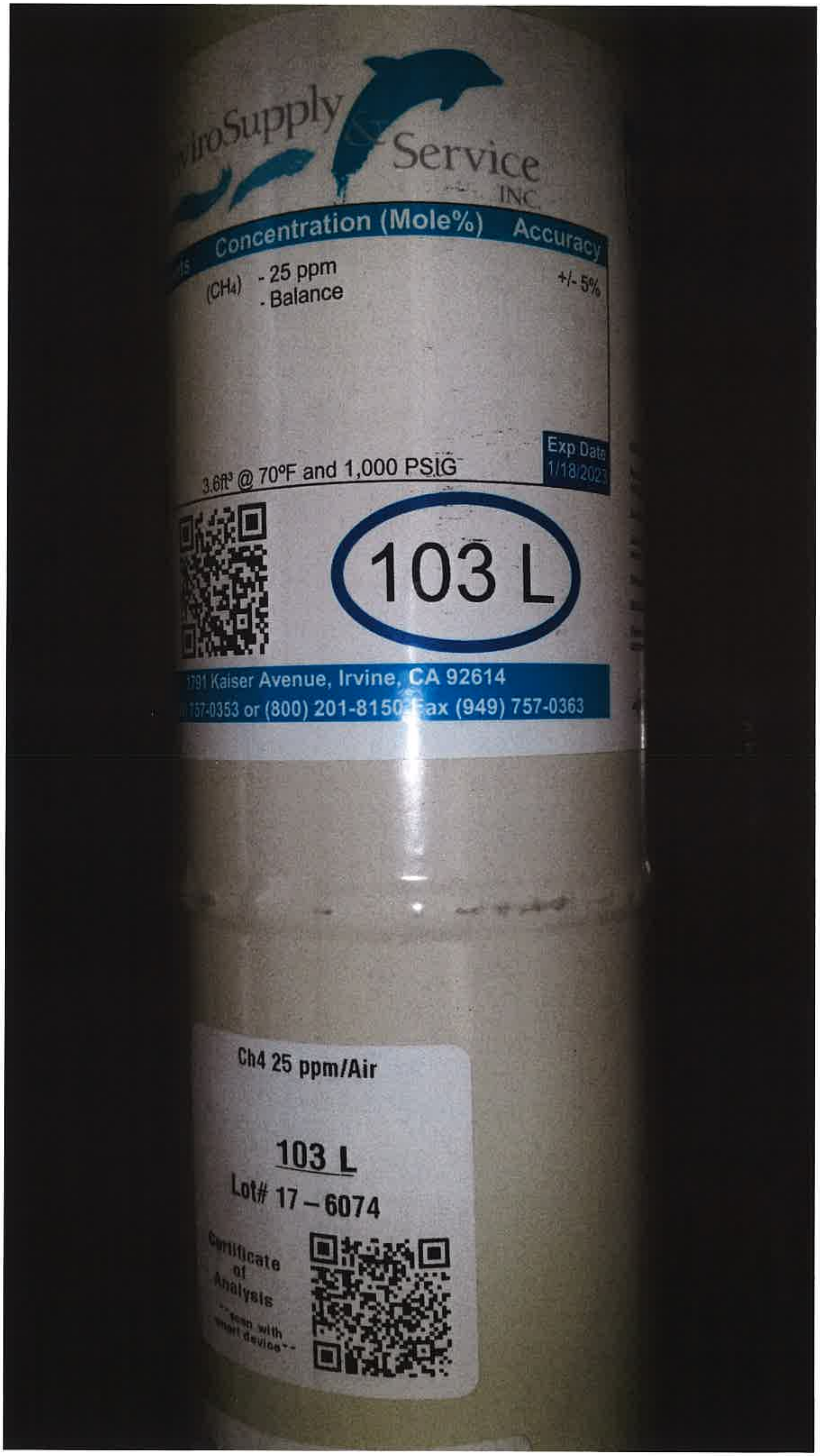
Lot # 17-6074

Mfg. Date:	10/16/2017
Parent Cylinder ID Number:	17161

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 10/16/2017


viroSupply & Service INC.
Concentration (Mole%)
Accuracy
(CH4) - 25 ppm
- Balance
+/- 5%
3.6ft³ @ 70ºF and 1,000 PSIG
Exp Date
1/18/2023
103 L
1791 Kaiser Avenue, Irvine, CA 92614
757-0353 or (800) 201-8150 Fax (949) 757-0363
Ch4 25 ppm/Air
103 L
Lot# 17 – 6074
Certificate of Analysis
--scan with smart device--

EQUIPCO SALES & SER

2100 MERIDIAN PARK BLVD
Concord, CA 94520
TO REORDER CALL 1 (888) 234-5678

AIR, ULTRA ZERO
THC <0.1 PPM

Analytical Accuracy +/- 2%

103L @ 70F & 1000 PSIG
Lot# TX17983
P/N AIR-ZER-103L

EXP: 10/11/2020

EQUIPCO

SALES & SERV

2100 MERIDIAN PARK BLVD
Concord, CA 94520
TO REORDER CALL 1 (888) 234-5678

METHANE 500ppm
AIR BALANCE

Analytical Accuracy +/- 2%

103L @ 70F & 1000 PSIG
Lot# K024306
P/N MET-500-103L

EXP: 6/19/2020

WASTE MANAGEMENT
172 98th Avenue
Oakland, CA 94603
(510) 430-8509

March 10, 2020

Ms. Alisha McCutcheon
Redwood Landfill, Inc.
8590 Redwood Highway
Novato, California 94948

Re: First Quarter 2020 Surface Emissions and Component Leak Monitoring Report for Redwood Landfill, Inc.

Dear Ms. McCutcheon:

This monitoring report for "**Redwood Landfill, Inc. (RLI)**" contains the results of the First Quarter 2020 Integrated and Instantaneous Surface Emissions Monitoring (SEM) and Component Leak Monitoring. Initial surface emissions monitoring was performed by Roberts Environmental Services, LLC. (RES). Re-monitoring of surface emissions and site-wide component leak monitoring was conducted by RES and/or Waste Management (WM) personnel.

APPLICABLE REQUIREMENTS

The monitoring discussed in this report was conducted in accordance with the following requirements:

Surface Emission Monitoring (SEM)

- New Source Performance Standard (NSPS), Title 40 of the Code of Federal Regulations (CFR) §60.755 (c) and (d), 40 CFR 60, Appendix A Method 21, promulgated by the United States Environmental Protection Agency (USEPA).

- California Code of Regulations (CCR) Title 17, Subchapter 10, Article 4, Subarticle 6, §95460 to §95476, known as the Assembly Bill 32 (AB32) landfill methane rule (LMR).

- Bay Area Air Quality Management District (BAAQMD) Regulation 8, Rule 34, Section 303 (Landfill Surface Requirements) and Section 607 (Landfill Surface Inspection procedures).

Component Leak

- Bay Area Air Quality Management District (BAAQMD) Regulation 8, Rule 34, Section 301 (Landfill Gas Collection and Emission Control System Requirements) and Section 602 (Collection and Control System Leak Inspection procedures).

- California Code of Regulations (CCR) Title 17, Subchapter 10, Article 4, Subarticle 6, §95464, known as the Assembly Bill 32 (AB32) landfill methane rule (LMR).

RLI Plan and Alternative Compliance Measures

An Alternative Compliance Option (ACO) Request was submitted to the California Air Resources Board (CARB) on March 24, 2011. After receipt of comments, this ACO was amended, restated, and submitted to BAAQMD on July 1, 2016. SEM and Component Leak monitoring was conducted per the methods outlined in the July 1, 2016 ACO.

PROCEDURES

General

The surface of the RLI disposal area has been divided into two hundred-eight (208), approximately 50,000 square foot monitoring grids. The entire landfill surface is monitored with the exception of active portions of the Landfill, slope areas, and as requested in the approved ACO, areas containing only asbestos-containing waste, inert waste and/or non-decomposable waste which are excluded for safety as allowed by CCR Title 17 §95466.

Field personnel walked the surface of the landfill following the walking pattern as depicted the 2011 RLI AB-32 SEM Plan, which traverses each monitoring grid. Additionally, in accordance with the provisions of 40 CFR 60.753(d) and 60.755(c)(1-3), the entire perimeter of the landfill surface was monitored. During the event, special attention was given to monitoring unusual cover conditions (stressed vegetation, cracks, seeps, etc.) and any areas with unusual odors.

Instantaneous Surface Emissions Monitoring

The Instantaneous SEM was conducted using a Toxic Vapor Analyzer (TVA) 1000 flame ionization detector (FID), which was calibrated to 500 parts per million by volume (ppm_v) methane, which meets or exceeds all guidelines set forth in the CCR Title 17 §95471(a) and NSPS. The FID was calibrated prior to use in accordance with the United States Environmental Protection Agency (USEPA) Method 21 requirements. The Instantaneous SEM procedures followed the requirements of 40 CFR 60.755 (c) and (d) and CCR Title 17 §95471(c)(2).

RES personnel walked the surface of the landfill on a grid by grid basis with the wand tip held at 2 inches from the landfill surface. While sampling the grid; the technicians also checked any surface impoundments (wells or otherwise) for leaks. Technicians also checked any surface cracks, seeps, or other areas that show evidence of surface emissions (odors or distressed vegetation). Active and sloped areas excluded for safety were documented on field data sheets and maps.

All instantaneous surface monitoring was performed in accordance with the applicable requirements referenced in this report. Any detections of methane above 200 ppm_v (areas of concern) or 500 ppm_v (exceedances) for instantaneous were recorded, flagged, and marked on an SEM Map, which, wherever required, is included in the Appendices of this report. Applicable corrective action and re-monitoring timelines are listed below:

- Corrective actions must be initiated within 5 days of the initial exceedance and re-monitoring shall be conducted within 10 days of the initial exceedance.
    - If the re-monitoring event shows the exceedance is corrected, the location shall be re-monitored within 1 month of the initial exceedance.
    - If the 1-month re-monitoring event shows the location is still corrected, all re-monitoring requirements have been completed.
- If either the first 10-day or 1-month re-monitoring events show a second exceedance, additional corrective actions shall be completed and a second re-monitoring event shall be conducted within 10 days of the second exceedance.
- If the second 10-day re-monitoring event shows the second exceedance is corrected, the location shall be re-monitored within 1 month of the initial exceedance. If the 1-month re-monitoring event shows the area is still corrected, monitoring requirements have been completed.

If any location shows three exceedances, an additional well shall be installed within 120 days of the initial exceedance.

Integrated Surface Emissions Monitoring

The Integrated surface monitoring was conducted using a TVA 1000 calibrated to 25 ppm_v for the integrated monitoring, which meets or exceeds all guidelines set forth in the CCR Title 17 §95471(a). The field technician traversed the grid walking path over a continuous 25-minute period using the TVA 1000 held at 3 inches above the landfill surface. The Integrated monitoring procedures followed the requirements of CCR Title 17 §95471(c)(2).

Grids with results greater than 25 ppm_v were recorded, marked on the SEM map, and flagged for remediation. Any grids with integrated concentrations greater than 25 ppm_v are subject to the following re-monitoring timeline:

- Re-monitoring shall be conducted within 10 days of the initial exceedance.
- If the 10-day re-monitoring event shows the exceedance is corrected, all re-monitoring requirements have been completed.
- If either the first 10-day re-monitoring event shows a second grid exceedance, additional corrective actions shall be completed and a second re-monitoring event shall be conducted within 10 days of the second exceedance.
- If the second 10-day re-monitoring event shows the second exceedance is corrected, all re-monitoring requirements have been completed.
- The second 10-day re-monitoring event shows a third grid exceedance, an additional well shall be installed within 120 days of the third exceedance.

Component Leak Monitoring Procedures

RES personnel monitored the exposed LFG components under positive pressure (pipes, wellheads, valves, blowers, and other mechanical appurtenances) using a TVA 1000 calibrated to 500 ppm_v. All leaks measured one half inch or less from the component exceeding the compliance limit of 500 ppm_v per requirements outlined in pursuant to CARB Title 17 of California Code of Regulations Subchapter 10, Article 4, Subarticle 6, Section 95464(b)(1)(B) and 1,000 ppm_v per requirements outlined in BAAQMD 8-34-303 were recorded. Applicable corrective action and re-monitoring timelines are listed below:

- Leaks between 500 and 999 ppm_v must be corrected and re-monitored within 10 days of the initial exceedance.

- Leaks at or above 1000 ppm_v must be corrected and re-monitored within 7 days of the initial exceedance.

FIRST QUARTER 2020 SEM AND COMPONENT LEAK RESULTS

The following is a summary of the SEM and component leak monitoring results completed for the First Quarter 2020.

Instantaneous Surface Emissions Monitoring Results

The Instantaneous surface monitoring was performed on January 30, 2020 in accordance with the NSPS, BAAQMD 8-34, and CCR Title 17 §95469 and ACO. Results and data from the monitoring are presented in Attachment A

Initial Monitoring Event Exceedances of 500 ppm_v

There were two (2) exceedances of 500 ppm_v as methane detected on January 30, 2020. Corrective actions to initiate repairs of the exceedances were completed within five days for all locations.

First Ten-Day Re-Monitoring Results

The first 10-day re-monitoring event was completed on February 7, 2020. All locations were observed at less than 500 ppm_v.

One-Month Re-Monitoring Results

The 1-month re-monitoring event was completed on February 27, 2020. All locations were observed at less than 500 ppm_v.

Readings between 200 ppm_v and 499 ppm_v (Initial and Re-monitored)

There were no readings between 200 ppm_v and 499 ppm_v as methane detected during the initial monitoring event on January 30, 2020. Pursuant to CCR Title 17 §95471(c), instantaneous surface emissions exceeding 200 ppm_v but below 500 ppm_v are required to be recorded.

Integrated Surface Emissions Monitoring Results

The Integrated surface sampling (ISS) was performed on January 29, 30, and 31, 2020 in accordance with the ACO and requirements outlined in CCR Title 17 §95469.

Initial Monitoring Event Exceedances of 25 ppm$_v$

There were 0 grids with exceedances of 25 ppm$_v$ as methane detected during the initial monitoring event.

The average methane concentration of each grid was recorded during the monitoring event per applicable requirements. See Attachment B, Integrated SEM 25 ppm$_v$ Exceedances and Monitoring Log, and SEM Map included in Attachment B, for details.

Component Leak Monitoring Results

Component leak monitoring was conducted per the applicable requirements on January 30, 2020. No leaks greater than 500 ppm$_v$ were identified. Please see Attachment C, for details.

WEATHER CONDITIONS

Wind Speed Conductions during the Surface Emission Monitoring Events

Wind speeds during initial monitoring were monitored using a portable weather station. The station has a strip chart that records the wind speed and direction. After completion of monitoring, the strip chart is reviewed by RES office staff to determine the average and maximum wind speeds during the monitoring and the average wind direction during each grid and ensure that the wind speed requirements are met (no gusts greater than 20 mph, average wind speed cannot exceed 10 mph). These values are documented in the field data sheets. The chart data is scanned and included in Attachment D.

Precipitation Requirements

Per the RLI's ACO, the initial monitoring event was carefully scheduled so that it could be conducted in compliance with the precipitation requirements (no precipitation ≥0.01" within 24 hours, ≥0.16" within 48 hours, nor ≥0.25" within 72 hours). Re-monitoring events are required to adhere to strict timelines. Any conflicts with precipitation requirements are discussed in the results section of this document.

EQUIPMENT CALIBRATION

The portable analyzers were calibrated to meet the instrument specifications requirements of U.S. EPA Method 21. The calibration gas used was methane, diluted to a nominal concentration of 25 ppm$_v$ in air for integrated sample analyses and 500 ppm$_v$ in air for instantaneous monitoring to comply with the requirements.

All analyzers were calibrated prior to use with required response time and precision related instrument checks. Calibration records include the following: One time response time test record;

One time response factor determination for methane; Calibration Precision test records (test to be performed every 3 months); and Daily Instrument Calibration and Background test records for each gas meter that was used during the quarterly monitoring event. The calibration log records are included in Attachment E.

All monitoring was completed in accordance with the applicable regulatory requirements or approved alternatives. If you have any questions regarding this report, please do not hesitate to contact me at (510) 613-2852.

Thank you,
Waste Management

Michael Chan

Michael Chan
Environmental Protection Specialist

Attachment A – Instantaneous Surface Emission Monitoring Event Records

- Monitoring Logs and Exceedances
- Surface Monitoring Weather Data
- SEM Map

Attachment B – Integrated Surface Emission Monitoring Event Records

- Monitoring Logs and Exceedances
- Surface Monitoring Weather Data
- SEM Map

Attachment C – Component Leak Monitoring Event Records

- Component Leak Exceedances and Monitoring Logs

Attachment D – Weather Station Data

- Strip Chart Data

Attachment E – Calibration Records

- Instrument and Gas Calibration Records

Attachment A

Instantaneous Surface Emission Monitoring Event Records

Table A.1
Instantaneous Landfill Surface Emissions Monitoring
Initial Monitoring Event Areas of Concern

2020 QUARTER: 1
PERFORMED BY: RES
LANDFILL NAME: Redwood Landfill, Inc.

Grid Number	Flag Number	Date of Monitoring	Concentration of Emission (ppm_v)	Comments
174	O1	1/30/2020	873	Well 210
187	O2	1/30/2020	16,000	Well 102
Notes: Please refer to field data sheets for details				

Table A.2
Instantaneous Landfill Surface Emissions Monitoring
Exceedance and Monitoring Logs (NSPS/BAAQMD 8-34)

2020 QUARTER: 1

INITIAL MONITORING PERFORMED BY: RES

FOLLOW-UP MONITORING PERFORMED BY: S. Johnson

LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			**Corrective Action**		**1st 10-day Follow-Up**			**1st 30-day Follow-Up**			
Flag Number	Monitoring Date	Reading ppm	Repair Date	Action Taken	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	**Comments**
O1	1/30/2020	873	1/31/2020	Increased BECS/ Vacuum	2/7/2020	0		2/27/2020	1.5		Well 210
O2	1/30/2020	16,000	1/31/2020	Increased and Fixed BECS	2/7/2020	0		2/27/2020	3.7		Well 102

Table A.3
Instantaneous Landfill Surface Emissions Monitoring Exceedance and Monitoring Logs (AB-32)

2020 QUARTER: 1

INITIAL MONITORING PERFORMED BY: RES

FOLLOW-UP MONITORING PERFORMED BY: S. Johnson

LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			1st Re-mon Event - 10 Days			2nd Re-mon Event - 10 Days			
Flag Number	Monitoring Date	Reading ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Comments
O1	1/30/2020	873	2/7/2020	0					Well 210
O2	1/30/2020	16,000	2/7/2020	0					Well 102

Table A.4

Instantaneous Landfill Surface Emissions Monitoring
Areas of Concern Greater than 200 ppmv

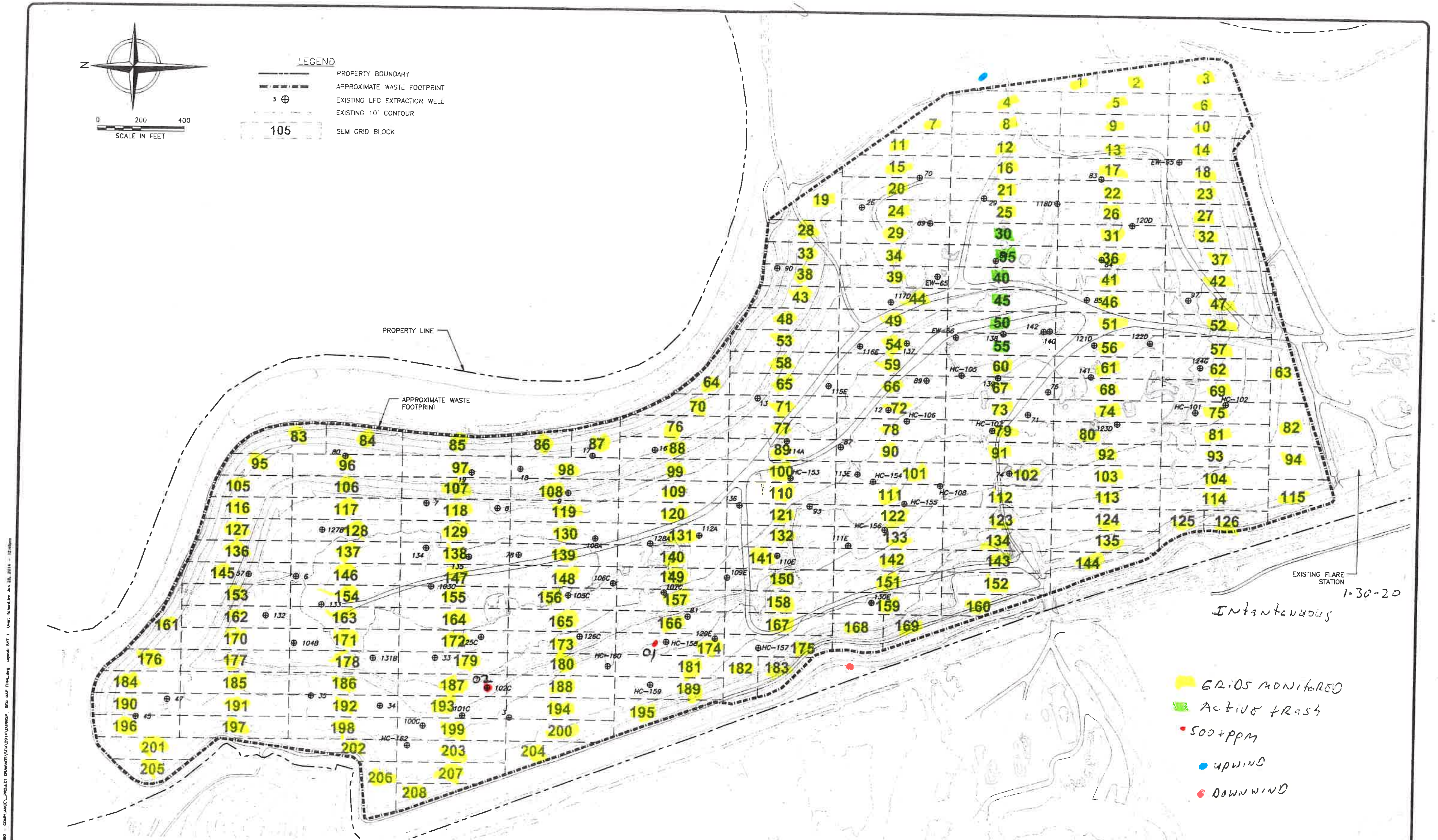
2020 QUARTER: 1

INITIAL MONITORING PERFORMED BY: RES

FOLLOW-UP MONITORING PERFORMED BY: S. Johnson

LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			**Re-mon Event**		**Comments**
Flag Number	Monitoring Date	Reading ppm	Monitoring Date	Reading ppm	
No 200-499 ppmv locations					



1-30-20

Intantaneous

🟨 GRIDS MONITORED

🟩 Active trash

● 500+ppm

● upwind

● DOWNWIND

NOTES:
1. TOPOGRAPHIC CONTOURS PREPARED USING PHOTOGRAMMETRIC METHODS BY MILLER CREEK AERIAL MAPPING. DATE OF PHOTOGRAPHY: FEBRUARY 14, 2014.
2. LOCATION OF WASTE FOOTPRINT IS APPROXIMATE.
3. SUPPLEMENTAL AS-BUILT WELL LOCATIONS PER FIELD SURVEY PERFORMED BY F3 AND ASSOCIATES (DATE OF SURVEY: AUGUST 13, 2013) AND NOTES FROM WASTE MANAGEMENT DATED OCTOBER 2, 2013 AND JUNE 19, 2014.

WASTE MANAGEMENT

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 6/24/2014
DRAWN BY RL
DESIGNED BY MLH
CHECKED BY MED
APPROVED BY PJS

cornerstone environmental

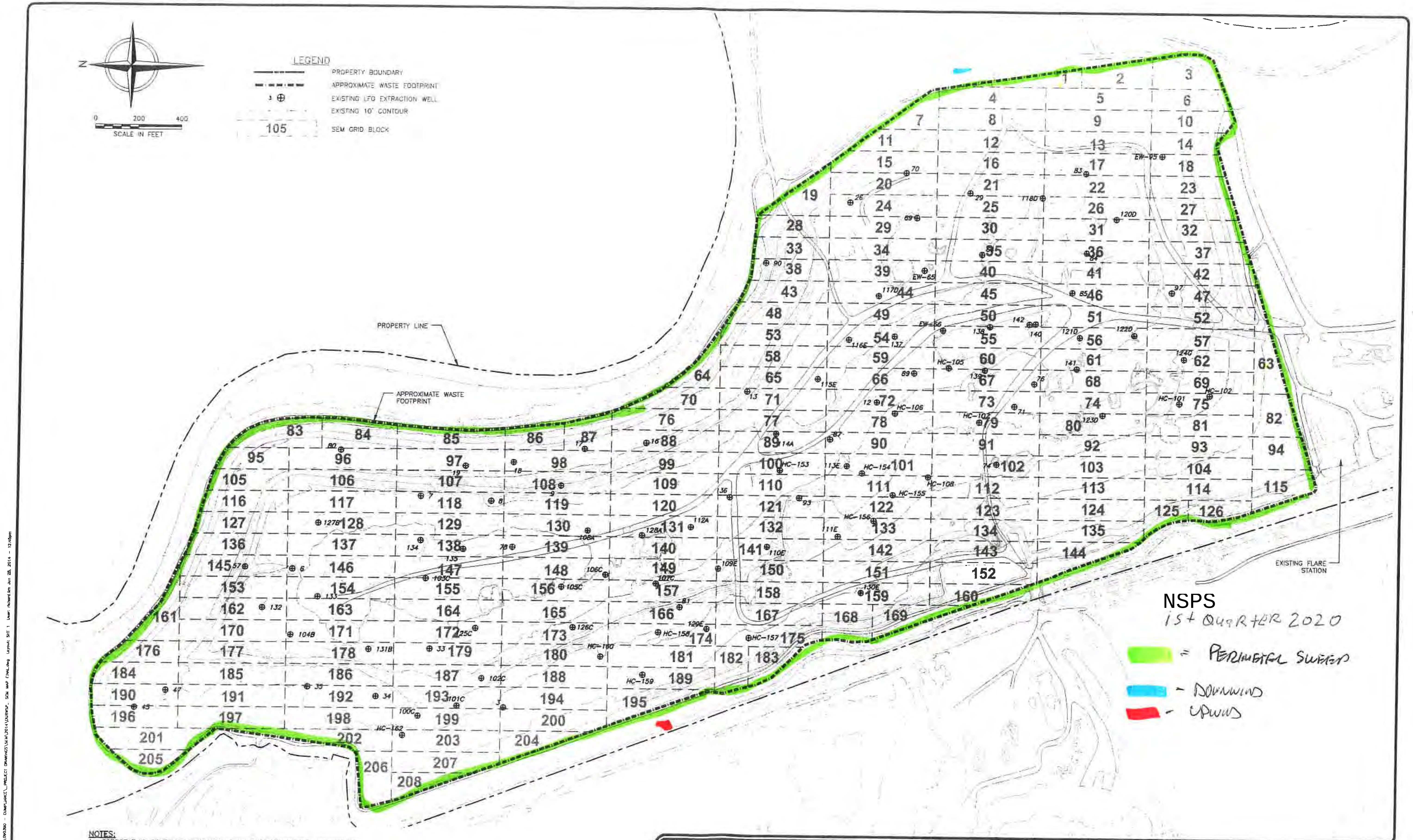
PREPARED BY:
CORNERSTONE ENVIRONMENTAL GROUP, LLC

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

SURFACE EMISSIONS MONITORING GRID MAP

SHEET NO. 1

PROJECT NO. 140521



NSPS
1st QuaRtER 2020

🟩 = PERIMETER SWEEP
🟦 - DOWNWIND
🟥 - UPWIND

NOTES:

1. TOPOGRAPHIC CONTOURS PREPARED USING PHOTOGRAMMETRIC METHODS BY MILLER CREEK AERIAL MAPPING. DATE OF PHOTOGRAPHY: FEBRUARY 14, 2014.
2. LOCATION OF WASTE FOOTPRINT IS APPROXIMATE.
3. SUPPLEMENTAL AS-BUILT WELL LOCATIONS PER FIELD SURVEY PERFORMED BY F3 AND ASSOCIATES (DATE OF SURVEY: AUGUST 13, 2013) AND NOTES FROM WASTE MANAGEMENT DATED OCTOBER 2, 2013 AND JUNE 19, 2014.

WASTE MANAGEMENT

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 6/24/2014
DRAWN BY RL
DESIGNED BY MLH
CHECKED BY MED
APPROVED BY PJS

cornerstone environmental
PREPARED BY
CORNERSTONE ENVIRONMENTAL GROUP, LLC

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

SURFACE EMISSIONS MONITORING
GRID MAP

SHEET NO.
1
PROJECT NO.
140521

Orange Flag Landfill Surface Emissions Monitoring
Exceedances and Monitoring Log

Site: REDWOOD

Quarter / Year: 1st 2020
Technician: LEIGH WADE
Instrument: TVA 1000
Calibration Standard: 500 ppm

Page of Pages

Initial Monitoring Event				First Re-Monitoring Event - 10 Days			Second Re-Monitoring Event - 10 Days			30-Day Follow-up Monitoring			Comments
Flag Number	Grid Number	Field Reading (ppm)	Date Monitored	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	
O- 1	174	873	1-30-20										WEll 216
O- 2	187	16,000	↓										WEll 102
O-													
O-													
O-													
O-													
O-													
O-													
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REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE, ANTHONY PEREIRA
AARON MCBRIDE, NICK BANKS
ERNEST PERAIRA

Date: 1-30-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 50 Precip: 0 Upwind BG: 1.8 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
1	LW	0600	0615	17	2	3	9	
2	AM	0600	0615	13	2	3	9	
3	ER	0600	0615	11	2	3	9	
4	AP	0600	0615	17	2	3	9	
5	NB	0600	0615	24	2	3	9	
6	LW	0615	0630	14	2	3	9	
7	AM	0615	0630	16	2	3	9	
8	ER	0615	0630	11	2	3	9	
9	AP	0615	0630	9	2	3	9	
10	NB	0615	0630	19	2	3	9	
11	LW	0630	0645	28	3	4	3	
12	AM	0630	0645	17	3	4	3	
13	ER	0630	0645	14	3	4	3	
14	AP	0630	0645	12	3	4	3	
15	NB	0630	0645	57	2	3	4	
16	LW	0645	0700	42	2	3	4	
17	AM	0645	0700	20	2	3	4	
18	ER	0645	0700	12	2	3	4	
19	AP	0645	0700	39	2	3	4	
20	NB	0645	0700	54	2	3	4	
21	LW	0700	0715	99	2	3	4	
22	AM	0700	0715	65	2	3	4	
23	ER	0700	0715	22	2	3	4	
24	AP	0700	0715	71	2	3	4	
25	NB	0700	0715	89	2	3	4	
26	LW	0715	0730	57	2	4	2	
27	AM	0715	0730	40	2	4	2	
31	ER	0715	0730	21	2	4	2	
32	AP	0715	0730	18	2	4	2	
36	NB	0715	0730	14	2	4	2	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 2

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wade, Aaron McBride, Ernest Ramirez, Anthony Pereira, Nick Banks

Date: 1-30-20 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 59 Precip: 0 Upwind BG: 1.8 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
37	LW	0730	0745	21	2	3	2	
41	AM	0730	0745	18	2	3	2	
42	ER	0730	0745	14	2	3	2	
46	AP	0730	0745	26	2	3	2	
47	NB	0730	0745	16	2	3	2	
51	LW	0745	0800	20	2	3	3	
52	AM	0745	6800	24	2	3	3	
56	ER	0745	0800	19	2	3	3	
57	AP	0745	0800	12	2	3	3	
60	NB	0745	0800	88	2	3	3	
61	LW	0800	0815	64	2	3	4	
62	AM	0800	0815	38	2	3	4	
63	ER	0800	0815	52	2	3	4	
67	AP	0800	0815	47	2	3	4	
68	NB	0800	0825	35	2	3	4	
69	LW	0815	0830	27	2	3	4	
73	AM	0815	0830	40	2	3	4	
74	ER	0815	0830	23	2	3	4	
75	AP	0815	0830	46	2	3	4	
82	NB	0815	0830	39	2	3	4	
79	LW	0830	0845	58	2	3	3	
80	AM	0830	0845	62	2	3	3	
81	ER	0830	0845	15	2	3	3	
91	AP	0830	0845	72	2	3	3	
92	NB	0830	0845	64	2	3	3	
93	LW	0845	0900	52	2	3	2	
94	AM	0845	0900	68	2	3	2	
102	ER	0845	0900	40	2	3	2	
103	AP	0845	0900	29	2	3	2	
104	NB	0845	0900	43	2	3	2	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 2

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wade; Anthony Perillo; Aaron McBride; Nick Banks; Ernest Ramirez

Date: 1-30-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 55 Precip: 0 Upwind BG: 1.8 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
112	LW	0900	0915	39	2	3	4	
113	AM	0900	0915	27	2	3	4	
114	ER	0900	0915	44	2	3	4	
115	AP	0900	0915	36	2	3	4	
123	NB	0900	0915	67	2	3	4	
124	LW	0915	0930	50	2	3	16	
125	AM	0915	0930	31	2	3	16	
126	ER	0915	0930	46	2	3	16	
134	AP	0915	0930	20	2	3	16	
135	NB	0915	0930	31	2	3	16	
143	LW	0930	0945	46	2	3	12	
144	AM	0930	0945	107	2	3	12	
152	ER	0930	0945	45	2	3	12	
160	AP	0930	0945	32	2	3	12	
168	NB	0930	0945	24	2	3	12	
169	LW	0945	1000	51	2	3	12	
182	AM	0945	1000	19	2	3	12	
183	ER	0945	1000	24	2	3	12	
175	AP	0945	1000	32	2	3	12	
167	NB	0945	1000	29	2	3	12	
158	LW	1000	1015	66	2	3	11	
159	AM	1000	1015	81	2	3	11	
150	ER	1000	1015	129	2	3	11	
151	AP	1000	1015	94	2	3	11	
141	NB	1000	1015	34	2	3	11	
142	LW	1015	1030	48	2	3	12	
132	AM	1015	1030	20	2	3	12	
133	ER	1015	1030	51	2	3	12	
121	AP	1015	1030	36	2	3	12	
122	NB	1015	1030	58	2	3	12	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LESHWADE / ANTHONY PERALTA / AARON MCBRIDE / NICK BANKS / ERNEST RAMIREZ

Date: 1-30-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 57 Precip: 0 Upwind BG: 1.8 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
110	LW	1030	1045	32	2	3	10	
111	AM	1030	1045	26	2	3	10	
100	ER	1030	1045	71	2	3	10	
101	AP	1030	1045	44	2	3	10	
97	NB	1030	1045	32	2	3	10	
98	LW	1045	1100	28	2	3	9	
99	AM	1045	1100	36	2	3	9	
107	ER	1045	1100	24	2	3	9	
108	AP	1045	1100	57	2	3	9	
109	NB	1045	1100	62	2	3	9	
118	LW	1100	1115	94	2	3	10	
119	AM	1100	1115	57	2	3	10	
120	ER	1100	1115	32	2	3	10	
129	AP	1100	1115	71	2	3	10	
130	NB	1100	1115	34	2	3	10	
131	LW	1115	1130	22	2	3	11	
138	AM	1115	1130	38	2	3	11	
139	ER	1115	1130	41	2	3	11	
140	AP	1115	1130	22	2	3	11	
147	NB	1115	1130	38	2	3	11	
148	LW	1130	1145	84	2	3	11	
149	AM	1130	1145	97	2	3	11	
155	ER	1130	1145	63	2	3	11	
156	AP	1130	1145	49	2	3	11	
157	NB	1130	1145	82	2	3	11	
164	LW	1145	1200	47	3	4	11	
165	AM	1145	1200	113	3	4	11	
166	ER	1145	1200	54	3	4	11	
172	AP	1145	1200	67	3	4	11	
173	NB	1145	1200	54	3	4	11	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEISHWADE ANTHONY PERALTA
AARON MCBRIDE NICK BANKS
ERNEST RAMIREZ

Date: 1-30-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 59 Precip: 0 Upwind BG: 1.8 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
174	LW	1200	1215	873	3	6	9	Well 210
179	AM	1200	1215	54	3	6	9	
180	ER	1200	1215	46	3	6	9	
181	AP	1200	1215	60	3	6	9	
187	NB	1200	1215	16,000	3	6	9	Well 102
188	LW	1215	1230	44	4	6	9	
189	AM	1215	1230	70	4	6	9	
193	ER	1215	1230	41	4	6	9	
194	AP	1215	1230	36	4	6	9	
195	NB	1215	1230	59	4	6	9	
199	LW	1230	1245	40	4	6	9	
200	AM	1230	1245	23	4	6	9	
203	ER	1230	1245	18	4	6	9	
204	NB	1230	1245	26	4	6	9	
207	AP	1230	1245	15	4	6	9	
208	LW	1245	1300	31	4	8	9	
206	AM	1245	1300	16	4	8	9	
202	ER	1245	1300	27	4	8	9	
197	AP	1245	1300	15	4	8	9	
198	NB	1245	1300	18	4	8	9	
205	LW	1300	1315	47	4	8	9	
201	AM	1300	1315	32	4	8	9	
196	ER	1300	1315	15	4	8	9	
190	AP	1300	1315	18	4	8	9	
191	NB	1300	1315	36	4	8	9	
192	LW	1315	1330	41	4	6	9	
184	AM	1315	1330	25	4	6	9	
185	ER	1315	1330	39	4	6	9	
186	AP	1315	1330	27	4	6	9	
176	NB	1315	1330	19	4	6	9	

Attach Calibration Sheet
Attach site map showing grid ID

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REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE, Anthony Peralta
AARON MCBRIDE, NICK BANKS
ERNEST RAMIREZ

Date: 1-30-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 62 Precip: 0 Upwind BG: 1.8 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
177	LW	1330	1345	22	4	8	10	
178	AM	1330	1345	59	9	8	10	
170	ER	1330	1345	36	4	8	10	
171	AP	1330	1345	77	4	8	10	
161	NB	1330	1345	54	4	8	10	
162	LW	1345	1400	20	4	7	9	
123	AM	1345	1400	51	4	7	9	
153	ER	1345	1400	71	4	7	9	
154	AP	1345	1400	99	4	7	9	
145	NB	1345	1400	50	4	7	9	
146	LW	1400	1415	107	4	6	11	
136	AM	1400	1415	32	4	6	11	
137	ER	1400	1415	71	4	6	11	
127	AP	1400	1415	20	4	6	11	
128	NB	1400	1415	81	4	6	11	
116	LW	1415	1430	19	4	8	12	
117	AM	1415	1430	58	4	8	12	
105	ER	1415	1430	16	4	8	12	
106	AP	1415	1430	45	4	8	12	
95	NB	1415	1430	38	4	8	12	
96	LW	1430	1445	15	4	7	9	
83	AM	1430	1445	11	4	7	9	
84	ER	1430	1445	17	4	7	9	
85	AP	1430	1445	14	4	7	9	
86	NB	1430	1445	11	4	7	9	
87	LW	1445	1500	16	4	7	9	
88	AM	1445	1500	19	4	7	9	
76	ER	1445	1500	81	4	7	9	
70	AP	1445	1500	47	4	7	9	
64	NB	1445	1500	32	4	7	9	

Attach Calibration Sheet
Attach site map showing grid ID

Page 6 of 7

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE, ANTHONY PERECCA, AARON MURRAY, NICK BENKS, ERNEST REMIREZ

Date: 1-30-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 68 Precip: 0 Upwind BG: 1.8 Downwind BG: 24

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
89	LW	1500	1515	52	4	6	9	
90	AM	1500	1515	49	4	6	9	
77	ER	1500	1515	21	4	6	9	
78	AP	1500	1515	47	4	6	9	
71	NB	1500	1515	38	4	6	9	
72	LW	1515	1530	91	4	6	9	
65	AM	1515	1530	36	4	6	9	
66	ER	1515	1530	65	4	6	9	
58	AP	1515	1530	47	4	6	9	
59	NB	1515	1530	42	4	6	9	
53	LW	1530	1545	89	4	6	9	
54	AM	1530	1545	76	4	6	9	
48	ER	1530	1545	51	4	6	9	
49	AP	1530	1545	37	4	6	9	
43	NB	1530	1545	68	4	6	9	
44	LW	1545	1600	107	4	6	9	
38	AM	1545	1600	51	4	6	9	
39	ER	1545	1600	140	4	6	9	
33	~~A~~AP	1545	1600	72	4	6	9	
34	NB	1545	1600	124	4	6	9	
28	LW	1600	1615	64	4	6	9	
29	AM	1600	1615	91	4	6	9	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 2

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE

Date: 1-30-20 Instrument Used: ________ Grid Spacing: ________

Temperature: ________ Precip: ________ Upwind BG: ________ Downwind BG: ________

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
30								Active trash
35								↓
40								
45								
50								
55								

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 1

Attachment B

Integrated Surface Emission Monitoring Event Records

Table B.1
Integrated Landfill Surface Monitoring
Exceedances and Monitoring Log

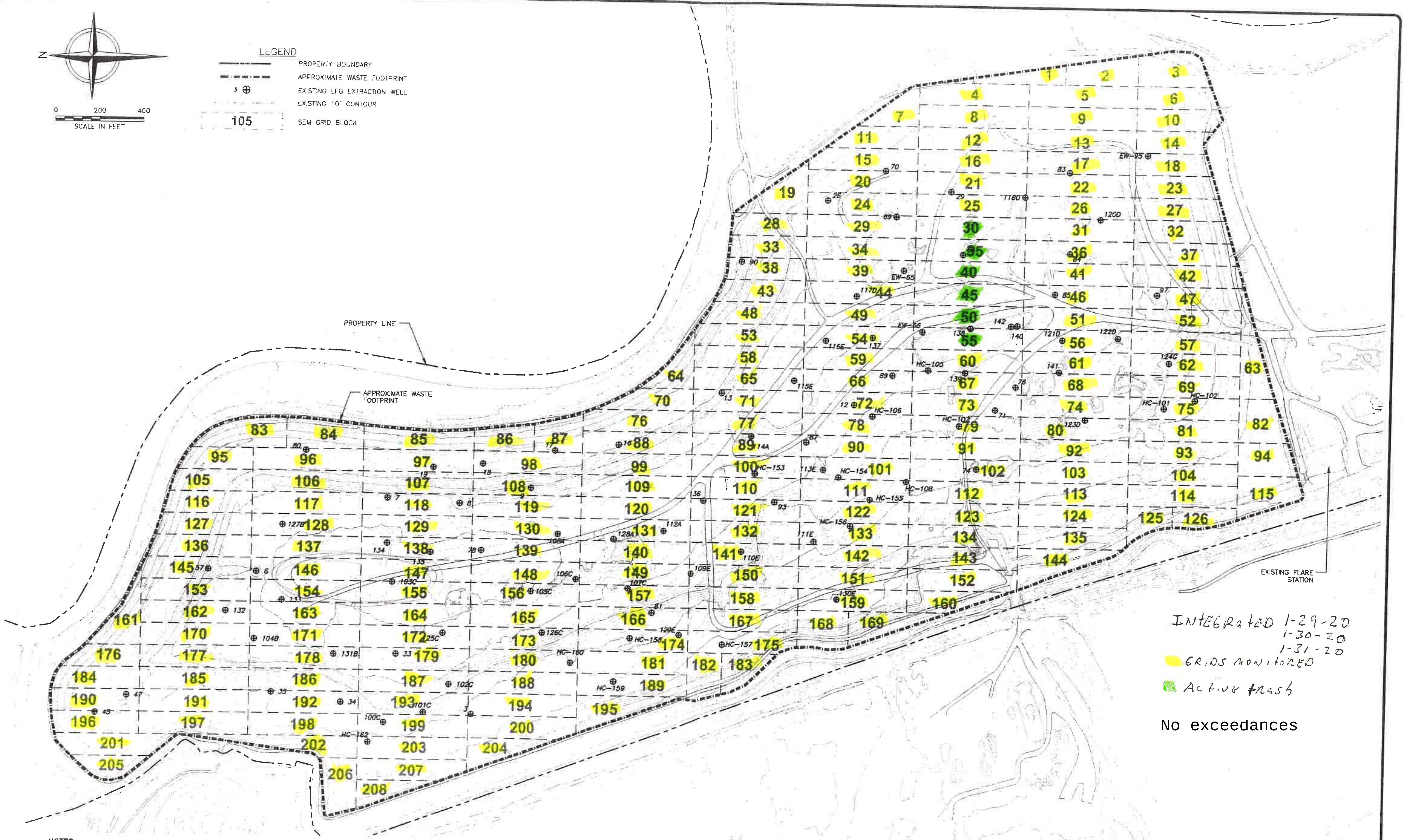
2020 QUARTER: 1

INITIAL MONITORING PERFORMED BY: RES

FOLLOW-UP MONITORING PERFORMED BY: S. Johnson

LANDFILL NAME: Redwood Landfill, Inc.

<table>
<tr><th colspan="3">Initial Monitoring Event</th><th colspan="3">1st Re-mon Event - 10 Days</th><th colspan="3">2nd Re-mon Event - 10 Days</th><th rowspan="2">Comments</th></tr>
<tr><th>Exceedance Grid ID No.</th><th>Monitoring Date</th><th>Reading ppm</th><th>Monitoring Date</th><th>No Exced. <25 ppm</th><th>No Exced. >25 ppm</th><th>Monitoring Date</th><th>No Exced. <25 ppm</th><th>No Exced. >25 ppm</th></tr>
<tr><td colspan="10">No Exceedances</td></tr>
</table>



LEGEND

PROPERTY BOUNDARY

APPROXIMATE WASTE FOOTPRINT

3 ⊕ EXISTING LFG EXTRACTION WELL

EXISTING 10' CONTOUR

105 SEM GRID BLOCK

INTEGRATED 1-29-20
1-30-20
1-31-20

🟨 GRIDS MONITORED

🟩 Active trash

No exceedances

NOTES:

1. TOPOGRAPHIC CONTOURS PREPARED USING PHOTOGRAMMETRIC METHODS BY MILLER CREEK AERIAL MAPPING. DATE OF PHOTOGRAPHY: FEBRUARY 14, 2014.
2. LOCATION OF WASTE FOOTPRINT IS APPROXIMATE.
3. SUPPLEMENTAL AS-BUILT WELL LOCATIONS PER FIELD SURVEY PERFORMED BY F3 AND ASSOCIATES (DATE OF SURVEY: AUGUST 13, 2013) AND NOTES FROM WASTE MANAGEMENT DATED OCTOBER 2, 2013 AND JUNE 19, 2014.

WASTE MANAGEMENT

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 6/24/2014

DRAWN BY RL

DESIGNED BY MLH

CHECKED BY MED

APPROVED BY PJS

cornerstone environmental

PREPARED BY:
CORNERSTONE ENVIRONMENTAL GROUP, LLC

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

SURFACE EMISSIONS MONITORING
GRID MAP

SHEET NO.
1

PROJECT NO
140521

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE | ANTHONY PERALTA
AARON MCBRIDE | NICK BANKS
ERNEST RAMIREZ

Cal. Gas Exp. Date: 9-21-20

Date: 1-29-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 61 Precip: 0 Upwind BG: 1.8 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
1	LW	1305	1330	3.89	3	5	12	
2	AM	1305	1330	3.60	3	5	12	
3	ER	1305	1330	4.15	3	5	12	
4	AP	1305	1330	3.72	3	5	12	
5	NB	1305	1330	3.54	3	5	12	
6	LW	1330	1355	4.51	4	6	12	
7	AM	1330	1355	5.77	4	6	12	
8	ER	1330	1355	4.39	4	6	12	
9	AP	1330	1355	5.58	4	6	12	
10	NB	1330	1355	4.12	4	6	12	
11	LW	1355	1420	4.55	4	6	12	
12	AM	1355	1420	6.74	4	6	12	
13	ER	1355	1420	5.90	4	6	12	
14	AP	1355	1420	4.82	4	6	12	
15	NB	1355	1420	7.35	4	6	12	
16	LW	1420	1445	8.12	4	6	9	
17	AM	1420	1445	6.45	4	6	9	
18	ER	1420	1445	5.10	4	6	9	
19	AP	1420	1445	5.71	4	6	9	
20	NB	1420	1445	9.14	4	6	9	
21	LW	1445	1510	8.70	4	6	9	
22	AM	1445	1510	6.32	4	6	9	
23	ER	1445	1510	6.17	4	6	9	
24	AP	1445	1510	8.91	4	6	9	
25	NB	1445	1510	7.45	4	6	9	
26	LW	1510	1535	3.42	4	6	9	
27	AM	1510	1535	3.98	4	6	9	
31	ER	1510	1535	6.76	4	6	9	
32	AP	1510	1535	5.32	4	6	9	
36	NB	1510	1535	7.28	4	6	9	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 2

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE · ANTHONY PERALTA · AARON MCBRIDE · NICK BANKS · ERNEST RAMIREZ

Cal. Gas Exp. Date: 9-21-20

Date: 1-29-20 · Instrument Used: TVA 1000 · Grid Spacing: 25'

Temperature: 63 · Precip: 0 · Upwind BG: 1.8 · Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
37	LW	1535	1600	4.12	4	6	10	
41	AM	1535	1600	7.28	4	6	10	
42	ER	1535	1600	5.51	4	6	10	
46	AP	1535	1600	8.13	4	6	10	
47	NB	1535	1600	5.28	4	6	10	
51	LW	1600	1625	7.22	4	6	9	
52	AM	1600	1625	4.96	4	6	9	
56	ER	1600	1625	8.31	4	6	9	
57	AP	1600	1625	5.46	4	6	9	
60	NB	1600	1625	7.91	4	6	9	
61	LW	1625	1650	5.27	4	6	10	
62	AM	1625	1650	5.70	4	6	10	
63	ER	1625	1650	4.28	4	6	10	
67	AP	1625	1650	5.84	4	6	10	
68	NB	1625	1650	5.12	4	6	10	
69	LW	1650	1715	4.77	3	4	9	
73	AM	1650	1715	5.55	3	4	9	
74	ER	1650	1715	4.32	3	4	9	
75	AP	1650	1715	5.04	3	4	9	
82	NB	1650	1715	5.29	3	4	9	
79	LW	1715	1740	7.13	4	6	8	
80	AM	1715	1740	5.90	4	6	8	
81	ER	1715	1740	6.67	4	6	8	
91	AP	1715	1740	8.30	4	6	8	
92	NB	1715	1740	6.19	4	6	8	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 2

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE

Cal. Gas Exp. Date:

Date: 1-29-20 Instrument Used: Grid Spacing:

Temperature: Precip: Upwind BG: Downwind BG:

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
30								Active Trash
35								↓
40								
45								
50								
55								

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 1

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEWIS WADE · ANTHONY PERALTA
AARON MCBRIDE · NICK BANKS
ERNEST RAMIREZ

Cal. Gas Exp. Date: 9-21-20

Date: 1-30-20 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 70 Precip: 0 Upwind BG: 1.8 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
93	LW	1625	1650	6.21	4	6	10	
94	AM	1625	1650	5.34	4	6	10	
102	ER	1625	1650	7.18	4	6	10	
103	AP	1625	1650	6.40	4	6	10	
104	NB	1625	1650	6.06	4	6	10	
112	LW	1650	1715	5.94	3	4	10	
113	AM	1650	1715	6.17	3	4	10	
114	ER	1650	1715	5.69	3	4	10	
115	AP	1650	1715	6.18	3	4	10	
123	NB	1650	1715	6.34	3	4	10	
124	LW	1715	1740	5.26	2	3	8	
125	AM	1715	1740	5.19	2	3	8	
126	ER	1715	1740	6.13	2	3	8	
134	AP	1715	1740	5.51	2	3	8	
135	NB	1715	1740	5.20	2	3	8	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 1

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE, ANTHONY PERELLA, AARON MCBRIDE, NICK BANKS, ERNEST RAMIREZ

Cal. Gas Exp. Date: 9-21-20

Date: 1-31-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 45 Precip: 0 Upwind BG: 1.8 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
143	LW	0550	0615	5.81	3	4	3	
144	AM	0550	0615	6.13	3	4	3	
152	ER	0550	0615	6.81	3	4	3	
160	AM	0550	0615	5.39	3	4	3	
168	NB	0550	0615	4.22	3	4	3	
169	LW	0615	0640	5.10	2	5	2	
182	AM	0615	0640	4.77	2	5	2	
183	ER	0615	0640	5.54	2	5	2	
175	AP	0615	0640	6.13	2	5	2	
167	NB	0615	0640	5.91	2	5	2	
158	LW	0640	0705	6.37	2	3	2	
159	AM	0640	0705	6.92	2	3	2	
150	ER	0640	0705	10.24	2	3	2	
151	AP	0640	0705	13.71	2	3	2	
141	NB	0640	0705	6.54	2	3	2	
142	LW	0705	0730	7.18	2	3	7	
132	AM	0705	0730	5.45	2	3	7	
133	ER	0705	0730	6.03	2	3	7	
121	AP	0705	0730	5.58	2	3	7	
122	NB	0705	0730	7.13	2	3	7	
110	LW	0730	0755	6.90	3	4	4	
111	AM	0730	0755	5.84	3	4	4	
100	ER	0730	0755	7.26	3	4	4	
101	AP	0730	0755	6.81	3	4	4	
97	NB	0730	0755	5.40	3	4	4	
98	LW	0755	0820	5.26	2	3	3	
99	AM	0755	0820	6.31	2	3	3	
107	ER	0755	0820	5.79	2	3	3	
108	AP	0755	0820	4.26	2	3	3	
109	NB	0755	0820	5.05	2	3	3	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 5

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wade | Anthony Pereira
Aaron McBride | Nick Banks
Ernest Ramirez
Cal. Gas Exp. Date: 9-21-20

Date: 1-31-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 49 Precip: 0 Upwind BG: 1.8 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
118	LW	0820	0845	4.72	2	5	4	
119	AM	0820	0845	5.07	2	5	4	
120	ER	0820	0845	4.95	2	5	4	
129	AP	0820	0845	6.13	2	5	4	
130	NB	0820	0845	5.50	2	5	4	
131	LW	0845	0910	7.38	3	5	7	
138	AM	0845	0910	6.55	3	5	7	
139	ER	0845	0910	6.29	3	5	7	
140	AP	0845	0910	5.51	3	5	7	
147	NB	0845	0910	8.75	3	5	7	
148	LW	0910	0935	6.91	2	4	7	
149	AM	0910	0935	6.14	2	4	7	
155	ER	0910	0535	7.21	2	4	7	
156	AP	0910	0535	6.84	2	4	7	
157	NB	0910	0535	8.20	2	4	7	
164	LW	0935	1000	8.13	2	3	4	
165	AM	0935	1000	7.21	2	3	4	
166	ER	0535	1000	8.40	2	3	4	
172	AP	0535	1000	6.91	2	3	4	
173	NB	0535	1000	7.59	2	3	4	
174	LW	1000	1025	8.13	2	3	1	
179	AM	1000	1025	6.47	2	3	1	
180	ER	1000	1025	6.28	2	3	1	
181	AP	1000	1025	7.11	2	3	1	
187	NB	1000	1025	6.41	2	3	1	
188	LW	1025	1050	5.32	2	3	12	
189	AM	1025	1050	5.15	2	3	12	
193	ER	1025	1050	6.37	2	3	12	
194	AP	1025	1050	5.45	2	3	12	
195	NB	1025	1050	6.76	2	3	12	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 5

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEISH WADE | Anthony PERALTA
AARON MCBRIDE | NICK BANKS
ERNEST RAMIREZ

Cal. Gas Exp. Date: 9-21-20

Date: 1-31-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 57 Precip: 0 Upwind BG: 1.8 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
199	LW	1050	1115	5.36	2	4	9	
200	AM	1050	1115	5.72	2	4	9	
203	ER	1050	1115	6.17	2	4	9	
204	AP	1050	1115	5.51	2	4	9	
207	NB	1050	1115	5.38	2	4	9	
208	LW	1115	1140	5.96	3	5	11	
206	AM	1115	1140	6.13	3	5	11	
202	ER	1115	1140	5.69	3	5	11	
197	AP	1115	1140	4.21	3	5	11	
198	NB	1115	1140	5.38	3	5	11	
205	LW	1140	1205	4.15	2	4	11	
201	AM	1140	1205	3.76	2	4	11	
196	ER	1140	1205	3.24	2	4	11	
190	AP	1140	1205	4.07	2	4	11	
191	NB	1140	1205	5.16	2	4	11	
192	LW	1205	1230	5.28	3	4	12	
184	AM	1205	1230	4.51	3	4	12	
185	ER	1205	1230	5.23	3	4	12	
186	AP	1205	1230	6.90	3	4	12	
176	NB	1205	1230	4.28	3	4	12	
177	LW	1230	1255	5.28	2	3	12	
178	AM	1230	1255	4.61	2	3	12	
170	ER	1230	1255	5.70	2	3	12	
171	AP	1230	1255	6.13	2	3	12	
161	NB	1230	1255	4.28	2	3	12	
162	LW	1255	1320	5.94	2	4	9	
163	AM	1255	1320	7.26	2	4	9	
153	ER	1255	1320	6.81	2	4	9	
154	AP	1255	1320	8.50	2	4	9	
145	NB	1255	1320	5.27	2	4	9	

Attach Calibration Sheet
Attach site map showing grid ID

Page 3 of 5

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wade | Anthony Pereira
Aaron McBride | Nick Banks
Ernest Ramirez

Cal. Gas Exp. Date: 9-21-20

Date: 1-31-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 62 Precip: 0 Upwind BG: 1.8 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
146	LW	1320	1345	9.14	2	4	9	
136	AM	1320	1345	5.71	2	4	9	
137	ER	1320	1345	6.89	2	4	9	
127	AP	1320	1345	5.42	2	4	9	
128	NB	1320	1345	4.76	2	4	9	
116	LW	1345	1410	5.18	2	4	9	
117	AM	1345	1410	4.51	2	4	9	
105	ER	1345	1410	5.37	2	4	9	
106	AP	1345	1410	4.76	2	4	9	
95	NB	1345	1410	4.10	2	4	9	
96	LW	1410	1435	3.82	2	4	11	
83	AM	1410	1435	4.15	2	4	11	
84	ER	1410	1435	3.67	2	4	11	
85	AP	1410	1435	4.14	2	4	11	
86	NB	1410	1435	3.89	2	4	11	
87	LW	1435	1500	4.50	3	5	9	
88	AM	1435	1500	4.70	3	5	9	
89	ER	1435	1500	6.35	3	5	9	
90	AP	1435	1500	6.84	3	5	9	
76	NB	1435	1500	5.51	3	5	9	
77	LW	1500	1525	7.13	3	4	9	
78	AM	1500	1525	5.89	3	4	9	
70	ER	1500	1525	4.57	3	4	9	
71	AP	1500	1525	6.13	3	4	9	
72	NB	1500	1525	7.30	3	4	9	
64	LW	1525	1550	5.58	3	5	9	
65	AM	1525	1550	8.13	3	5	9	
66	ER	1525	1550	6.47	3	5	9	
58	AP	1525	1550	6.21	3	5	9	
59	NB	1525	1550	9.46	3	5	9	

Attach Calibration Sheet
Attach site map showing grid ID

Page 4 of 5

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE | Anthony Purcell
AARON MCBRIDE | Nick Banks
ERNEST REAMER

Cal. Gas Exp. Date: 9-21-20

Date: 1-31-20 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 65 Precip: 0 Upwind BG: 1.8 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
53	LW	1550	1615	5.87	3	5	9	
54	AM	1550	1615	7.33	3	5	9	
48	ER	1550	1615	5.51	3	5	9	
49	AP	1550	1615	6.79	3	5	9	
43	NB	1550	1615	5.45	3	5	9	
44	LW	1615	1640	8.22	4	7	12	
38	AM	1615	1640	6.17	4	7	12	
39	ER	1615	1640	8.50	4	7	12	
33	AP	1615	1640	6.01	4	7	12	
34	NB	1615	1640	9.57	4	7	12	
28	LW	1640	1705	7.11	4	7	12	
29	AM	1640	1705	8.44	4	7	12	

Attach Calibration Sheet
Attach site map showing grid ID

Page 5 of 5

Attachment C

Component Leak Monitoring Event Records

Table C.1
AB-32 Component Leak Monitoring
Summary of Component Leaks Greater than 500 ppmv

2020 QUARTER: 1

INITIAL MONITORING PERFORMED BY: RES

FOLLOW-UP MONITORING PERFORMED BY: S. Johnson

LANDFILL NAME: **Redwood Landfill, Inc.**

Location	Initial Monitoring			Corrective Action		10-Day Remonitoring		
	Date	TOC (ppmv)	Tech	Date	Description	Date	TOC (ppmv)	Tech
No Exceedances Detected								

Table C.2
BAAQMD Component Leak Monitoring
Summary of Component Leaks Greater than 1,000 ppmv

2020 QUARTER: 1

INITIAL MONITORING PERFORMED BY: RES

FOLLOW-UP MONITORING PERFORMED BY: S. Johnson

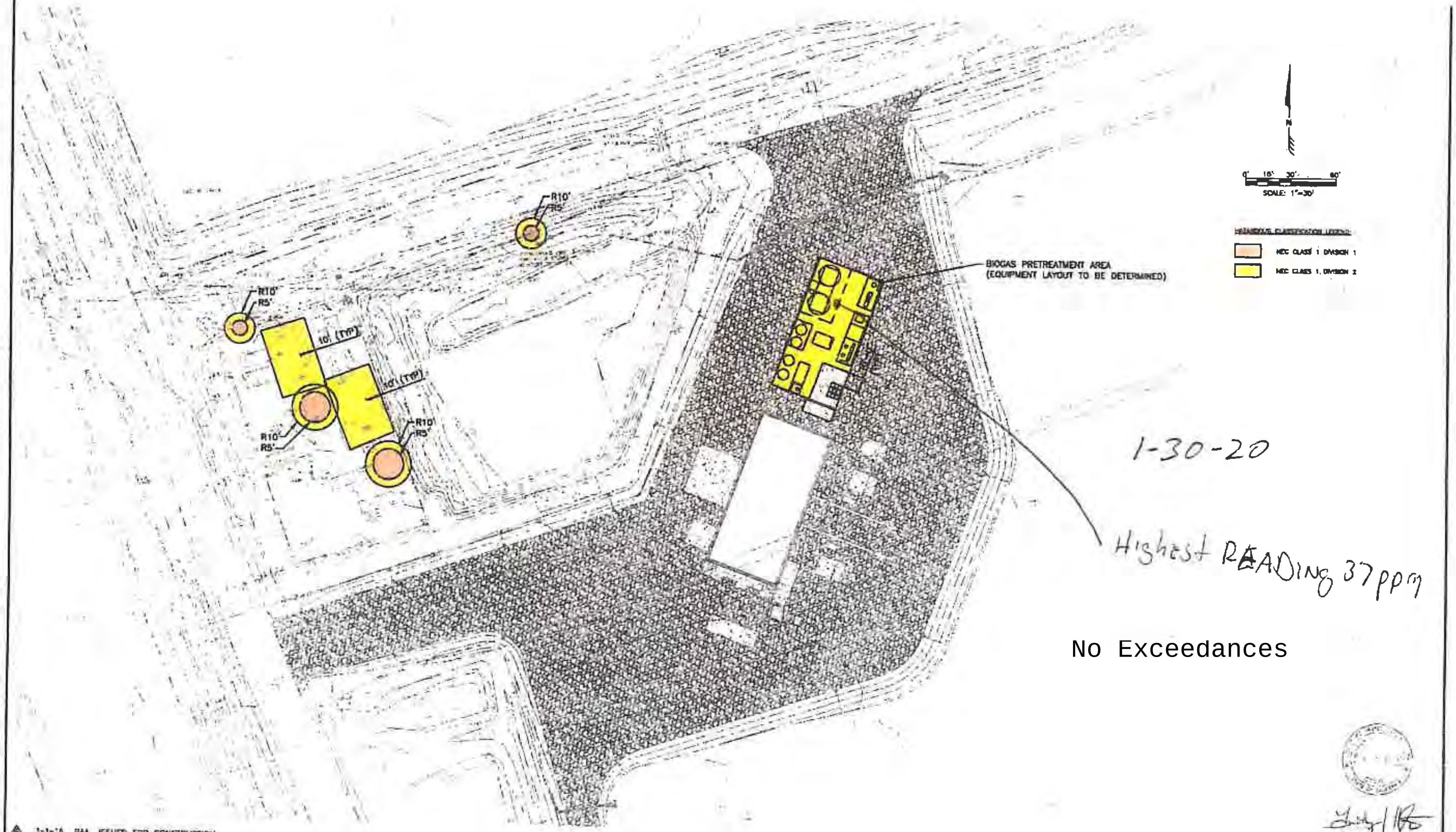
LANDFILL NAME: Redwood Landfill, Inc.

Location	Initial Monitoring			Corrective Action		7-Day Remonitoring		
	Date	TOC (ppmv)	Tech	Date	Description	Date	TOC (ppmv)	Tech
No Exceedances Detected								

REDWOOD 3520+ ENGINE PLANT, CA

Site Map

8950 Redwood Hwy, Novato, CA 94948



1-30-20

Highest READing 37ppm

No Exceedances

REV	DATE	BY	DESCRIPTION
6	3-1-16	RAA	ISSUED FOR CONSTRUCTION
5	10-26-15	RAA	BUILDING PERMIT APPLICATION SET
4	10-2-15	RAA	95% DESIGN RESUBMITTAL
3	8-7-15	RAA	ISSUED FOR GAS TREATMENT SKID BID
2	6-12-15	RAA	95% DESIGN SUBMITTAL
1	5-6-15	RAA	50% DESIGN SUBMITTAL

SCALE: AS SHOWN
DATE: 5-5-15
DRAWN: JFD
CHECKED: RFC
APPROVED: RAA

ACEng
www.ac-engineering.com

CLIENT
WASTE MANAGEMENT RENEWABLE ENERGY
LANDFILL TO GAS ENERGY PROJECT
REDWOOD LANDFILL, NOVATO, CA

DESCRIPTION
PROPOSED CONDITIONS AND
HAZARDOUS AREA CLASSIFICATIONS

PROJECT NO:
1003.005.001

SHEET:
G-5

7/25/2017

LANDFILL NAME: REDWOOD
QUARTERLY LFG COMPONENT LEAK MONITORING

INSTRUMENT FID
MAKE: Thermo Environr
MODEL: TVA 1000
S/N: 1036346773

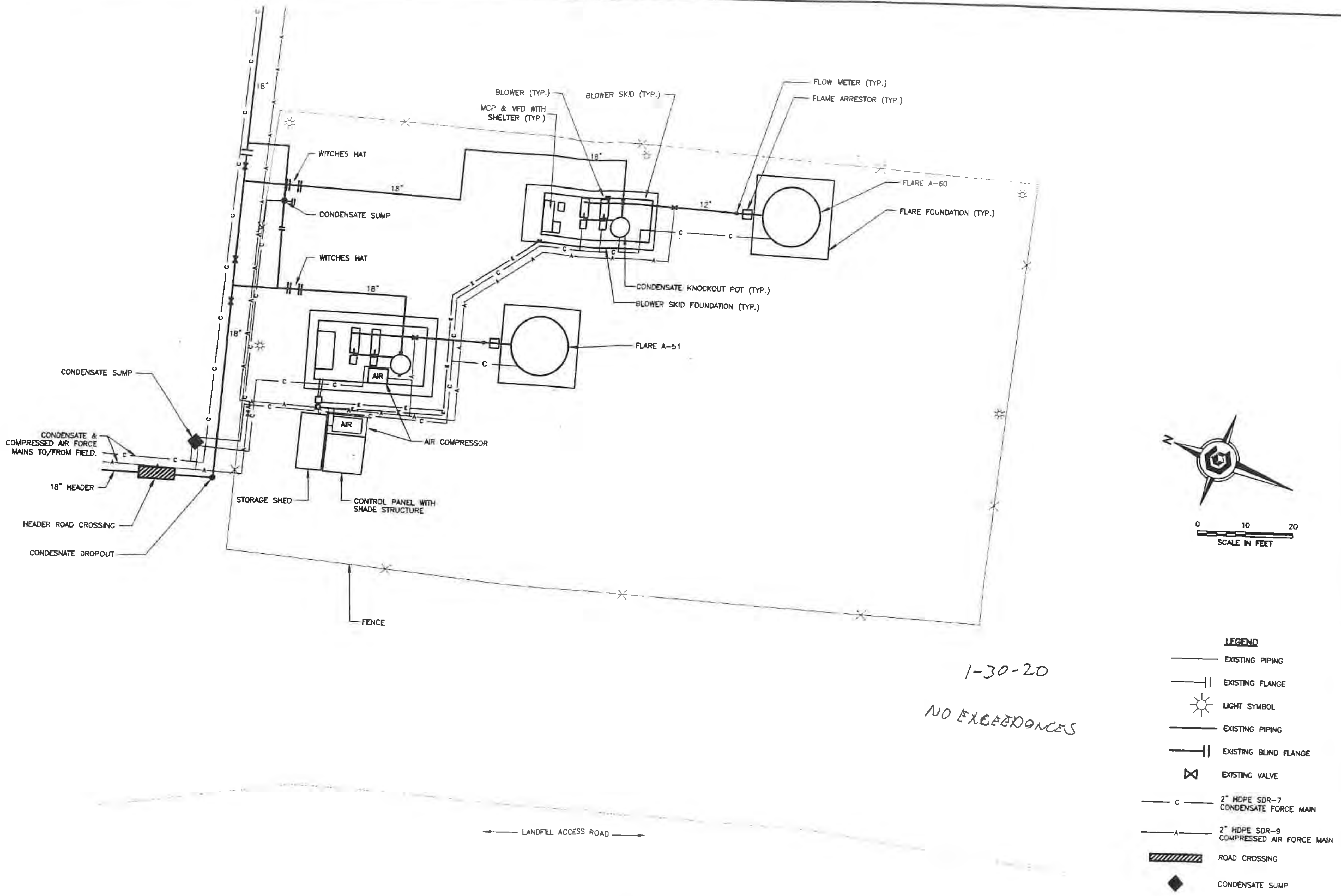
DATE OF SAMPLING: 1-30-20
TECHNICIAN: LEIGH WADE

LOCATION OF LEAK	LEAK CONCENTRATION (ppmv)	DATE OF DISCOVERY	TECHNICIAN	ACTION TAKEN TO REPAIR LEAK	DATE OF REPAIR	DATE OF ANY REQUIRED RE-MONITORING	RE-MONITORED CONCENTRATION (ppmv)
NO EXCEEDENCES							

In the event that an exceedance is detected, please intiate corrective action and re-monitor the exceedance location within 7 days of the initial exceedance.

NOTE: Leaks over 500 ppmv methane are exceedances at any component containing landfill gas, pursuant to CARB Title 17 of California Code of Regulations Subchapter 10, Article 4, Subarticle 6, Section 95464(b)(1)(B).

NOTE: Leaks over 1,000 ppmv methane are exceedances at any component containing landfill gas, pursuant to BAAQMD Regulation 8-34-301.2.



1-30-20

NO EXCEEDANCES

DRAFT

PAUL J STOUT, P.E

P.E Lic No C52827 Date

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
DATE OF ISSUE		DRAWN BY DESIGNED BY	CHECKED BY APPROVED BY			

CORNERSTONE
Environmental Group, LLC

WASTE MANAGEMENT OF CALIFORNIA, INC
REDWOOD LANDFILL, INC.
NOVATO, MARIN COUNTY, CALIFORNIA

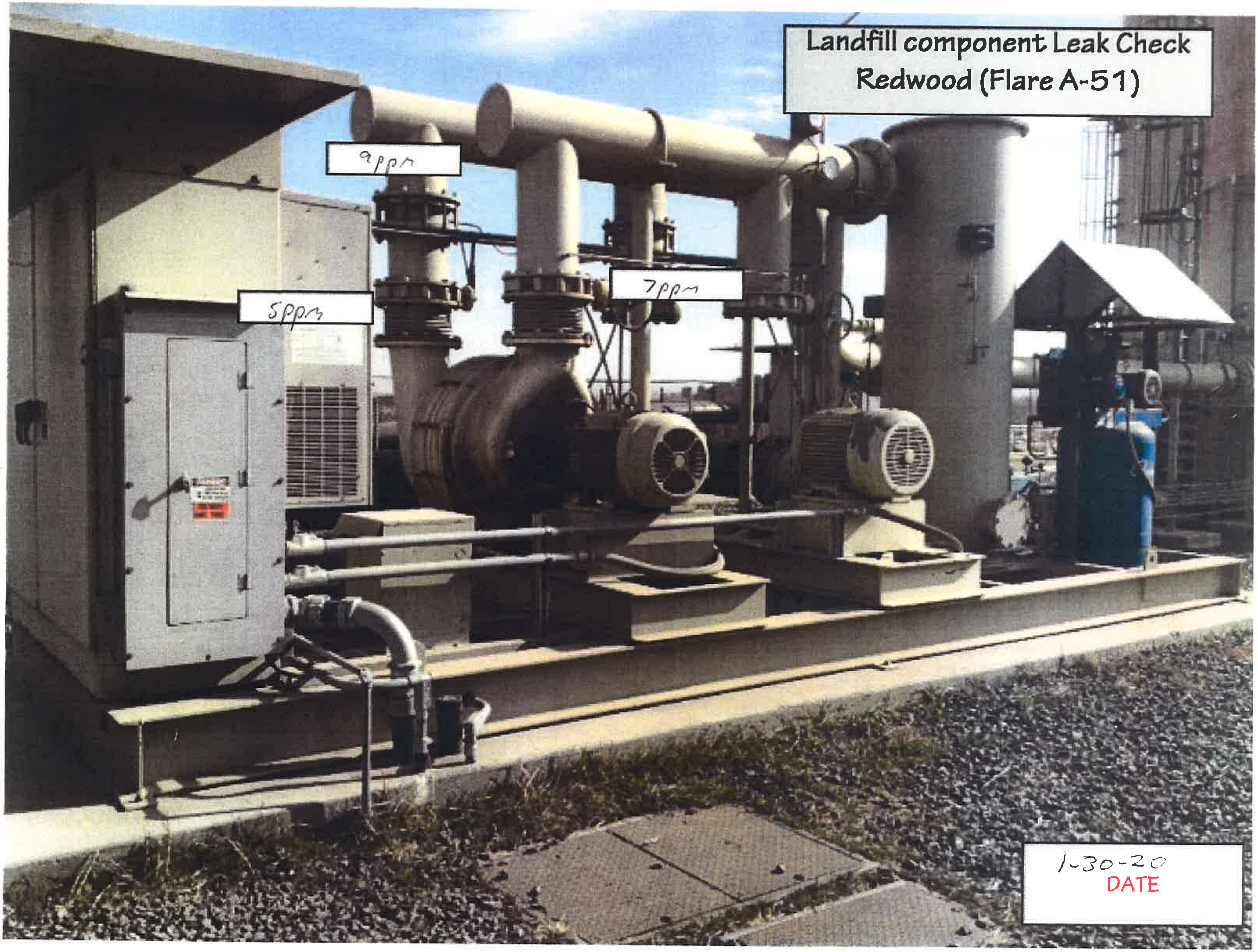
LFG FLARE AND GCCS AS-BUILT FACILITY SITE PLAN

SHEET NO
1

PROJECT NO
70314

File: K:\PROJECTS\REDWOOD\120272 2012 GCCS Improvements_PROJECT DRAWINGS\Facilities Layout\[illegible]-02-FACILITY_[illegible].dwg Layout: FACILITY SITE - [illegible] User: [illegible] Aug 17, 2012 - 10:48am

Landfill component Leak Check
Redwood (Flare A-51)



9ppm

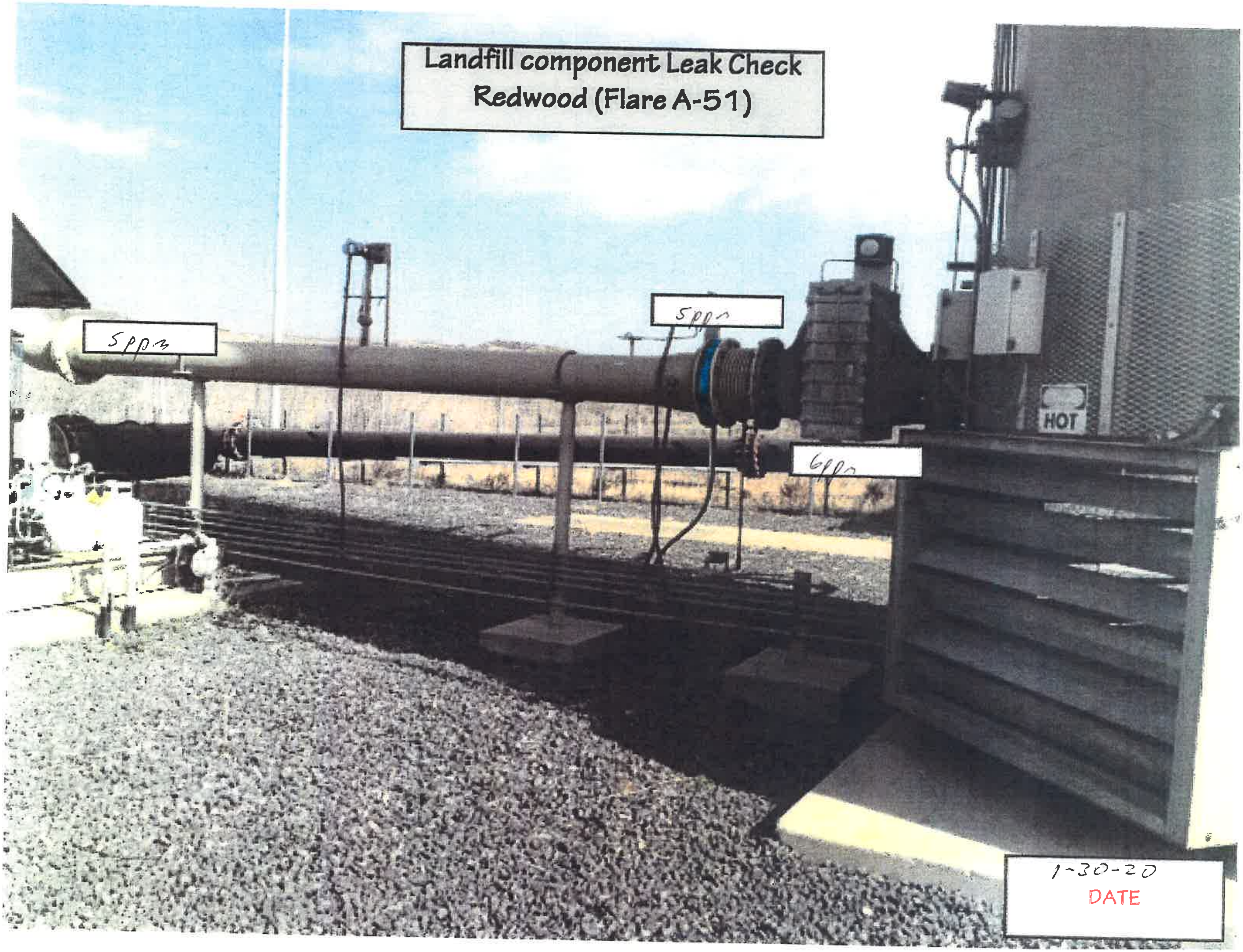
5ppm

7ppm

1-30-20

DATE

Landfill component Leak Check
Redwood (Flare A-51)



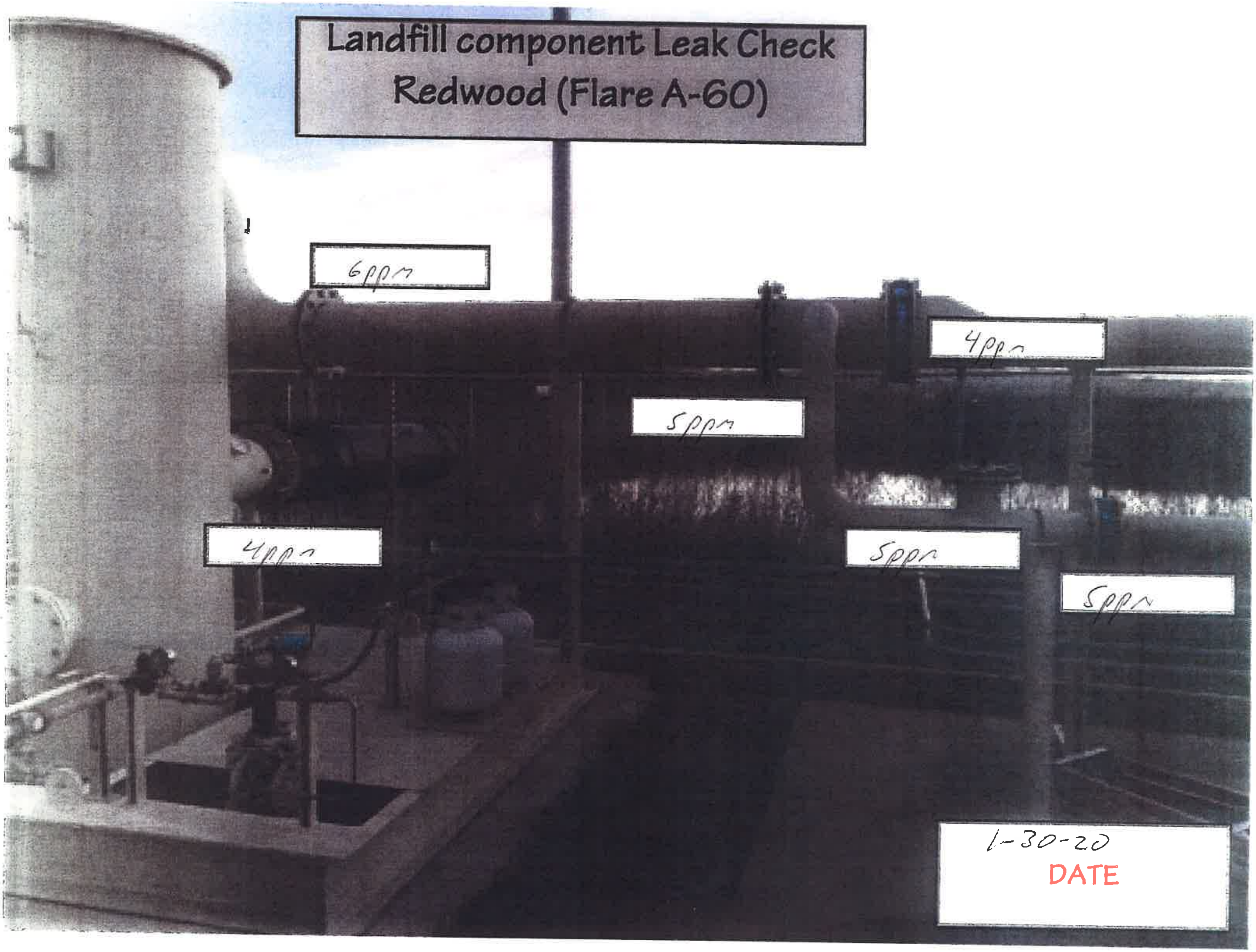
5ppm

5ppm

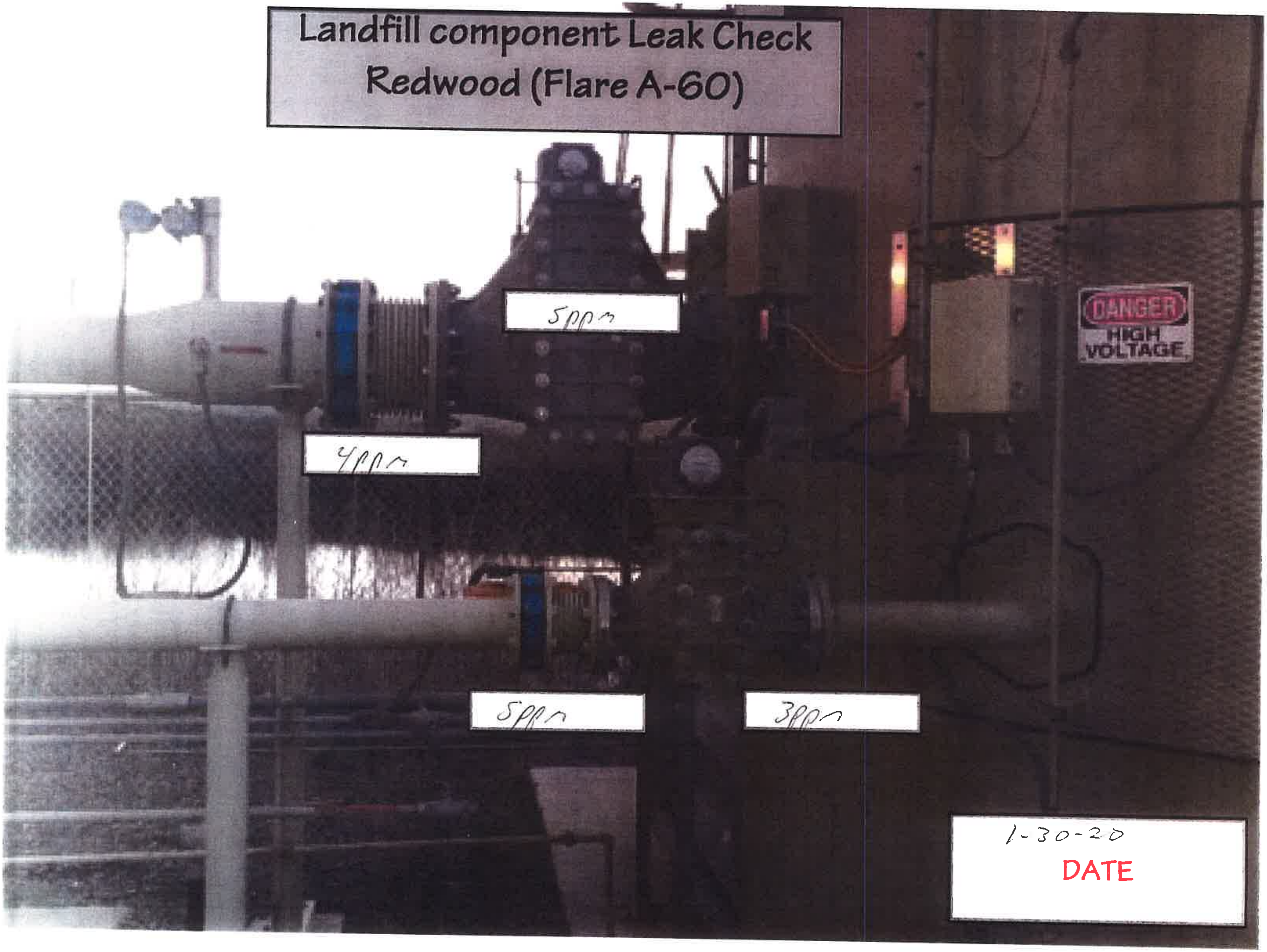
6ppm

1-30-20
DATE

Landfill component Leak Check
Redwood (Flare A-60)



Landfill component Leak Check
Redwood (Flare A-60)



5ppm

4ppm

5ppm

3ppm

1-30-20

DATE

Landfill component Leak Check
Redwood (Flare A-60)

7ppm

7ppm

5ppm

1-30-20
DATE

Attachment D

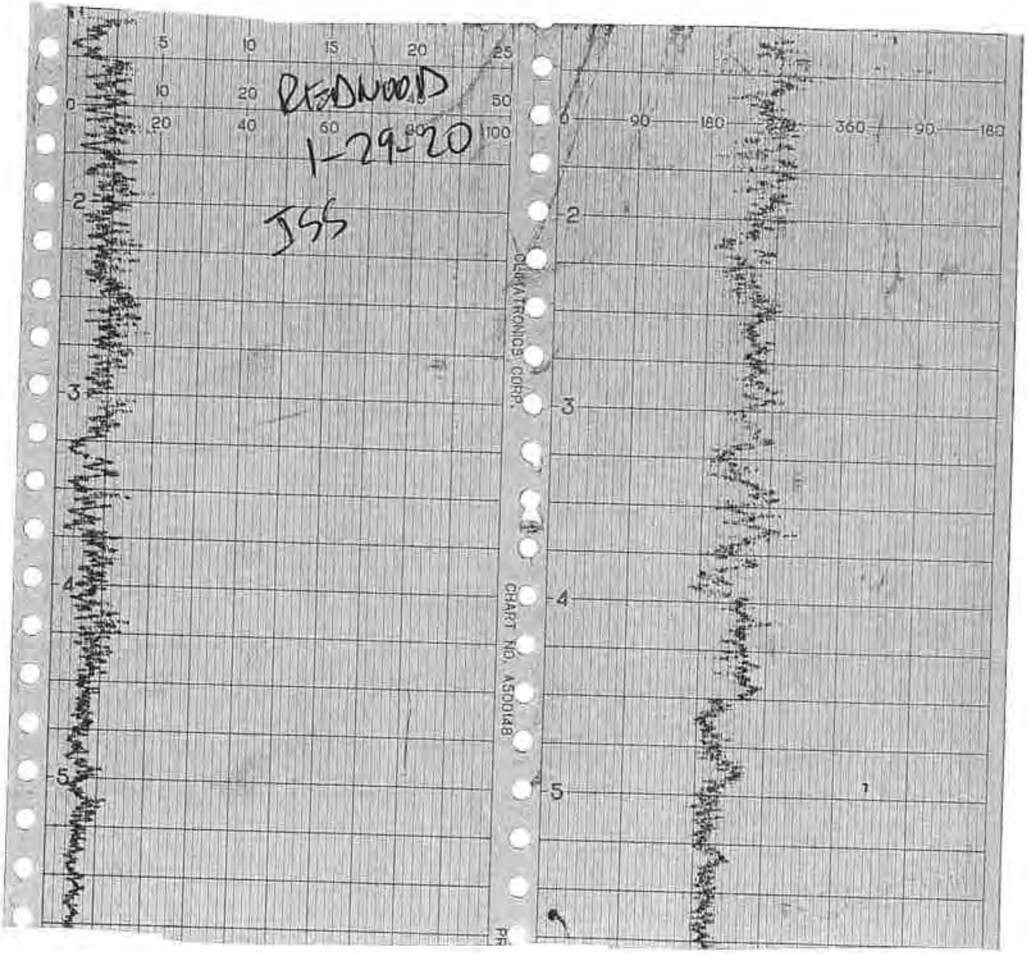
Weather Station Data

RES
Environmental Inc.

16-POINT WIND DIRECTION INDEX

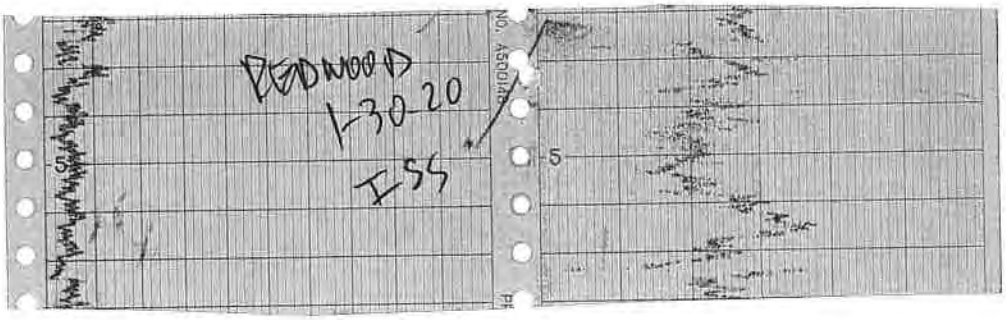
NO	DIRECTION	DEGREES FROM	CENTER	TO
16	NORTH (N)	348.8	360.0	011.3
1	NORTH-NORTHEAST (NNE)	011.3	022.5	033.8
2	NORTHEAST (NE)	033.8	045.0	056.3
3	EAST-NORTHEAST (ENE)	056.3	067.5	078.8
4	EAST (E)	078.8	090.0	101.3
5	EAST-SOUTHEAST (ESE)	101.3	112.5	123.8
6	SOUTHEAST (SE)	123.8	135.0	146.3
7	SOUTH-SOUTHEAST (SSE)	146.3	157.5	168.8
8	SOUTH (S)	168.8	180.0	191.3
9	SOUTH-SOUTHWEST (SSW)	191.3	202.5	213.8
10	SOUTHWEST (SW)	213.8	225.0	236.3
11	WEST-SOUTHWEST (WSW)	236.3	247.5	258.8
12	WEST (W)	258.8	270.0	281.3
13	WEST-NORTHWEST (WNW)	281.3	292.5	303.8
14	NORTHWEST (NW)	303.8	315.0	326.3
15	NORTH-NORTHWEST (NNW)	326.3	337.5	348.8

WIND SPEED & DIRECTION CHART ROLL

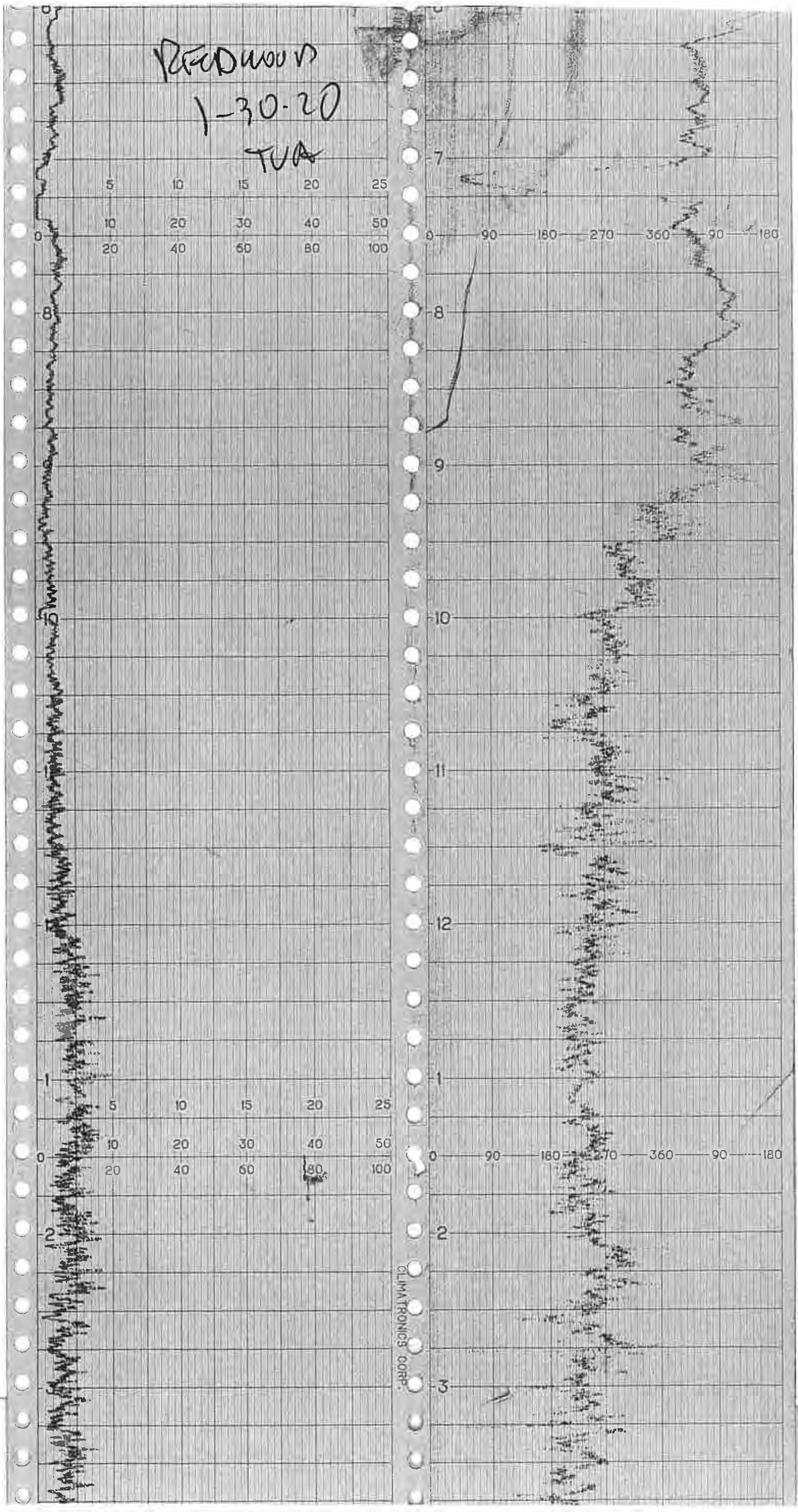


REDWOOD
1-29-20
JSS

WIND SPEED & DIRECTION CHART ROLL

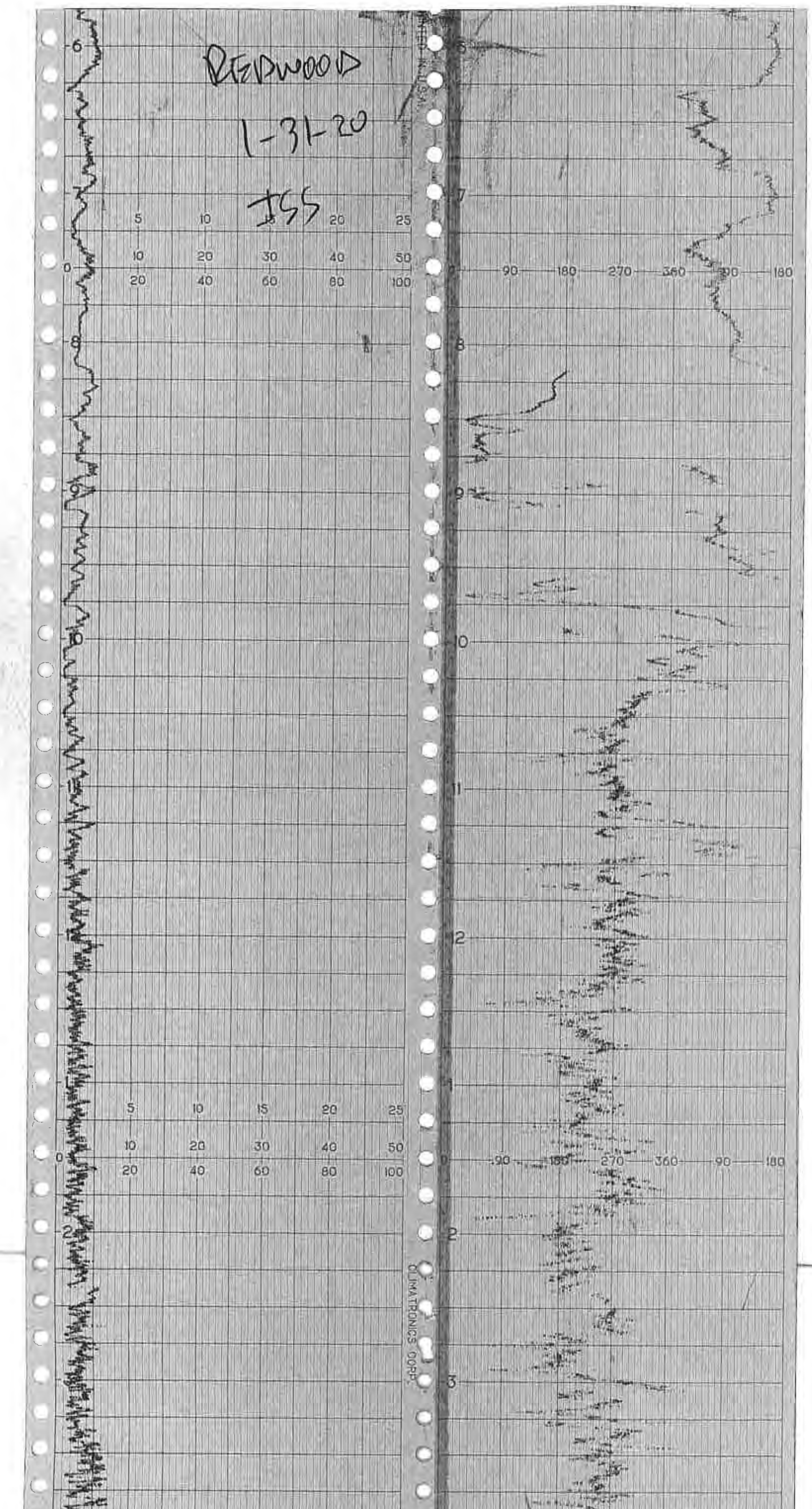


WIND SPEED & DIRECTION CHART ROLL



REDWOOD
1-30-20
TVA

WIND SPEED & DIRECTION CHART ROLL



REDWOOD
1-31-20
JSS

Attachment E

Calibration Records

CALIBRATION PRECISION TEST RECORD

Date: 2/7/2020

Expiration Date (3 months): 5/7/2020

Time: —— AM 1250 PM

Instrument Make: Photovac Model: Micro FID S/N: C8MF340

Measurement #1:

Meter Reading for Zero Air: 0.3 ppm (a)

Meter Reading for Calibration Gas: 499.7 ppm (b)

Measurement #2:

Meter Reading for Zero Air: 0.7 ppm (c)

Meter Reading for Calibration Gas: 497.9 ppm (d)

Measurement #3:

Meter Reading for Zero Air: 0.5 ppm (e)

Meter Reading for Calibration Gas: 497.5 ppm (f)

Calculate Precision:

$$\frac{\{|(500)-(b)|+|(500)-(d)|+|(500)-(f)|\}}{3} \times \frac{1}{500} \times 100$$

0.32 % (must be < than 10%)

Performed By:

RESPONSE TIME TEST RECORD

Date: 2/7/2020

Expiration Date (3 months): 5/7/2020

Time: — AM 1250 PM

Instrument Make: Photovac Model: MicroFID S/N: CZMF340

Measurement #1:

Stabilized Reading Using Calibration Gas: 500.1 ppm
90% of the Stabilized Reading: 450.09 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 2 seconds (a)

Measurement #2:

Stabilized Reading Using Calibration Gas: 500.2 ppm
90% of the Stabilized Reading: 450.18 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 3 seconds (b)

Measurement #3:

Stabilized Reading Using Calibration Gas: 499.4 ppm
90% of the Stabilized Reading: 449.46 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 2 seconds (c)

Calculate Response Time:

$$\frac{(a) + (b) + (c)}{3} = \underline{2.33}\text{ seconds (must be less than 30 seconds)}$$

Performed By:

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Landfill Date: 2/7/2020

Time: — AM 1250 PM

Instrument Make: Photovac Model: Micro FID S/N: CBMF340

Calibration Procedure

1. Allow instrument to internally zero itself while introducing zero air.
2. Introduce the calibration gas into the probe.

   Stable Reading = 500.3 ppm
3. Adjust meter to read 500 ppm. ✓

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 0.0 ppm (a)
2. Downwind Reading (highest in 30 seconds): 0.5 ppm (b)

Calculate Background Value:

$\frac{(a) + (b)}{2}$ Background = 0.25 ppm

Performed By:

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Landfill Date: 2/27/20

Time: 1120 AM — PM

Instrument Make: Photovac Model: MicroFID S/N: CZMF340

Calibration Procedure

1. Allow instrument to internally zero itself while introducing zero air.
2. Introduce the calibration gas into the probe.

   Stable Reading = 501.7 ppm
3. Adjust meter to read 500 ppm. ✓

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 0.1 ppm (a)
2. Downwind Reading (highest in 30 seconds): 0.5 ppm (b)

Calculate Background Value:

$\frac{(a) + (b)}{2}$ Background = 0.3 ppm

Performed By:

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO
MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1036346773
MONITORING DATE: 1-30-20 TIME: 0555

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
1.8 ppm	2.4 ppm	2.1 ppm

Background Value = 2.1 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	490 ppm	440 ppm	7
#2	500 ppm	450 ppm	7
#3	500 ppm	450 ppm	7
	Calculate Response Time (1+2+3) / 3		#DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.41 ppm	490 ppm	10
#2	0.27 ppm	500 ppm	0
#3	0.18 ppm	500 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1 / 500 X 100 / 1		0.66 #DIV/0! Must be less than 10%

Performed By: LEISSWADE Date/Time: 1-30-20 - 0555

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 11 SERIAL #: 1036396779

MONITORING DATE: 1-30-20 TIME: 0555

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
1.8 ppm	2.4 ppm	2.1 ppm

Background Value = 2.1 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	487 ppm	437 ppm	7
#2	498 ppm	448 ppm	7
#3	500 ppm	450 ppm	7
Calculate Response Time (1+2+3) / 3			7 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.36 ppm	487 ppm	13
#2	0.14 ppm	498 ppm	2
#3	0.08 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		1.0 #DIV/0! Must be less than 10%

Performed By: Anthony Parcella Date/Time: 1-30-20 -0555

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 1-30-20 TIME: 0555

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: $\frac{\text{(Upwind + Downwind)}}{2}$
1.8 ppm	2.4 ppm	2.1 ppm

Background Value = 2.1 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	504 ppm	454 ppm	6
#2	499 ppm	449 ppm	6
#3	500 ppm	450 ppm	6
Calculate Response Time $\frac{(1+2+3)}{3}$			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.31 ppm	504 ppm	4
#2	0.20 ppm	499 ppm	1
#3	0.15 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.33 #DIV/0! Must be less than 10%

Performed By: Aaron McBride Date/Time: 1-30-20-0555

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO
MODEL: TVA1000 EQUIPMENT #: 13 SERIAL #: 1102746775
MONITORING DATE: 1-30-20 TIME: 0550

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: $\frac{\text{(Upwind + Downwind)}}{2}$
1.8 ppm	2.4 ppm	2.1 ppm

Background Value = 2.1 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	499 ppm	449 ppm	5
#2	501 ppm	451 ppm	5
#3	500 ppm	450 ppm	5
Calculate Response Time $\frac{(1+2+3)}{3}$			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.47 ppm	499 ppm	6
#2	0.22 ppm	501 ppm	1
#3	0.11 ppm	500 ppm	0
Calculate Precision $\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$			0.46 #DIV/0! Must be less than 10%

Performed By: ERNEST ROMERO Date/Time: 1-30-20-0555

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 15 SERIAL #: 1036346772

MONITORING DATE: 1-30-20 TIME: 0555

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** $\frac{\text{(Upwind + Downwind)}}{2}$
1.8 ppm	2.4 ppm	2.1 ppm

Background Value = 2.1 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	495 ppm	445 ppm	6
#2	500 ppm	450 ppm	6
#3	500 ppm	450 ppm	6
Calculate Response Time $\frac{(1+2+3)}{3}$			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.26 ppm	495 ppm	5
#2	0.19 ppm	500 ppm	0
#3	0.14 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.33 #DIV/0! Must be less than 10%

Performed By: Nick Banks Date/Time: 1-30-20 -0555

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 1-29-20 TIME: 1300

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
1.8 ppm	2.4 ppm	2.1 ppm

Background Value = 2.1 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	7
#2	25 ppm	22.5 ppm	7
#3	25 ppm	22.5 ppm	7
Calculate Response Time (1+2+3) / 3			7 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.41 ppm	24 ppm	1
#2	0.26 ppm	25 ppm	0
#3	0.14 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		1.3 #DIV/0! Must be less than 10%

Performed By: LEIGH WARD Date/Time: 1-29-20 - 1300

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: tHermo

MODEL: tVA 1000 EQUIPMENT #: 11 SERIAL #: 1036346779

MONITORING DATE: 1-29-20 TIME: 1300

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
1.8 ppm	2.4 ppm	2.1 ppm

Background Value = 2.1 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	7
#2	25 ppm	22.5 ppm	7
#3	25 ppm	22.5 ppm	7
	Calculate Response Time $\frac{(1+2+3)}{3}$		7 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.45 ppm	23 ppm	2
#2	0.31 ppm	25 ppm	0
#3	0.13 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.6 #DIV/0! Must be less than 10%

Performed By: Anthony Peralta Date/Time: 1-29-20 -1300

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 1-29-20 TIME: 1300

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
1.8 ppm	2.4 ppm	2.1 ppm

Background Value = 2.1 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	6
#2	24 ppm	21.6 ppm	6
#3	25 ppm	22.5 ppm	6
Calculate Response Time (1+2+3) / 3			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.38 ppm	24 ppm	1
#2	0.22 ppm	24 ppm	1
#3	0.16 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1 / 25 X 100 / 1		2.6 #DIV/0! Must be less than 10%

Performed By: AARON MCBRIDE Date/Time: 1-29-20 - 1300

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 13 SERIAL #: 1162746775

MONITORING DATE: 1-29-20 TIME: 1300

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** $\frac{\text{(Upwind + Downwind)}}{2}$
1.8 ppm	2.4 ppm	2.1 ppm

Background Value = 2.1 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	5
#2	24 ppm	21.6 ppm	5
#3	25 ppm	22.5 ppm	5
	Calculate Response Time $\frac{(1+2+3)}{3}$		5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.51 ppm	23 ppm	2
#2	0.26 ppm	24 ppm	1
#3	0.11 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		4.0 #DIV/0! Must be less than 10%

Performed By: ERNEST RAMIREZ Date/Time: 1-29-20 - 1300

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO
MODEL: TVA 1000 EQUIPMENT #: 15 SERIAL #: 1636346772
MONITORING DATE: 1-29-20 TIME: 1300

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
1.8 ppm	2.4 ppm	2.1 ppm

Background Value = 2.1 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	5
#2	25 ppm	22.5 ppm	5
#3	25 ppm	22.5 ppm	5
Calculate Response Time (1+2+3) / 3			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.18 ppm	24 ppm	1
#2	0.14 ppm	25 ppm	0
#3	0.06 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		.1.3 #DIV/0! Must be less than 10%

Performed By: Nick Banks Date/Time: 1-29-20 -1300

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: tHermo

MODEL: tVA1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 1-30-20 TIME: 1620

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: $\frac{(\text{Upwind + Downwind})}{2}$
1.8 ppm	2.4 ppm	2.1 ppm

Background Value = 2.1 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	7
#2	25 ppm	22.5 ppm	7
#3	25 ppm	22.5 ppm	7
Calculate Response Time	$\frac{(1+2+3)}{3}$		7 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.45 ppm	24 ppm	1
#2	0.21 ppm	25 ppm	0
#3	0.16 ppm	25 ppm	0
Calculate Precision	$\frac{[\text{STD-B1}] + [\text{STD-B2}] + [\text{STD-B3}]}{3} \times \frac{1}{25} \times \frac{100}{1}$		1.3 #DIV/0! Must be less than 10%

Performed By: LEIGH WADE Date/Time: 1-30-20-1620

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 11 SERIAL #: 1036346779

MONITORING DATE: 1-30-20 TIME: 1620

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: $\frac{(\text{Upwind + Downwind})}{2}$
1.8 ppm	2.4 ppm	2.1 ppm

Background Value = 2.1 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	6
#2	25 ppm	22.5 ppm	6
#3	25 ppm	22.5 ppm	6
	Calculate Response Time $\frac{(1+2+3)}{3}$		6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.56 ppm	23 ppm	2
#2	0.18 ppm	25 ppm	0
#3	0.72 ppm	25 ppm	0
Calculate Precision	$\frac{[\text{STD-B1}] + [\text{STD-B2}] + [\text{STD-B3}]}{3} \times \frac{1}{25} \times \frac{100}{1}$		. 2.6 #DIV/0! Must be less than 10%

Performed By: ANthony pereCtA Date/Time: 1-30-20-1620

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 1-30-20 TIME: 1620

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** (Upwind + Downwind) / 2
1.8 ppm	2.4 ppm	2.1 ppm

Background Value = 2.1 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	**Stabilized Reading Using Calibration Gas**	**90% of the Stabilized Reading**	**Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas**
#1	24 ppm	21.6 ppm	7
#2	24 ppm	21.6 ppm	7
#3	25 ppm	22.5 ppm	7
	Calculate Response Time $\frac{(1+2+3)}{3}$		7 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	**Meter Reading for Zero Air (A)**	**Meter Reading for Calibration Gas (B)**	**Calculate Precision [STD – (B)]**
#1	0.31 ppm	24 ppm	1
#2	0.18 ppm	24 ppm	1
#3	0.10 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		2.6 #DIV/0! Must be less than 10%

Performed By: AARON MCBIDE Date/Time: 1-30-20 -1620

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: Hicnao

MODEL: TVA1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 1-30-20 TIME: 1620

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** (Upwind + Downwind) / 2
1.8 ppm	2.4 ppm	2.1 ppm

Background Value = 2.1 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	**Stabilized Reading Using Calibration Gas**	**90% of the Stabilized Reading**	**Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas**
#1	23 ppm	20.7 ppm	5
#2	24 ppm	21.6 ppm	5
#3	25 ppm	22.5 ppm	5
	Calculate Response Time (1+2+3) / 3		5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	**Meter Reading for Zero Air (A)**	**Meter Reading for Calibration Gas (B)**	**Calculate Precision [STD – (B)]**
#1	0.25 ppm	23 ppm	2
#2	0.17 ppm	24 ppm	1
#3	0.14 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		4.0 #DIV/0! Must be less than 10%

Performed By: ERNEST RAMIRE Date/Time: 1-30-20-1620

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 15 SERIAL #: 1036346772

MONITORING DATE: 1-30-20 TIME: 1620

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
1.8 ppm	2.4 ppm	2.1 ppm

Background Value = 2.1 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	5
#2	25 ppm	22.5 ppm	5
#3	25 ppm	22.5 ppm	5
	Calculate Response Time $\frac{(1+2+3)}{3}$		5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.44 ppm	24 ppm	1
#2	0.21 ppm	25 ppm	0
#3	0.13 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		.1.3 #DIV/0! Must be less than 10%

Performed By: Nick Banks Date/Time: 1-30-20-1620

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1636346773

MONITORING DATE: 1-31-20 TIME: 0545

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** $\frac{\text{(Upwind + Downwind)}}{2}$
1.8 ppm	2.4 ppm	2.1 ppm

Background Value = 2.1 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	23 ppm	20.7 ppm	7
#2	24 ppm	21.6 ppm	7
#3	25 ppm	22.5 ppm	7
Calculate Response Time $\frac{(1+2+3)}{3}$			7 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.33 ppm	23 ppm	2
#2	0.21 ppm	24 ppm	1
#3	0.18 ppm	25 ppm	0
Calculate Precision	$\frac{\text{[STD-B1] + [STD-B2] + [STD-B3]}}{3} \times \frac{1}{25} \times \frac{100}{1}$		. 4.0 #DIV/0! Must be less than 10%

Performed By: Date/Time: 1-31-20 - 0545

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 11 SERIAL #: 1036341774

MONITORING DATE: 1-31-20 TIME: 0545

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** (Upwind + Downwind) / 2
1.8 ppm	2.4 ppm	2.1 ppm

Background Value = 2.1 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	7
#2	24 ppm	21.6 ppm	7
#3	25 ppm	22.5 ppm	7
Calculate Response Time $\frac{(1+2+3)}{3}$			7 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.47 ppm	24 ppm	1
#2	0.30 ppm	24 ppm	1
#3	0.17 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		.2.6 #DIV/0! Must be less than 10%

Performed By: Anthony Peneda Date/Time: 1-31-20 - 0545

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 12 SERIAL #: 103624674

MONITORING DATE: 1-31-20 TIME: 0545

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
1.8 ppm	2.4 ppm	2.1 ppm

Background Value = 2.1 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	6
#2	25 ppm	22.5 ppm	6
#3	25 ppm	22.5 ppm	6
Calculate Response Time	(1+2+3) / 3		6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.45 ppm	24 ppm	1
#2	0.26 ppm	25 ppm	0
#3	0.14 ppm	25 ppm	6
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		1.3 #DIV/0! Must be less than 10%

Performed By: AARON MCBRIDE Date/Time: 1-31-20 -0545

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 13 SERIAL #: 1102346775

MONITORING DATE: 1-31-20 TIME: 0545

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** (Upwind + Downwind) / 2
1.8 ppm	2.4 ppm	2,1 ppm

Background Value = 2,1 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	**Stabilized Reading Using Calibration Gas**	**90% of the Stabilized Reading**	**Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas**
#1	23 ppm	20.7 ppm	5
#2	25 ppm	22.5 ppm	5
#3	25 ppm	22.5 ppm	5
	Calculate Response Time (1+2+3) / 3		5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 **ppm**

Measurement #	**Meter Reading for Zero Air (A)**	**Meter Reading for Calibration Gas (B)**	**Calculate Precision [STD – (B)]**
#1	0.26 ppm	23 ppm	2
#2	0.12 ppm	25 ppm	0
#3	0.08 ppm	25 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{25} \times \frac{100}{1}$		. 2.6 #DIV/0! Must be less than 10%

Performed By: ERNEST RAMIREZ Date/Time: 1-31-20-0545

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 15 SERIAL #: 1036346772

MONITORING DATE: 1-31-20 TIME: 0545

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 25 ppm
3. Adjust meter settings to read 25 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
1.8 ppm	2.4 ppm	2.1 ppm

Background Value = 2.1 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	24 ppm	21.6 ppm	6
#2	25 ppm	21.6 ppm	6
#3	25 ppm	22.5 ppm	6
Calculate Response Time (1+2+3) / 3			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 25 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.41 ppm	24 ppm	1
#2	0.67 ppm	25 ppm	0
#3	0-14 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		. 1.3 #DIV/0! Must be less than 10%

Performed By: NICK BANKS Date/Time: 1-31-20- 0545

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SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 1-3-20 **Time:** 0630

Model # TVA 1000 B

Serial # #10 1036346773

INSTRUMENT INTEGRITY CHECKLIST

Battery test [✓ Pass] / Fail

Reading following ignition 2.3 ppm

Leak test [✓ Pass] / Fail / NA

Clean system check (check valve chatter) [✓ Pass] / Fail / NA

H_2 supply pressure gauge (acceptable range 9.5 - 12) [✓ Pass] / Fail / NA

Date of last factory calibration 1-3-20

Factory calibration record w/instrument within 3 months [✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 6
2. 8
3. 9

Average 7.6

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 1-3-20 **Time:** 0615

Model # TVA 1000 B

Serial # #11 1036346774

INSTRUMENT INTEGRITY CHECKLIST	
Battery test	[✓ Pass] / Fail
Reading following ignition	2.2 ppm
Leak test	[✓ Pass] / Fail / NA
Clean system check (check valve chatter)	[✓ Pass] / Fail / NA
H_2 supply pressure gauge (acceptable range 9.5 - 12)	[✓ Pass] / Fail / NA
Date of last factory calibration	1-3-20
Factory calibration record w/instrument within 3 months	[✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500
90% of Calibration Gas, ppm 450
Time required to attain 90% of Cal Gas ppm
1. 9
2. 9
3. 9
Average 9.0
Equal to or less than 30 seconds? [✓ Y] N
Instrument calibrated to CH_4 gas.

Comments:

465

P.O. Box 748 • Colton, California 92324 •
(909) 422-1001 Toll Free (888) 325-1098 Fax (909) 422-0707 www.resenvironmental.com

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SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 1-3-20 **Time:** 0600

Model # TVA 1000B

Serial # #12 1036246741

INSTRUMENT INTEGRITY CHECKLIST

Battery test [✓ Pass] / Fail

Reading following ignition 2.3 ppm

Leak test [✓ Pass] / Fail / NA

Clean system check (check valve chatter) [✓ Pass] / Fail / NA

H_2 supply pressure gauge (acceptable range 9.5 - 12) [✓ Pass] / Fail / NA

Date of last factory calibration 1-3-20

Factory calibration record w/instrument within 3 months [✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 6
2. 7
3. 7

Average 6.6

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH_4 gas.

Comments:

RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 1-3-20 Time: 0545

Model # TVA 1000 B

Serial # #13 1102746775

INSTRUMENT INTEGRITY CHECKLIST

Battery test [✓ Pass] / Fail

Reading following ignition 1.9 ppm

Leak test [✓ Pass] / Fail / NA

Clean system check (check valve chatter) [✓ Pass] / Fail / NA

H_2 supply pressure gauge (acceptable range 9.5 - 12) [✓ Pass] / Fail / NA

Date of last factory calibration 1-3-20

Factory calibration record w/instrument within 3 months [✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 6
2. 6
3. 7

Average 6.3

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 1-3-20 Time: 0515

Model # TVA 1000 B

Serial # #15 1036346772

INSTRUMENT INTEGRITY CHECKLIST	
Battery test	[✓ Pass] / Fail
Reading following ignition	2.3 ppm
Leak test	[✓ Pass] / Fail / NA
Clean system check (check valve chatter)	[✓ Pass] / Fail / NA
H_2 supply pressure gauge (acceptable range 9.5 - 12)	[✓ Pass] / Fail / NA
Date of last factory calibration	1-3-20
Factory calibration record w/instrument within 3 months	[✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500
90% of Calibration Gas, ppm 450
Time required to attain 90% of Cal Gas ppm
1. 7
2. 7
3. 6
Average 6.6
Equal to or less than 30 seconds? [✓ Y] N
Instrument calibrated to CH4 gas.

Comments:

RES
Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #10

SERIAL NUMBER: 1036346773

TECHNICIAN:

DATE: 1-3-20

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	500	+/- 125
10000	10000	10,001	+/- 2500
< 1	ZERO GAS	0.53	< 3

PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #11

SERIAL NUMBER: 1036346774

TECHNICIAN:

DATE: 1-3-20

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID			
METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	99	+/- 25
500	500	500	+/- 125
10000	10000	10,021	+/- 2500
< 1	ZERO GAS	0.56	< 3

PID			
ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit #12

SERIAL NUMBER: 1036246741

TECHNICIAN:

DATE: 1-3-20

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID

METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	499	+/- 125
10000	10000	10,001	+/- 2500
< 1	ZERO GAS	0.57	< 3

PID

ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS.(ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

RES Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES Unit # 13

SERIAL NUMBER: 1102746775

TECHNICIAN:

DATE: 1-320

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID

METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	500	+/- 125
10000	10000	10,000	+/- 2500
< 1	ZERO GAS	0.67	< 3

PID

ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

RES
Environmental Inc.

TVA1000B CALIBRATION VERIFICATION

CUSTOMER: RES UNIT #15

SERIAL NUMBER: 1036346772

TECHNICIAN:

DATE: 1-3-20

GAS CALIBRATION CHECK (PERFORMED AT ROOM TEMPERATURE)

FID

METHANE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
100	100	100	+/- 25
500	500	500	+/- 125
10000	10000	10,000	+/- 2500
< 1	ZERO GAS	0.73	< 3

PID

ISOBUTYLENE GAS NOMINAL (ppm)	CALIBRATION GAS (ppm)	TVA READING (ppm)	TOLERANCE (ppm)
50	50		+/- 12.5
100	100		+/- 25
500	500		+/- 125
< 1	ZERO GAS		< 3

All measurement standards are calibrated at scheduled intervals by the National Institute of Standards and Technology (NIST), or against certified standards, which are traceable to the National Institute of Standards and Technology.

INTERMOUNTAIN SPECIALTY GASES

520 N. Kings Road • Nampa • Idaho • 83687
800-552-5003 • www.isgases.com

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Air - Zero		
THC	< 2 PPM	
Oxygen	20.9%	± 2%
Nitrogen	Balance	

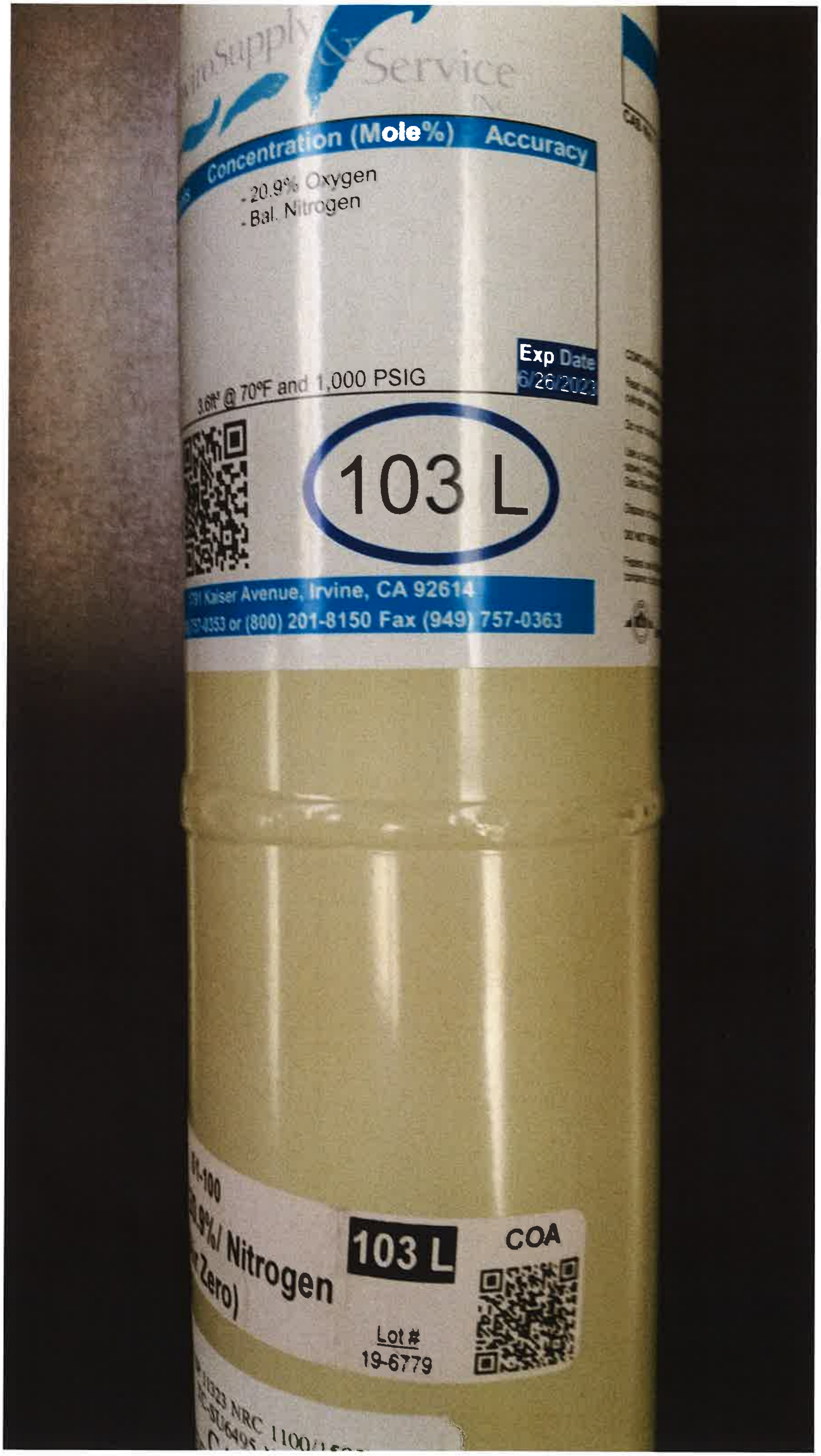
Lot # 19-6779

Mfg. Date:	4/3/2019
Parent Cylinder ID Number:	001739, 02268

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
This mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 4/3/2019



Supply
Service
INC
Concentration (Mole%)
Accuracy
- 20.9% Oxygen
- Bal. Nitrogen
Exp Date
6/26/202
3.6ft³ @ 70°F and 1,000 PSIG
103 L
Kaiser Avenue, Irvine, CA 92614
or (800) 201-8150 Fax (949) 757-0363
-100
% / Nitrogen
Zero)
103 L
COA
Lot #
19-6779
31323 NRC
1100/

INTERMOUNTAIN SPECIALTY GASES

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CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Methane	25 ppm	± 5%
Air	Balance	

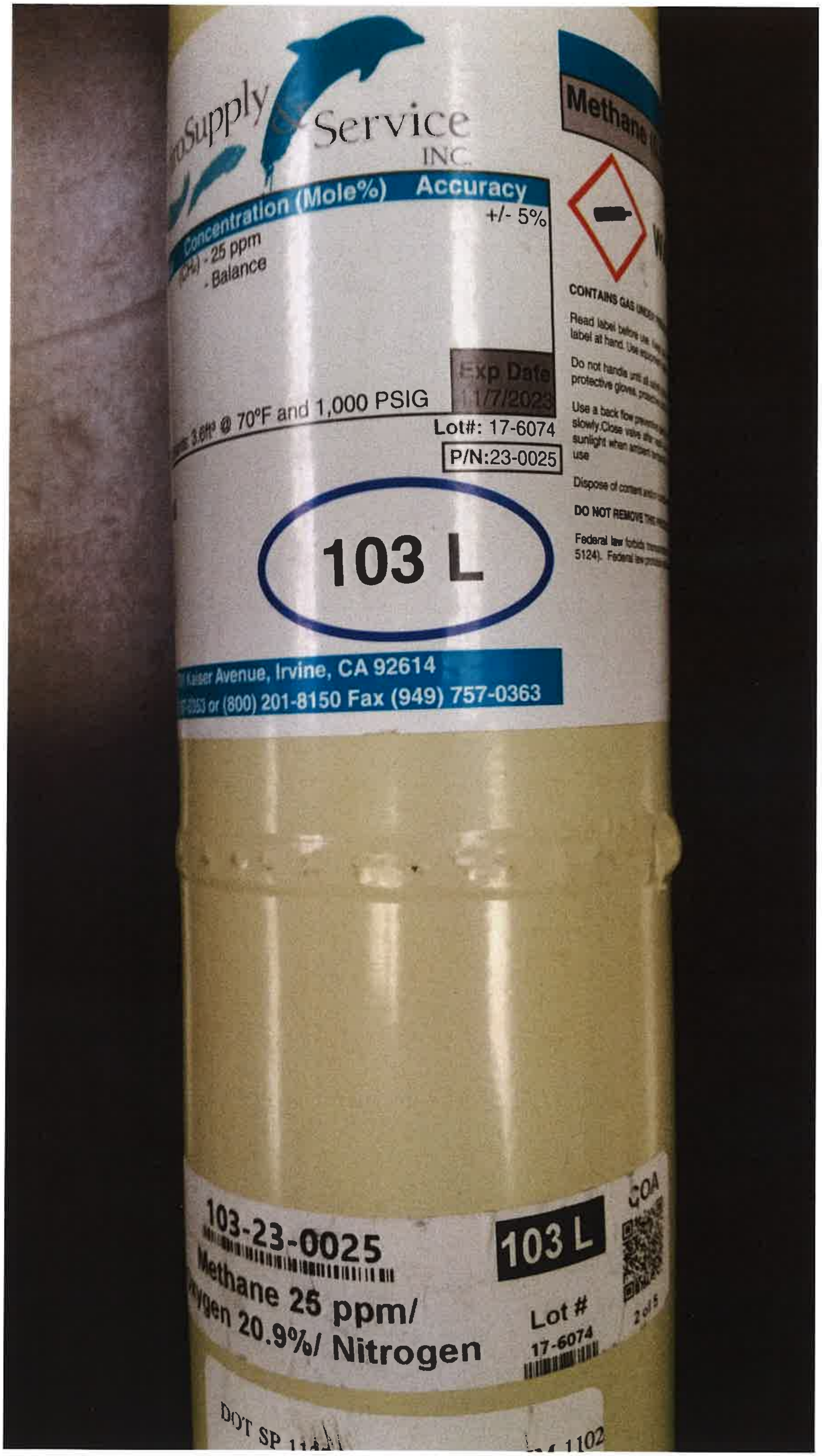
Lot # 17-6074

Mfg. Date:	10/16/2017
Parent Cylinder ID Number:	17161

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 10/16/2017



roSupply & Service
INC.
Concentration (Mole%)
Accuracy
(CH₄) - 25 ppm
- Balance
+/- 5%
Exp Date
11/7/2023
3.6ft³ @ 70°F and 1,000 PSIG
Lot#: 17-6074
P/N:23-0025
103 L
Kaiser Avenue, Irvine, CA 92614
or (800) 201-8150 Fax (949) 757-0363
Methane
CONTAINS GAS
Read label before use.
label at hand.
Do not handle until
protective gloves,
Use a back flow
slowly.Close valve
sunlight when
use
Dispose of content
DO NOT REMOVE THIS
Federal law forbids
5124). Federal law
103-23-0025
Methane 25 ppm/
Oxygen 20.9%/ Nitrogen
103 L
Lot #
17-6074
COA
2 of 5
DOT SP 11
1102

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CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Methane	500 ppm	± 2%
Air	Balance	

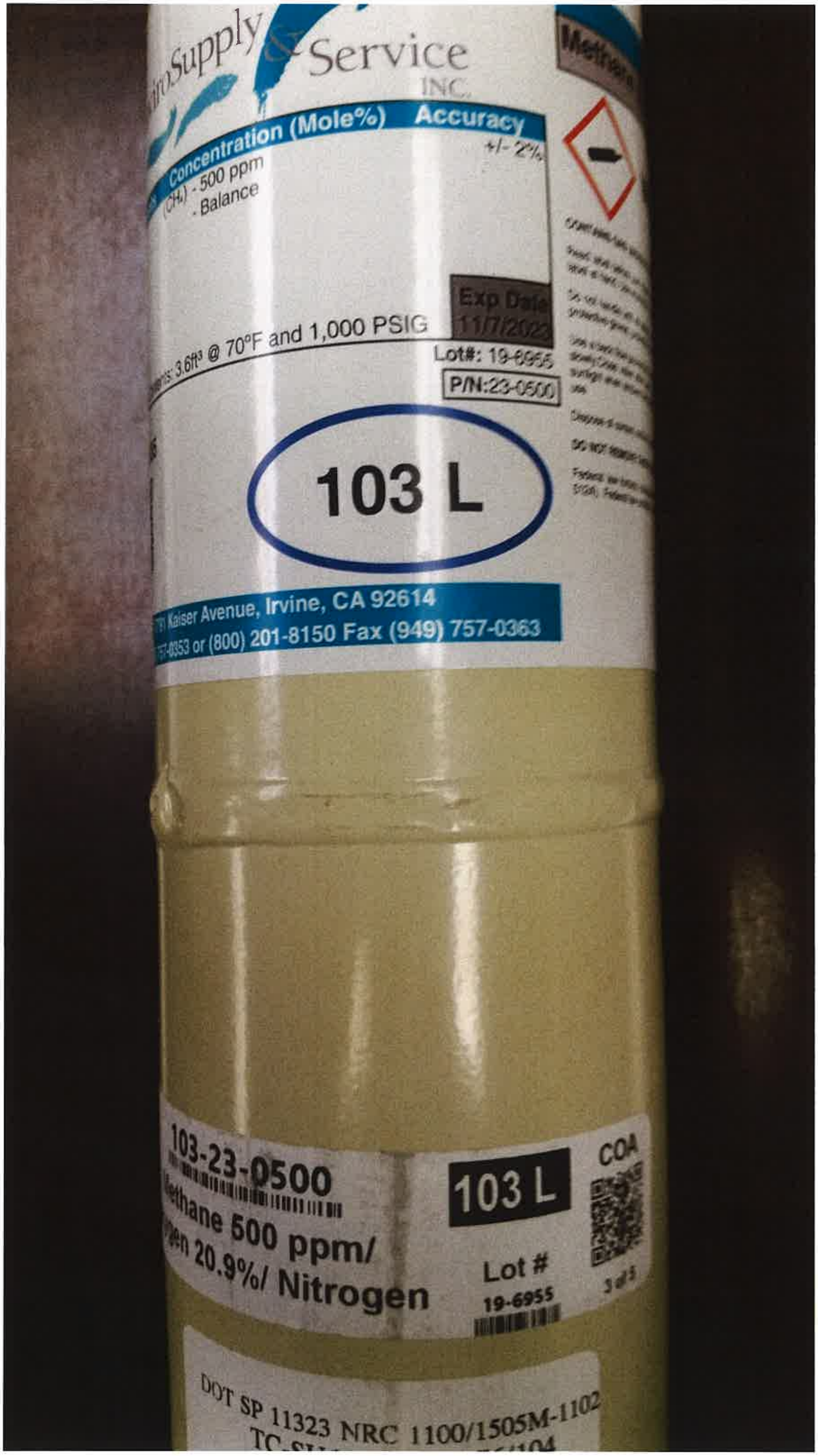
Lot # 19-6955

Mfg. Date:	7/24/2019
Parent Cylinder ID Number:	001763

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 7/24/2019


Supply & Service INC.
Concentration (Mole%)
Accuracy
+/- 2%
(CH4) - 500 ppm
- Balance
Exp Date 11/7/2022
3.6ft³ @ 70°F and 1,000 PSIG
Lot#: 19-6955
P/N:23-0500
103 L
Kaiser Avenue, Irvine, CA 92614
0353 or (800) 201-8150 Fax (949) 757-0363
Methane
103-23-0500
ethane 500 ppm/
gen 20.9%/ Nitrogen
103 L
COA
Lot #
19-6955
3 of 5
DOT SP 11323 NRC 1100/1505M-1102

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2100 MERIDIAN PARK BLVD
Concord, CA 94520
TO REORDER CALL 1 (888) 234-5678

AIR, ULTRA ZERO
THC <0.1 PPM

Analytical Accuracy +/- 2%

103L @ 70F & 1000 PSIG
Lot# TX17983
P/N AIR-ZER-103L

EXP: 10/11/2020

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Concord, CA 94520
TO REORDER CALL 1 (888) 234-5678

METHANE 500ppm
AIR BALANCE

Analytical Accuracy +/- 2%

103L @ 70F & 1000 PSIG
Lot# K024306
P/N MET-500-103L

EXP: 6/19/2020

WASTE MANAGEMENT
172 98th Avenue
Oakland, CA 94603
(510) 430-8509

April 1, 2020

Ms. Alisha McCutcheon
Redwood Landfill, Inc.
8590 Redwood Highway
Novato, California 94948

Re: March 2020 Surface Emissions Monitoring Report for Redwood Landfill, Inc.

Dear Ms. McCutcheon:

This monitoring report for "**Redwood Landfill, Inc. (RLI)**" contains the results of the March 2020 Surface Emissions Monitoring (SEM). Initial surface emissions monitoring was performed by Roberts Environmental Services, LLC. (RES).

APPLICABLE REQUIREMENTS

The monitoring discussed in this report was conducted in accordance with the following requirements:

Surface Emission Monitoring (SEM)

- New Source Performance Standard (NSPS), Title 40 of the Code of Federal Regulations (CFR) §60.755 (c) and (d), 40 CFR 60, Appendix A Method 21, promulgated by the United States Environmental Protection Agency (USEPA).
- Bay Area Air Quality Management District (BAAQMD) Regulation 8, Rule 34, Section 303 (Landfill Surface Requirements) and Section 607 (Landfill Surface Inspection procedures).

PROCEDURES

General

Per NSPS and 8-34 rules, the entire surface of the landfill was monitored following a serpentine path with a 100' spacing. Active portions of the Landfill, slope areas, and as requested in the approved ACO, areas containing only asbestos-containing waste, inert waste and/or non-decomposable waste which are excluded for safety as allowed by the NSPS and 8-34.

Field personnel walked the surface of the landfill using the gridlines normally used for monitoring required by AB32 (see Attachment A map). These grids typically have dimensions of 500' x 100'. A consistent 100' spacing was achieved by walking on the 500' long borderline shared by two grids. Additionally, in accordance with the provisions of 40 CFR 60.753(d) and

60.755(c)(1-3), the entire perimeter of the landfill surface was monitored. During the event, special attention was given to monitoring unusual cover conditions (stressed vegetation, cracks, seeps, etc.) and any areas with unusual odors.

Instantaneous Surface Emissions Monitoring

The Instantaneous SEM was conducted using a Toxic Vapor Analyzer (TVA) 1000 flame ionization detector (FID), which was calibrated to 500 parts per million by volume (ppm_v) methane, which meets or exceeds all guidelines set forth in the NSPS and 8-34. The FID was calibrated prior to use in accordance with the United States Environmental Protection Agency (USEPA) Method 21 requirements.

RES personnel walked the surface of the landfill with the wand tip held at 2 inches from the landfill surface. While sampling the grid; the technicians also checked any surface impoundments (wells or otherwise) for leaks. Technicians also checked any surface cracks, seeps, or other areas that show evidence of surface emissions (odors or distressed vegetation). Active and sloped areas excluded for safety were documented on the map included in Attachment A.

All instantaneous surface monitoring was performed in accordance with the applicable requirements referenced in this report. Any detections of methane above 500 ppm_v (exceedances) for instantaneous were recorded, flagged, and marked on an SEM Map, which, wherever required, is included in the Appendices of this report. Applicable corrective action and re-monitoring timelines are listed below:

- Corrective actions must be initiated within 5 days of the initial exceedance and re-monitoring shall be conducted within 10 days of the initial exceedance.
    - If the re-monitoring event shows the exceedance is corrected, the location shall be re-monitored within 1 month of the initial exceedance.
    - If the 1-month re-monitoring event shows the location is still corrected, all re-monitoring requirements have been completed.
- If either the first 10-day or 1-month re-monitoring events show a second exceedance, additional corrective actions shall be completed and a second re-monitoring event shall be conducted within 10 days of the second exceedance.
- If the second 10-day re-monitoring event shows the second exceedance is corrected, the location shall be re-monitored within 1 month of the initial exceedance. If the 1-month re-monitoring event shows the area is still corrected, monitoring requirements have been completed.

If any location shows three exceedances, an additional well shall be installed within 120 days of the initial exceedance.

MARCH 2020 SEM RESULTS

The Instantaneous surface monitoring was performed on March 11 and 12, 2020 in accordance with the NSPS and BAAQMD 8-34. Results and data from the monitoring are presented in Attachment A.

Initial Monitoring Event Exceedances of 500 ppm$_v$

There were no exceedances of 500 ppm$_v$ as methane detected on March 11 and 12, 2020. No re-monitoring was required.

WEATHER CONDITIONS

Wind Speed Conductions during the Surface Emission Monitoring Events

Wind speeds during initial monitoring were monitored using a portable weather station. The station has a strip chart that records the wind speed and direction. The chart data is scanned and included in Attachment B.

EQUIPMENT CALIBRATION

The portable analyzers were calibrated to meet the instrument specifications requirements of U.S. EPA Method 21. The calibration gas used was methane, diluted to a nominal concentration of 25 ppm$_v$ in air for integrated sample analyses and 500 ppm$_v$ in air for instantaneous monitoring to comply with the requirements.

All analyzers were calibrated prior to use with required response time and precision related instrument checks. Calibration records include the following: Response time test record; Response factor determination for methane; Calibration Precision test records; and Daily Instrument Calibration and Background test records for each gas meter that was used during the monitoring event. The calibration log records are included in Attachment C.

All monitoring was completed in accordance with the applicable regulatory requirements or approved alternatives. If you have any questions regarding this report, please do not hesitate to contact me at (510) 613-2852.

Thank you,
Waste Management

Michael Chan
Environmental Protection Specialist

Attachment A – Instantaneous Surface Emission Monitoring Event Records

- SEM Map
- Monitoring Logs and Exceedances

Attachment B – Weather Station Data

- Strip Chart Data

Attachment C – Calibration Records

- Instrument and Gas Calibration Records

Attachment A

Surface Emission Monitoring Event Records

LEGEND

— — —	EXISTING 10' CONTOUR
——12"——	EXISTING LFG HEADER-ABOVE GROUND
— · — · —	EXISTING HORIZONTAL COLLECTOR
	EXISTING FORCE MAIN AND AIR LINE
⊕ EW-	EXISTING HORIZONTAL COLLECTOR WELLHEAD
⊠	EXISTING HORIZONTAL COLLECTOR TERMINAL HEAD
⋈	EXISTING CONTROL VALVE
⊣‖	EXISTING BLIND FLANGE
⊣‖⊢	EXISTING FLANGE CONNECTION
⊣▷⊢	EXISTING REDUCER FITTING
◆ CS-	EXISTING CONDENSATE PUMP STATION
▨	EXISTING ROAD CROSSING
┼	EXISTING HEADER HIGH POINT
—]	EXISTING CAP ON EXISTING PIPE
◇ CS-	EXISTING LEACHATE SUMP

NSPS

No Exceedances 3-11-20
3-12-20

🟦 = UPWIND

🟥 = DOWNWIND

NOTES:

1. EXISTING TOPOGRAPHY BASED ON AERIAL SURVEY BY MILLER CREEK AERIAL MAPPING DATED FEBRUARY 19, 2014. FEATURES, CONTOURS, AND ELEVATIONS OF THIS BASE MAP ARE APPROXIMATE INDICATIONS OF CURRENT AND FUTURE CONDITIONS.
2. EXISTING GCCS COMPONENTS (INSTALLED PRIOR TO THE 2015 GCCS IMPROVEMENTS) ARE PER THE LOCATIONS ESTABLISHED AT THE END OF THE 2014 IMPROVMENTS BY OTHERS.
3. ALL 2014 GCCS COMPONENTS INSTALLED AS PART OF THE 2014 GCCS IMPROVEMENTS ARE SHOWN IN THEIR APPROXIMATE LOCATIONS.
4. SURVEY DATA BASED ON FIELD SURVEY PERFORMED ON OCTOBER 29, 2015, BY F3 & ASSOCIATES, INC.

N

GRAPHIC SCALE
200 100 0 200 400 600
SCALE: 1"=200'

F3 & Associates, Inc.
LAND SURVEYING - 3D INDUSTRIAL LASER SCANNING
701 E. H ST. BENICIA, CA 94510
PHONE(707)748-4300 FAX(707)361-0295
www.F3-Inc.com

REDWOOD LANDFILL
AS-BUILT GCCS PLAN
2015 GCCS IMPROVEMENTS

MARIN COUNTY
CALIFORNIA

NOVATO

DESIGN BY:	N/A
DRAWN BY:	STAFF
DATE:	NOV 2015
SCALE:	1"=200'
PAGE	1
OF	1
JOB NUMBER:	15341

Instantaneous Landfill Surface Emissions Monitoring
Exceedance and Monitoring Logs (NSPS/BAAQMD 8-34)

2020 Month: March
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY:
LANDFILL NAME: Redwood Landfill, Inc.

Initial Monitoring Event			**Corrective Action**		**1st 10-day Follow-Up**			**1st 30-day Follow-Up**			**Comments**
Flag Number	Monitoring Date	Reading ppm	Repair Date	Action Taken	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	Monitoring Date	No Exced. <500 ppm	Exced. >500 ppm	
No Exceedances											

Orange Flag Landfill Surface Emissions Monitoring
Exceedances and Monitoring Log

Site: REDWOOD

Quarter / Year: 1st WSPS
Technician: LE3LWAOE
Instrument: TVA1000
Calibration Standard: 500ppm

Page of Pages

Initial Monitoring Event				First Re-Monitoring Event - 10 Days			Second Re-Monitoring Event - 10 Days			30-Day Follow-up Monitoring			Comments
Flag Number	Grid Number	Field Reading (ppm)	Date Monitored	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	Date Monitored	No Excd. <500 ppm	Excd. >500 ppm	
O-													
O-													NO EXCEEDENCES
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Attachment B

Weather Station Data

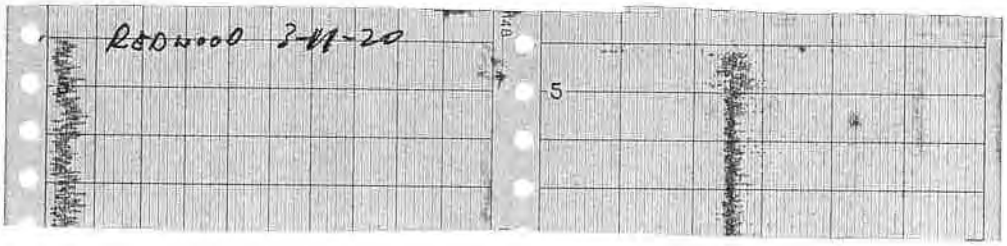
RES
Environmental Inc.

16-POINT WIND DIRECTION INDEX

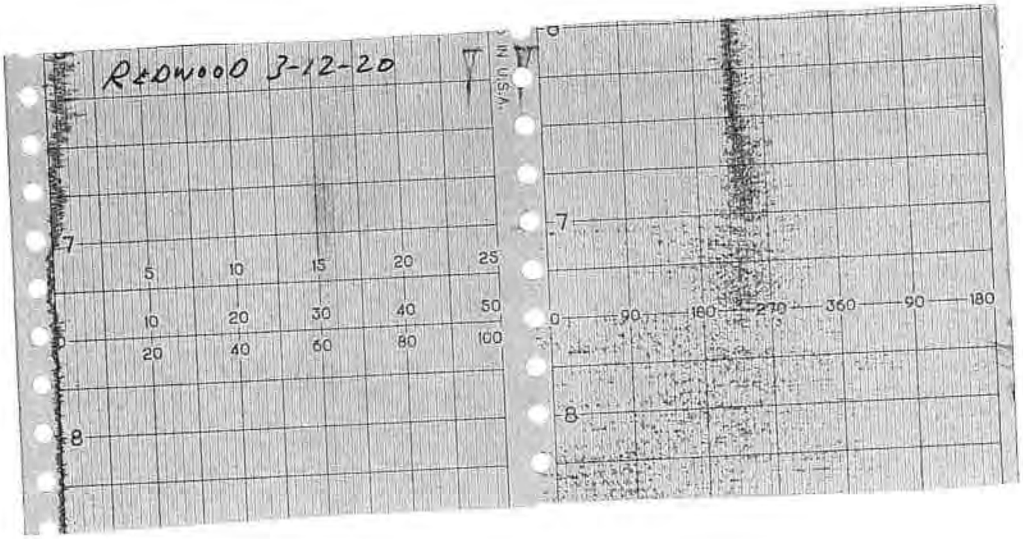
NO	DIRECTION	DEGREES		
		FROM	CENTER	TO
16	NORTH (N)	348.8	360.0	011.3
1	NORTH-NORTHEAST (NNE)	011.3	022.5	033.8
2	NORTHEAST (NE)	033.8	045.0	056.3
3	EAST-NORTHEAST (ENE)	056.3	067.5	078.8
4	EAST (E)	078.8	090.0	101.3
5	EAST-SOUTHEAST (ESE)	101.3	112.5	123.8
6	SOUTHEAST (SE)	123.8	135.0	146.3
7	SOUTH-SOUTHEAST (SSE)	146.3	157.5	168.8
8	SOUTH (S)	168.8	180.0	191.3
9	SOUTH-SOUTHWEST (SSW)	191.3	202.5	213.8
10	SOUTHWEST (SW)	213.8	225.0	236.3
11	WEST-SOUTHWEST (WSW)	236.3	247.5	258.8
12	WEST (W)	258.8	270.0	281.3
13	WEST-NORTHWEST (WNW)	281.3	292.5	303.8
14	NORTHWEST (NW)	303.8	315.0	326.3
15	NORTH-NORTHWEST (NNW)	326.3	337.5	348.8

865 Via Lata ▪ Colton, California 92324 ▪ (909) 422-1001 Fax (909) 422-0707

WIND SPEED & DIRECTION CHART ROLL



WIND SPEED & DIRECTION CHART ROLL



Attachment C

Calibration Records

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 3-11-20 TIME: 1640

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** $\frac{\text{(Upwind + Downwind)}}{2}$
1.8 ppm	2.6 ppm	2.2 ppm

Background Value = 2.2 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	498 ppm	448 ppm	6
#2	500 ppm	450 ppm	6
#3	500 ppm	450 ppm	6
	Calculate Response Time $\frac{(1+2+3)}{3}$		6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.31 ppm	498 ppm	2
#2	0.25 ppm	500 ppm	0
#3	0.18 ppm	500 ppm	0
Calculate Precision	$\frac{\text{[STD-B1] + [STD-B2] + [STD-B3]}}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.13 #DIV/0! Must be less than 10%

Performed By: LEIGHWADE Date/Time: 3-11-20-1640

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 11 SERIAL #: 1036346774

MONITORING DATE: 3-11-20 TIME: 1640

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** (Upwind + Downwind) / 2
1.8 ppm	2.6 ppm	2.2 ppm

Background Value = 2.2 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	506 ppm	456 ppm	7
#2	498 ppm	448 ppm	7
#3	500 ppm	450 ppm	7
	Calculate Response Time (1+2+3) / 3		7 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.19 ppm	506 ppm	6
#2	0.11 ppm	498 ppm	2
#3	0.06 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.53 #DIV/0! Must be less than 10%

Performed By: ANTHONY PERILLA Date/Time: 3-11-20 - 1640

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 3-11-20 TIME: 1640

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** (Upwind + Downwind) / 2
1.8 ppm	2.6 ppm	2.2 ppm

Background Value = 2.2 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	502 ppm	452 ppm	6
#2	495 ppm	445 ppm	6
#3	500 ppm	450 ppm	6
Calculate Response Time (1+2+3) / 3			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.24 ppm	502 ppm	2
#2	0.13 ppm	495 ppm	5
#3	0.10 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.46 #DIV/0! Must be less than 10%

Performed By: AARON MCBRIDE Date/Time: 3-11-20- 1640

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 3-11-20 TIME: 1640

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: (Upwind + Downwind) / 2
1.8 ppm	2.6 ppm	2.2 ppm

Background Value = 2.2 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	490 ppm	440 ppm	6
#2	502 ppm	452 ppm	6
#3	500 ppm	450 ppm	6
Calculate Response Time (1+2+3) / 3			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.16 ppm	490 ppm	10
#2	0.08 ppm	502 ppm	2
#3	0.05 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.60 #DIV/0! Must be less than 10%

Performed By: Nick Banks Date/Time: 3-11-20- 1640

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 3-12-20 TIME: 0530

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: $\frac{\text{(Upwind + Downwind)}}{2}$
1.8 ppm	2.6 ppm	2.2 ppm

Background Value = 2.2 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	506 ppm	456 ppm	6
#2	500 ppm	450 ppm	6
#3	500 ppm	450 ppm	6
Calculate Response Time $\frac{(1+2+3)}{3}$			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.27 ppm	506 ppm	6
#2	0.20 ppm	500 ppm	0
#3	0.17 ppm	500 ppm	0
Calculate Precision	$\frac{\text{[STD-B1] + [STD-B2] + [STD-B3]}}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.40 #DIV/0! Must be less than 10%

Performed By: LEIGH WADE Date/Time: 3-12-20 - 0530

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 11 SERIAL #: 1036346774

MONITORING DATE: 3-12-20 TIME: 0530

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	Downwind Background Reading: (Highest in 30 seconds)	Background Value: $\frac{\text{(Upwind + Downwind)}}{2}$
1.8 ppm	2.6 ppm	2.2 ppm

Background Value = 2.2 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	495 ppm	445 ppm	5
#2	501 ppm	451 ppm	5
#3	500 ppm	450 ppm	5
Calculate Response Time $\frac{(1+2+3)}{3}$			5 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.32 ppm	495 ppm	5
#2	0.24 ppm	501 ppm	1
#3	0.17 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.40 #DIV/0! Must be less than 10%

Performed By: Anthony Peralta Date/Time: 3-12-20 0530

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO
MODEL: TVA 1000 EQUIPMENT #: 12 SERIAL #: 1036246741
MONITORING DATE: 3-12-20 TIME: 0530

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest In 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** (Upwind + Downwind) / 2
1.8 ppm	2.6 ppm	2.2 ppm

Background Value = 2.2 **ppm**

INSTRUMENT RESPONSE TIME RECORD

Measurement #	**Stabilized Reading Using Calibration Gas**	**90% of the Stabilized Reading**	**Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas**
#1	489 ppm	439 ppm	7
#2	500 ppm	450 ppm	7
#3	500 ppm	450 ppm	7
	Calculate Response Time $\frac{(1+2+3)}{3}$		7 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = **500 ppm**

Measurement #	**Meter Reading for Zero Air (A)**	**Meter Reading for Calibration Gas (B)**	**Calculate Precision [STD – (B)]**
#1	0.41 ppm	489 ppm	11
#2	0.26 ppm	500 ppm	0
#3	0.11 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.73 #DIV/0! Must be less than 10%

Performed By: AARON MCBRIDE Date/Time: 3-12-20-0530

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 3-12-20 TIME: 0530

Calibration Procedure:

1. Allow instrument to zero itself while introducing air.
2. Introduce calibration gas into the probe. Stabilized reading = 500 ppm
3. Adjust meter settings to read 500 ppm.

Background Determination Procedure

Upwind Background Reading: (Highest in 30 seconds)	**Downwind Background Reading:** (Highest in 30 seconds)	**Background Value:** (Upwind + Downwind) / 2
1.8 ppm	2.6 ppm	2.2 ppm

Background Value = 2.2 ppm

INSTRUMENT RESPONSE TIME RECORD

Measurement #	Stabilized Reading Using Calibration Gas	90% of the Stabilized Reading	Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas
#1	506 ppm	456 ppm	6
#2	495 ppm	445 ppm	6
#3	500 ppm	450 ppm	6
Calculate Response Time (1+2+3) / 3			6 #DIV/0! Must be less than 30 seconds

CALIBRATION PRECISION RECORD

Calibration Gas Standard = 500 ppm

Measurement #	Meter Reading for Zero Air (A)	Meter Reading for Calibration Gas (B)	Calculate Precision [STD – (B)]
#1	0.36 ppm	506 ppm	6
#2	0.20 ppm	495 ppm	5
#3	0.15 ppm	500 ppm	0
Calculate Precision	$\frac{[STD-B1] + [STD-B2] + [STD-B3]}{3} \times \frac{1}{500} \times \frac{100}{1}$		0.73 #DIV/0! Must be less than 10%

Performed By: Nick Banks Date/Time: 3-12-20 0530

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 3-7-20 Time: 0900

Model # TVA 1000B

Serial # #10 1036346773

INSTRUMENT INTEGRITY CHECKLIST

Battery test	[✓ Pass] / Fail
Reading following ignition	1.8 ppm
Leak test	[✓ Pass] / Fail / NA
Clean system check (check valve chatter)	[✓ Pass] / Fail / NA
H_2 supply pressure gauge (acceptable range 9.5 - 12)	[✓ Pass] / Fail / NA
Date of last factory calibration	1-3-20
Factory calibration record w/instrument within 3 months	[✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 6
2. 9
3. 9

Average 8.0

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 3-7-20 Time: 0915

Model # TVA 1000 B

Serial # #11 1036346774

INSTRUMENT INTEGRITY CHECKLIST

Battery test [✓ Pass] / Fail

Reading following ignition 1.2 ppm

Leak test [✓ Pass] / Fail / NA

Clean system check (check valve chatter) [✓ Pass] / Fail / NA

H_2 supply pressure gauge (acceptable range 9.5 - 12) [✓ Pass] / Fail / NA

Date of last factory calibration 1-3-20

Factory calibration record w/instrument within 3 months [✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 6
2. 9
3. 8

Average 7.6

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 3-7-20 **Time:** 0930

Model # TVA 1000B

Serial # #12 1036246741

INSTRUMENT INTEGRITY CHECKLIST

Battery test	[✓ Pass] / Fail
Reading following ignition	2.3 ppm
Leak test	[✓ Pass] / Fail / NA
Clean system check (check valve chatter)	[✓ Pass] / Fail / NA
H_2 supply pressure gauge (acceptable range 9.5 - 12)	[✓ Pass] / Fail / NA
Date of last factory calibration	1-3-20
Factory calibration record w/instrument within 3 months	Pass / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500
90% of Calibration Gas, ppm 450
Time required to attain 90% of Cal Gas ppm
1. 8
2. 8
3. 8

Average 8.0
Equal to or less than 30 seconds? [✓ Y] N
Instrument calibrated to CH4 gas.

Comments:

RES
Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site:

Purpose:

Operator:

Date: 3-7-20 Time: 0945

Model # TVA 1000B

Serial # #13 1102746775

INSTRUMENT INTEGRITY CHECKLIST

Battery test	[✓ Pass] / Fail
Reading following ignition	2.3 ppm
Leak test	[✓ Pass] / Fail / NA
Clean system check (check valve chatter)	[✓ Pass] / Fail / NA
H2 supply pressure gauge (acceptable range 9.5 - 12)	[✓ Pass] / Fail / NA
Date of last factory calibration	1-3-20
Factory calibration record w/instrument within 3 months	[✓ Pass] / Fail

INSTRUMENT CALIBRATION

CALIBRATION CHECK

Calibration Gas (ppm)	Actual (ppm)	% Accuracy
500	500	100%

RESPONSE TIME

Calibration Gas, ppm 500

90% of Calibration Gas, ppm 450

Time required to attain 90% of Cal Gas ppm

1. 6
2. 6
3. 6

Average 6.0

Equal to or less than 30 seconds? [✓ Y] N

Instrument calibrated to CH4 gas.

Comments:

INTERMOUNTAIN SPECIALTY GASES
520 N. Kings Road • Nampa • Idaho • 83687
800-552-5003 • www.isgases.com

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Air - Zero		
THC	< 2 PPM	
Oxygen	20.9%	± 2%
Nitrogen	Balance	

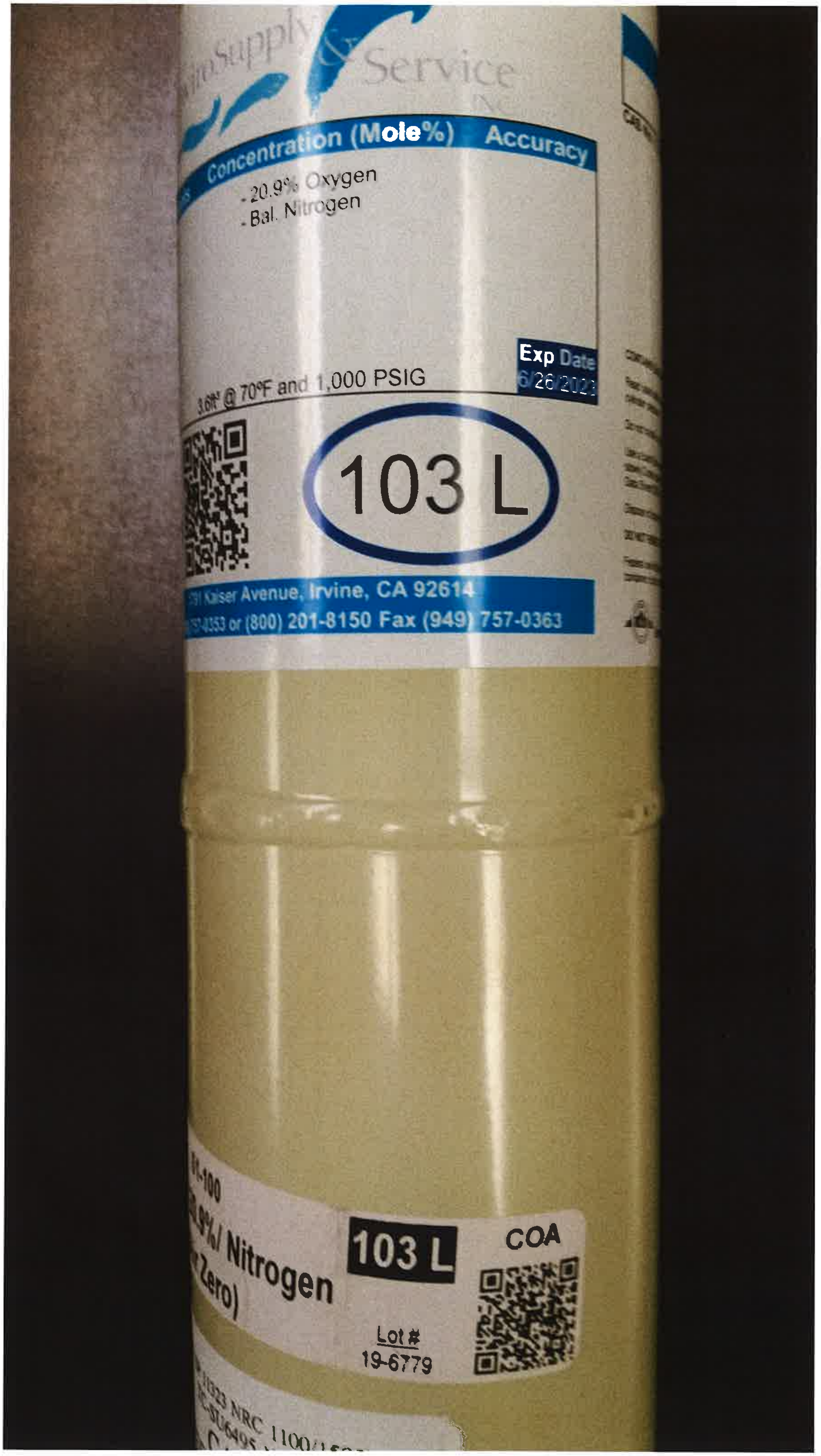
Lot # 19-6779

Mfg. Date: 4/3/2019
Parent Cylinder ID Number: 001739, 02268

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
This mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 4/3/2019

Supply & Service INC
Concentration (Mole%)
Accuracy
-20.9% Oxygen
-Bal. Nitrogen
Exp Date
6/26/2023
3.6ft³ @ 70°F and 1,000 PSIG
103 L
Kaiser Avenue, Irvine, CA 92614
(800) 201-8150 Fax (949) 757-0363
-100
.9%/ Nitrogen
Zero)
103 L
COA
Lot #
19-6779
11323 NRC 1100/
-SU6495

INTERMOUNTAIN SPECIALTY GASES
520 N. Kings Road • Nampa • Idaho • 83687
800-552-5003 • www.isgases.com

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Methane	25 ppm	± 5%
Air	Balance	

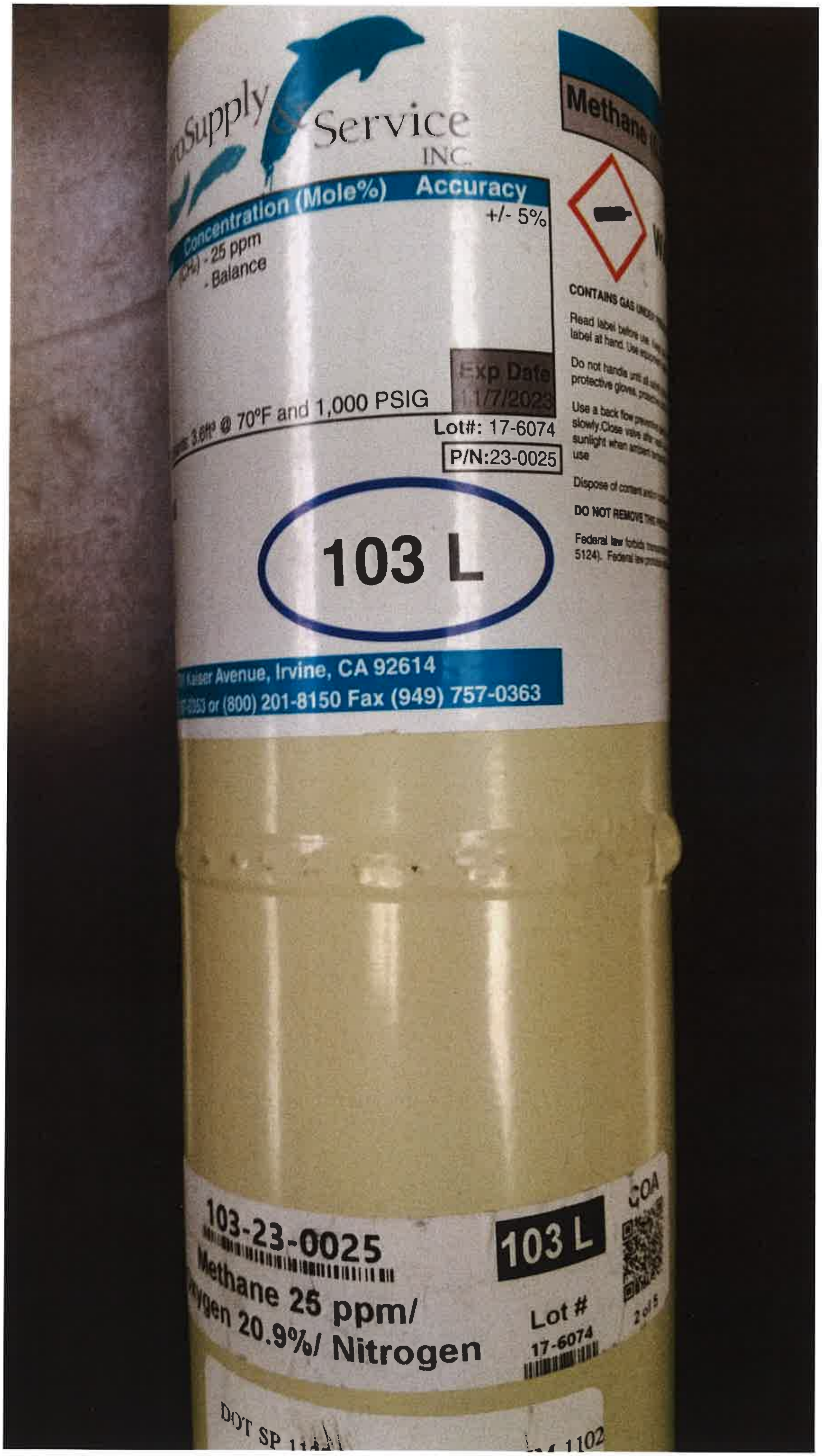
Lot # 17-6074

Mfg. Date:	10/16/2017
Parent Cylinder ID Number:	17161

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 10/16/2017


Supply & Service INC.
Concentration (Mole%)
Accuracy
+/- 5%
- 25 ppm
- Balance
Exp Date
11/7/2023
3.6ft³ @ 70°F and 1,000 PSIG
Lot#: 17-6074
P/N:23-0025
103 L
Kaiser Avenue, Irvine, CA 92614
or (800) 201-8150 Fax (949) 757-0363
Methane
CONTAINS GAS
Read label before use.
label at hand.
Do not handle until all
protective gloves,
Use a back flow
slowly. Close valve
sunlight when ambient
use
Dispose of content
DO NOT REMOVE THIS
Federal law forbids
5124). Federal law
103-23-0025
Methane 25 ppm/
gen 20.9%/ Nitrogen
103 L
Lot #
17-6074
COA
2 of 5
DOT SP
1102

INTERMOUNTAIN SPECIALTY GASES
520 N. Kings Road • Nampa • Idaho • 83687
800-552-5003 • www.isgases.com

CERTIFICATE OF ANALYSIS

Composition	Certification	Analytical Accuracy
Methane	500 ppm	± 2%
Air	Balance	

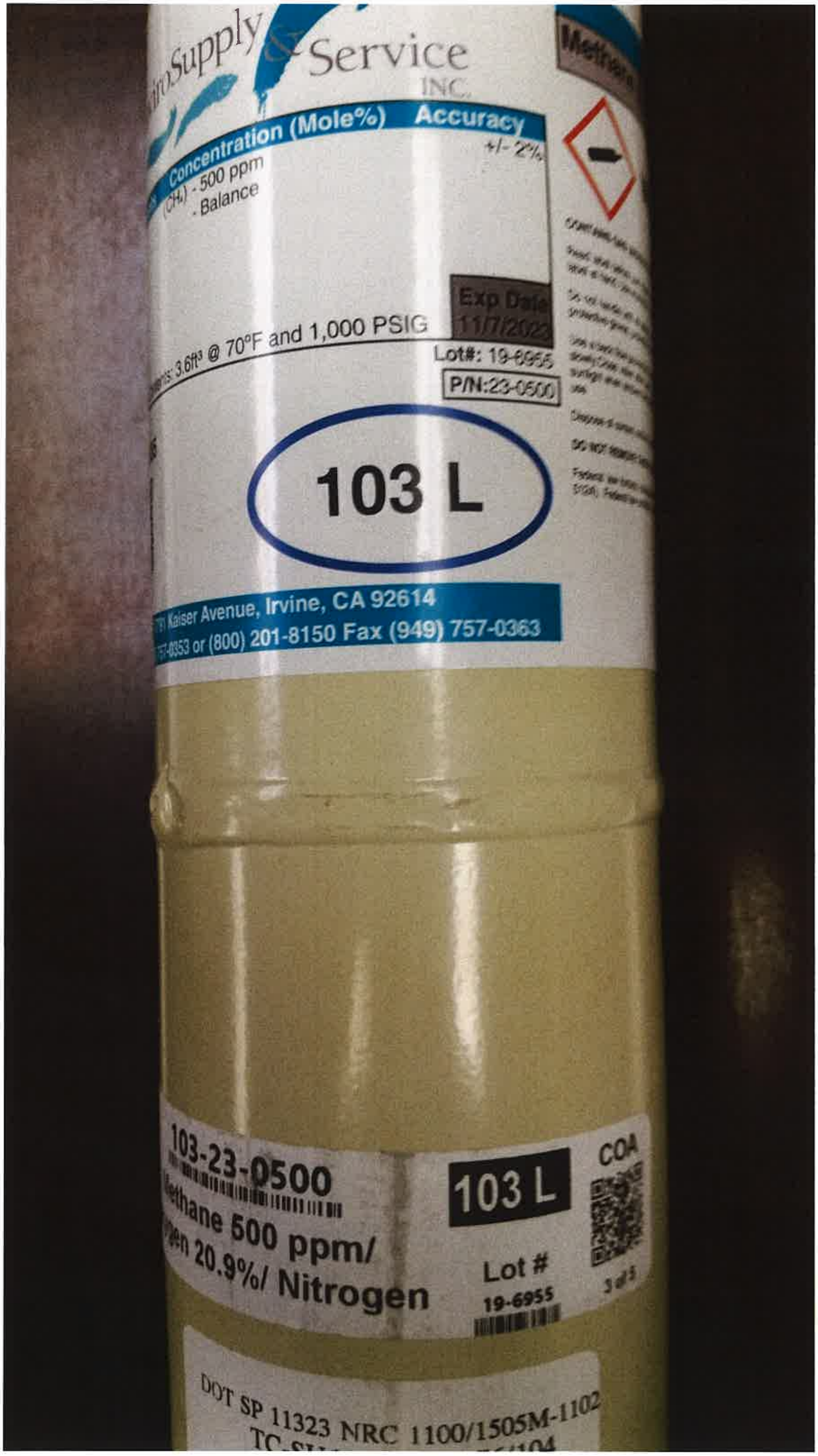
Lot # 19-6955

Mfg. Date: 7/24/2019
Parent Cylinder ID Number: 001763

Method of Preparation:
Gravimetric/Pressure Transfilled

Method of Analysis:
The parent mix was prepared gravimetrically and is traceable to the NIST by certified weights (ID #CA10814) used to calibrate the scale.

Analysis By: Tony Janquart
Quality Assurance Manager
800-552-5003
Certificate Date: 7/24/2019


iroSupply & Service INC.
Concentration (Mole%)
Accuracy
(CH₄) - 500 ppm
- Balance
+/- 2%
Exp Date
11/7/2022
Lot#: 19-6955
P/N:23-0500
3.6ft³ @ 70°F and 1,000 PSIG
Methane
103 L
Kaiser Avenue, Irvine, CA 92614
757-0353 or (800) 201-8150 Fax (949) 757-0363
103-23-0500
Methane 500 ppm/
Oxygen 20.9%/ Nitrogen
103 L
COA
Lot #
19-6955
3 of 5
DOT SP 11323 NRC 1100/1505M-1102
TC-SU 104

APPENDIX I

WELLFIELD MONITORING LOGS

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - November 5, 6, 7, 11, 12, 15, and 27, 2019

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (^{o}F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (^{o}F)
RLHC0153	11/7/19 15:05	54.4	41.3	0	4.3	-1.1	102	-1.2	102
RLHC0156	11/15/19 8:53	58.4	37.9	0	3.7	-0.2	98	-0.3	99
RLI00003	11/6/19 15:51	38.2	45.1	0.7	16	-21.7	80	-16	79
RLI00008	11/12/19 10:48	59.4	36.2	0.1	4.3	-47.2	90	-47.3	83
RLI00016	11/15/19 7:32	28.4	25.7	0	45.9	-29.9	67	-28.2	66
RLI00017	11/15/19 7:37	41.6	32.1	0.2	26.1	-21.9	68	-20.9	68
RLI00018	11/15/19 7:47	30.9	28.2	0.1	40.8	-4.9	56	-4.9	56
RLI00019	11/15/19 7:52	56.7	35.7	0	7.6	-36.2	56	-36.7	56
RLI00029	11/5/19 12:10	50.9	37.3	1.6	10.2	-49.1	91	-49.1	89
RLI00034	11/15/19 8:22	58.1	39.6	0	2.3	-32	78	-32.4	78
RLI00035	11/15/19 8:18	48.6	36	0	15.4	-35.6	75	-33.6	75
RLI00045	11/15/19 8:11	53.9	33	0	13.1	-1	64	-1.1	67
RLI00047	11/15/19 8:08	48.4	35.2	0	16.4	-1.7	75	-1.8	74
RLI00065	11/5/19 12:28	52.6	42	0	5.4	-10.6	98	-11.5	98
RLI00083	11/5/19 11:15	54.5	34.2	2	9.3	-46	94	-45.9	94
RLI00089	11/6/19 14:38	45.3	34.9	2.8	17	-34.6	104	-28.3	104
RLI00095	11/5/19 11:19	51.9	36.2	0	11.9	-2.1	94	-2.1	94
RLI00132	11/11/19 14:16	58	38.5	0	3.5	-12.1	104	-13.9	104
RLI00134	11/12/19 10:03	54.7	39	0	6.3	-15.4	110	-19.8	110
RLI00135	11/12/19 10:07	54.1	38.9	0	7	-29.1	106	-30.4	107
RLI00137	11/5/19 14:40	62.6	33.7	0.8	2.9	-43.1	95	-41.9	96
RLI00138	11/7/19 9:03	55.1	22.6	4.1	18.2	-43.1	70	-44.6	69
RLI00139	11/7/19 9:17	54.6	22.1	4.7	18.6	-46.1	56	-46.1	56
RLI00140	11/7/19 8:37	63.4	28.9	1.4	6.3	-45.1	72	-45.3	72
RLI00141	11/5/19 16:05	53.5	34.9	0.4	11.2	-16.9	92	-17.7	93
RLI00142	11/7/19 8:31	57.4	31.8	0.9	9.9	-45	89	-44.9	89
RLI00220	11/11/19 14:41	49.7	37.4	0.8	12.1	-1.1	63	-0.8	63
RLI0100C	11/15/19 8:27	60.7	39.1	0	0.2	-36.3	75	-36	76
RLI0102C	11/11/19 9:30	56.5	37.9	0.6	5	-41.8	92	-41.7	92
RLI0103C	11/12/19 9:58	59.8	40.1	0	0.1	-34.8	105	-34.9	105
RLI0105C	11/15/19 9:15	53.8	38.5	0	7.7	-17.6	107	-17.9	107
RLI0106C	11/12/19 11:18	60.6	39.3	0	0.1	-44.7	103	-44.7	103
RLI0107C	11/15/19 9:05	48.5	34.2	2.4	14.9	-38.8	107	-35	107
RLI0108A	11/12/19 11:14	35.7	29.9	3.2	31.2	-1.4	80	-1.3	81
RLI0114A	11/15/19 9:27	39.6	28	4.8	27.6	-32.1	75	-30.2	74
RLI0115E	11/6/19 10:39	53.3	33.5	2.2	11	-38.9	74	-39.7	77
RLI0116E	11/5/19 14:49	54.5	37.6	1.3	6.6	-37.3	91	-37.4	91
RLI0117D	11/5/19 12:24	59.1	40.7	0.1	0.1	-41.6	96	-41.3	97
RLI0120D	11/5/19 11:08	16.9	14.8	11.5	56.8	-1.7	89	-1.4	90
RLI0120D	11/5/19 11:11	32.8	23.1	6.4	37.7	-1.4	90	-1.3	90
RLI0120D	11/5/19 15:29	43.8	28	4.7	23.5	-1.8	95	-1.8	95
RLI0124G	11/5/19 10:13	54.3	36.9	0	8.8	-9.2	89	-9.6	89
RLI0126C	11/11/19 9:19	61.5	31.1	1.5	5.9	-42.7	82	-42.5	83
RLI0127B	11/12/19 10:33	54.7	38.2	0	7.1	-33.1	75	-33.9	74
RLI0128A	11/15/19 9:10	49.9	38.4	0.6	11.1	-0.3	107	-0.4	108
RLI0129E	11/15/19 8:43	62.3	37.2	0	0.5	-45.4	79	-45.6	79
RLI0130E	11/15/19 8:48	53	35.3	0	11.7	-10.7	77	-10.9	77
RLIHC101	11/5/19 10:23	55.3	38.4	0.1	6.2	-32.9	92	-32.9	92
RLIHC102	11/5/19 10:16	52.5	39.4	0	8.1	-6.6	94	-6.6	94
RLIHC105	11/6/19 14:46	47.9	40.3	0	11.8	-6.2	98	-2.3	98
RLIHC107	11/6/19 14:54	44.2	38.8	0	17	-0.6	120	-0.5	120
RLLC0165	11/7/19 8:48	47	34.3	0.1	18.6	-21.7	97	-17.2	96
RLLC0166	11/7/19 8:54	48.9	34	0	17.1	-45.1	100	-43.3	100
RLLC0169	11/7/19 8:41	51.5	33.1	0.6	14.8	-35.8	103	-35.7	103
RLLC0170	11/7/19 8:44	48.9	35.5	0	15.6	-9.6	79	-9.6	79
RLLC0171	11/6/19 14:49	34	34.3	0	31.7	-0.3	99	-0.3	99

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - November 5, 6, 7, 11, 12, 15, and 27, 2019

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	11/7/19 15:05	54.4	41.3	0	4.3	-1.1	102	-1.2	102
RLHC0156	11/15/19 8:53	58.4	37.9	0	3.7	-0.2	98	-0.3	99
RLLC0175	11/12/19 10:17	59.5	40.4	0	0.1	-44.4	101	-44	102
RLLC0176	11/11/19 14:27	53.5	44.9	0	1.6	-0.1	95	-0.3	102
RLLC0179	11/15/19 10:26	46.7	33.7	0	19.6	-2.2	84	-2.2	84
RLLC0180	11/12/19 9:37	57.8	40.2	0	2	-1.1	80	-1.4	85
RLLC0181	11/12/19 11:10	55.6	38.5	0	5.9	-10.6	104	-11.5	104
RLLC0183	11/12/19 10:28	49.6	36.6	0	13.8	-3.8	79	-3.8	79
RLLC0184	11/12/19 10:43	51.6	36.9	0	11.5	-7.5	99	-7.5	99
RLLC0185	11/27/19 13:41	52.4	47.5	0	0.1	-0.3	82	-0.4	84
RLLC0186	11/12/19 15:29	57.3	38.5	0.1	4.1	-7.4	95	-9.2	96
RLLC0187	11/12/19 9:51	57.3	39.8	0	2.9	-41.7	102	-42	102
RLLC0188	11/12/19 9:48	53	39.7	0	7.3	-3.5	101	-4	102
RLLC0189	11/12/19 9:44	54.9	39.8	0	5.3	-4.8	106	-5.1	107
RLLC0190	11/12/19 9:41	47.4	38.6	0	14	-1	96	-1.1	96
RLLC0191	11/5/19 10:45	53.2	36.3	0	10.5	-1.1	87	-1.2	89
RLLC0193	11/6/19 10:44	52.1	38.3	0.6	9	-15	105	-15.7	105
RLLC0194	11/7/19 14:54	49.8	39	0	11.2	-19.8	101	-16.8	101
RLLC0195	11/7/19 14:57	50.9	38.2	0	10.9	-13.6	100	-13.6	101
RLLC0196	11/7/19 15:02	58.4	38.6	0.3	2.7	-39.7	106	-39.6	106
RLLC0198	11/7/19 14:38	47.3	36.8	0	15.9	-14	111	-10.7	110
RLLC0199	11/7/19 14:35	50.1	38.8	0	11.1	-14.6	109	-14.1	109
RLLC0200	11/7/19 14:27	45.3	34.9	0	19.8	-2	96	-1.5	96
RLLC0201	11/7/19 14:10	45.4	35.6	0	19	-3.5	106	-2.5	106
RLLC0202	11/7/19 14:50	54.4	39.4	0	6.2	-9.4	103	-14.7	103
RLLC0203	11/11/19 8:17	53.8	38.5	0	7.7	-16.4	101	-17.7	102
RLLC0204	11/11/19 8:19	51.6	38.4	0.2	9.8	-2.5	100	-2.5	101
RLLC0205	11/15/19 9:20	39.9	34.4	0	25.7	-0.1	91	-0.1	91
RLLC0206	11/11/19 9:16	46.7	34.4	0.2	18.7	-1.1	102	-0.8	101
RLLC0207	11/11/19 9:22	39.3	32.8	0	27.9	-0.6	90	-0.3	90
RLLC0208	11/11/19 9:26	53.3	36.9	1.1	8.7	-3.6	76	-5.3	75
RLLC0209	11/11/19 9:13	45.5	35	0	19.5	-1	100	-0.7	99
RLLC0210	11/11/19 8:22	43.1	36.5	0	20.4	-0.3	101	-0.2	100
RLLC0212	11/6/19 15:27	51.9	39.1	0.7	8.3	-20.2	87	-20.2	87
RLLC0213	11/6/19 15:08	41.2	34.1	0	24.7	-1.6	84	-1.6	85
RLLC0214	11/6/19 15:20	56.8	36.9	0	6.3	-2.4	102	-4.6	102
RLLC0215	11/6/19 15:16	53.7	38	0	8.3	-2.9	95	-3.7	95
RLLC0217	11/5/19 11:31	53.6	38	0	8.4	-9	94	-9.9	94
RLLC0218	11/5/19 14:45	54.6	39.3	0.7	5.4	-36.1	91	-36.1	92
RLLC0219	11/6/19 14:10	52.1	39.4	0.3	8.2	-2.7	103	-3.6	102
RLLC0221	11/7/19 14:47	57.2	39.8	0	3	-10.6	103	-13.6	104
RLLC0222	11/5/19 15:17	51.2	39	0.6	9.2	-8	101	-8	101
RLLC0223	11/5/19 15:14	51.2	41.1	0.1	7.6	-3.9	100	-4	100
RLLC0224	11/5/19 15:10	50.7	38.1	1.2	10	-1.5	106	-1.5	107
RLLC0225	11/7/19 14:07	41.4	34.6	0	24	-6.5	102	-4.3	101
RLLC0226	11/6/19 15:23	53.3	38.3	0.5	7.9	-4.7	96	-5.3	96
RLLC0227	11/5/19 11:25	53.5	36.7	0	9.8	-2.6	87	-3.1	87
RLLC0228	11/7/19 14:42	51.6	37.8	0	10.6	-4.4	109	-4.4	109
RLLC0229	11/7/19 14:32	40.5	36.9	0	22.6	-0.7	106	-0.6	105
RLLC0230	11/5/19 15:02	52.1	42.6	0	5.3	-2.1	110	-2.1	110
RLLC0231	11/6/19 14:26	54.7	38.1	0.3	6.9	-1.7	95	-2.4	94
RLLC0232	11/6/19 14:30	51.7	38.8	0.1	9.4	-2.8	93	-2.8	93
RLLC0233	11/5/19 14:59	53.2	42.2	0	4.6	-1	100	-1.3	101
RLLC0234	11/5/19 12:13	51.2	43	0.2	5.6	-7.3	91	-7.3	91
RLLC0234	11/12/19 15:42	51.3	43.5	0	5.2	-7.5	91	-7.5	92
RLLC0235	11/5/19 12:16	52.5	41.7	0.2	5.6	-4.2	90	-4.7	90

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - November 5, 6, 7, 11, 12, 15, and 27, 2019

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	11/7/19 15:05	54.4	41.3	0	4.3	-1.1	102	-1.2	102
RLHC0156	11/15/19 8:53	58.4	37.9	0	3.7	-0.2	98	-0.3	99
RLLC0235	11/12/19 15:45	50.7	41.8	0	7.5	-5.4	90	-5.2	91
RLLC0236	11/5/19 12:20	52.1	41.2	0	6.7	-1.7	90	-1.7	90
RLLC0236	11/12/19 15:49	50.3	40.6	0	9.1	-2	90	-1.7	90
RLLC0237	11/5/19 14:43	52.2	40.4	0.3	7.1	-3.4	98	-3.3	98
RLLC0238	11/5/19 12:34	52.6	41.1	0	6.3	-2.5	98	-2.9	98
RLLC0239	11/5/19 14:52	52.7	40.1	0	7.2	-0.2	100	-0.3	100
RLLC0240	11/5/19 14:56	52.5	40.3	0	7.2	-1.5	101	-1.6	101
RLLC0241	11/5/19 12:06	54.8	43	0.5	1.7	-30.2	98	-33.2	99
RLLC0241	11/12/19 15:38	55.1	43.4	0.3	1.2	-34.3	98	-36.3	98
RLLC0242	11/5/19 12:02	52.9	44	0	3.1	-1.6	99	-1.9	99
RLLC0242	11/12/19 15:35	49.8	43	0	7.2	-1.9	99	-1.5	99
RLLC0243	11/5/19 10:33	51.2	44.8	0	4	-0.1	97	-0.1	97
RLLC0244	11/5/19 10:30	52.5	44.5	0	3	-0.5	100	-0.5	100
RLLC0245	11/5/19 10:27	46.4	45.9	0	7.7	-0.2	93	-0.2	93

There are 119 total collectors; 110 vertical wells and 9 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

"H2O = in. w.c.= inches in water column

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - December 2, 3, 4, 5, 10, 16, 17, 19, 20, 23, and 30, 2019

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	12/16/19 10:09	57.5	41.2	0	1.3	-1	98	-1.2	99
RLHC0156	12/23/19 8:53	56.6	36.4	1.6	5.4	-5.9	61	-23.7	73
RLI00003	12/17/19 14:30	52	39.8	0	8.2	-22	65	-22.7	65
RLI00008	12/17/19 13:52	62	37.6	0.1	0.3	-33.4	70	-33.3	69
RLI00016	12/23/19 9:11	61.6	30.6	1.8	6	-40.1	50	-40.1	50
RLI00017	12/23/19 9:15	62.6	37.2	0	0.2	-12.8	61	-21.6	64
RLI00018	12/23/19 9:20	51.3	28.2	3.6	16.9	-6.5	48	-5.6	46
RLI00019	12/23/19 9:25	61.3	37.5	0.6	0.6	-47.1	48	-47	49
RLI00029	12/4/19 10:34	59.7	40.2	0	0.1	-8.6	78	-25.5	83
RLI00034	12/17/19 14:20	60.6	38.7	0.1	0.6	-19.1	76	-19.2	77
RLI00035	12/23/19 9:38	60.3	39.6	0	0.1	-15.6	72	-17.1	73
RLI00045	12/23/19 9:47	62.7	35.8	0	1.5	-2	66	-2.6	68
RLI00047	12/23/19 9:44	61.5	38.4	0	0.1	-1.6	68	-1.8	70
RLI00065	12/4/19 10:48	48.5	41	0	10.5	-13.7	96	-11.1	96
RLI00083	12/4/19 9:35	61.5	38.4	0	0.1	-46.9	93	-47.1	93
RLI00089	12/20/19 14:38	47.8	36.5	2.2	13.5	-24.8	97	-21.5	97
RLI00095	12/3/19 15:58	56.3	36.5	0	7.2	-1.1	93	-1.4	94
RLI00132	12/17/19 14:14	55.2	38.4	0	6.4	-15.7	101	-17	102
RLI00134	12/17/19 11:34	59.7	40.2	0	0.1	-17	107	-19.3	108
RLI00135	12/17/19 11:38	59.9	39.8	0	0.3	-23.7	103	-24.4	103
RLI00137	12/19/19 11:25	63.9	35.7	0.3	0.1	-27.1	69	-26	68
RLI00138	12/19/19 11:13	60.6	24.5	3.3	11.6	-26.4	67	-26.9	67
RLI00139	12/19/19 10:53	26.4	26.7	4.6	42.3	-26.8	52	-15.9	53
RLI00140	12/10/19 12:46	68.5	29.8	0.7	1	-31.6	62	-31.5	62
RLI00141	12/10/19 13:11	51.1	35.5	0	13.4	-14.5	90	-14.5	90
RLI00142	12/20/19 14:43	62.3	33.6	0.7	3.4	-43.7	79	-43.7	79
RLI00220	12/20/19 14:15	57.5	40.4	0.1	2	-0.9	51	-1.2	52
RLI0100C	12/17/19 14:26	60.1	39.8	0	0.1	-20.8	76	-20.8	76
RLI0102C	12/17/19 11:08	60.7	39.1	0.1	0.1	-32.7	89	-32.5	89
RLI0105C	12/17/19 11:03	56.6	38.3	0	5.1	-15.3	104	-15.4	104
RLI0106C	12/17/19 14:38	60.5	39	0.3	0.2	-32.5	89	-32.5	89
RLI0107C	12/17/19 14:53	59.1	40.5	0.2	0.2	-7.2	97	-11.6	99
RLI0108A	12/17/19 14:46	34.6	30.5	0.3	34.6	-2.2	57	-2.2	56
RLI0114A	12/19/19 11:49	64.5	33.2	1	1.3	-2.5	65	-1.2	65
RLI0115E	12/5/19 14:03	61.1	38.8	0	0.1	-42.3	70	-39.9	70
RLI0116E	12/19/19 11:32	58	41.9	0	0.1	-17.8	57	-18.2	57
RLI0117D	12/4/19 10:55	57.6	42.3	0	0.1	-45.5	90	-45.4	90
RLI0120D	12/4/19 9:31	49	30.2	4.1	16.7	-1.2	58	-1	58
RLI0124G	12/2/19 14:19	47.4	35.4	0.1	17.1	-10.3	86	-9.7	86
RLI0126C	12/16/19 10:53	61	30.6	1.9	6.5	-32.4	67	-32.3	67
RLI0127B	12/17/19 14:03	56.4	38.5	0	5.1	-26.1	105	-26.3	105
RLI0128A	12/17/19 14:49	52.1	39.5	0	8.4	-1.6	101	-1.6	101
RLI0129E	12/23/19 8:59	63.7	35.4	0.2	0.7	-45.1	75	-45.1	76
RLI0130E	12/23/19 8:49	64.5	35.1	0.3	0.1	-21	74	-25	75
RLIHC101	12/3/19 15:34	52.9	38	0	9.1	-34	91	-34	91
RLIHC102	12/3/19 15:30	52.1	38.8	0	9.1	-6.6	94	-6.7	94
RLIHC105	12/19/19 8:32	55.7	42.3	0	2	-1.6	90	-2.9	91
RLIHC107	12/19/19 8:26	57	42.9	0	0.1	-0.9	113	-1.8	114
RLLC0165	12/10/19 12:53	62.9	37	0	0.1	-26.3	80	-30.6	81
RLLC0166	12/10/19 12:58	61.1	32.4	0	6.5	-31.1	84	-31.3	82
RLLC0169	12/10/19 13:01	59.4	34.3	0	6.3	-25.6	101	-27.8	101
RLLC0170	12/10/19 13:03	45.1	34.9	0	20	-7.8	76	-7.8	76
RLLC0171	12/19/19 8:29	47.8	41.5	0	10.7	-0.7	56	-0.8	55
RLLC0175	12/17/19 11:25	54.7	45.2	0	0.1	-20.3	86	-23	87
RLLC0176	12/17/19 14:11	51.5	48.4	0	0.1	-0.2	97	-0.2	97
RLLC0179	12/4/19 9:13	31.9	23.3	0.3	44.5	-42.3	52	-42.3	52

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - December 2, 3, 4, 5, 10, 16, 17, 19, 20, 23, and 30, 2019

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	12/16/19 10:09	57.5	41.2	0	1.3	-1	98	-1.2	99
RLHC0156	12/23/19 8:53	56.6	36.4	1.6	5.4	-5.9	61	-23.7	73
RLLC0180	12/17/19 11:46	58.3	41.6	0	0.1	-1.6	83	-1.7	85
RLLC0181	12/17/19 14:42	58.1	39.8	0	2.1	-9.1	103	-10	103
RLLC0183	12/17/19 14:07	47.1	34.1	0	18.8	-3.9	72	-4	72
RLLC0184	12/17/19 13:58	59.9	39.2	0	0.9	-4	95	-4.1	95
RLLC0185	12/17/19 11:29	54.5	45.4	0	0.1	-0.2	88	-0.5	90
RLLC0186	12/17/19 11:20	59.2	40.6	0	0.2	-7.8	90	-11.1	92
RLLC0187	12/17/19 11:16	59.9	40	0	0.1	-33	99	-33.1	99
RLLC0188	12/17/19 11:12	56.5	39.5	0	4	-4.8	100	-5.3	100
RLLC0189	12/17/19 11:42	56.3	39.5	0	4.2	-5.8	106	-6.3	106
RLLC0190	12/17/19 13:41	58.3	40.4	0.1	1.2	-0.9	85	-1.1	86
RLLC0191	12/3/19 15:51	44.2	34.4	0	21.4	-1.3	85	-1.1	84
RLLC0193	12/5/19 14:09	49.8	38.6	0	11.6	-21.2	107	-16.3	107
RLLC0194	12/16/19 9:51	56.5	40.7	0.1	2.7	-15.8	101	-18.2	101
RLLC0195	12/16/19 9:55	56.7	38.8	0	4.5	-22	91	-27.1	92
RLLC0196	12/16/19 10:05	59.8	40.1	0	0.1	-30.6	105	-29.7	104
RLLC0198	12/16/19 9:31	57.7	37.3	1.3	3.7	-20.2	95	-26.5	96
RLLC0199	12/16/19 9:27	56.9	38.5	1.4	3.2	-25.1	107	-29.8	108
RLLC0200	12/16/19 9:22	62	37.8	0	0.2	-1.1	86	-2.3	91
RLLC0201	12/16/19 8:17	54.6	40.3	0.1	5	-4.3	102	-5.3	103
RLLC0202	12/16/19 9:42	51.8	36.8	1.8	9.6	-13.7	97	-13.7	97
RLLC0203	12/16/19 10:34	59.5	40.4	0	0.1	-22.1	99	-25.8	99
RLLC0204	12/16/19 10:37	56.1	38.3	0.7	4.9	-7.5	96	-10	97
RLLC0205	12/16/19 10:43	45.1	34.1	0	20.8	-0.1	88	-0.1	88
RLLC0206	12/16/19 10:50	62.3	37.6	0	0.1	-0.2	89	-0.5	94
RLLC0207	12/16/19 10:56	60.7	39.2	0	0.1	-0.1	82	-0.2	85
RLLC0208	12/16/19 10:59	59.6	39.4	0.1	0.9	-4.6	70	-11.2	72
RLLC0209	12/16/19 10:47	61	38.9	0	0.1	-0.3	94	-0.5	94
RLLC0210	12/16/19 10:40	50.6	38.4	0	11	-0.3	96	-0.3	96
RLLC0212	12/10/19 15:10	55.8	40.2	0.3	3.7	-11.9	87	-12.2	87
RLLC0213	12/10/19 15:00	35.4	28.8	0.1	35.7	-2.6	56	-2.2	57
RLLC0214	12/10/19 15:07	58.9	37.9	0	3.2	-6.1	98	-7.3	98
RLLC0215	12/10/19 15:03	51.9	35.5	0	12.6	-4.6	93	-4.6	94
RLLC0217	12/4/19 9:41	50.9	37.9	0	11.2	-10.3	92	-10.2	92
RLLC0218	12/19/19 11:28	56.7	43.1	0	0.2	-16.7	56	-16.9	56
RLLC0219	12/20/19 14:22	50.6	38	0.5	10.9	-2.4	99	-2.4	99
RLLC0221	12/16/19 9:39	58.9	40.8	0.1	0.2	-14.9	97	-27.9	97
RLLC0222	12/10/19 15:40	56.5	42.1	0	1.4	-5	100	-5.7	100
RLLC0223	12/10/19 18:13	54.9	41.8	0.4	2.9	-2.7	102	-3	103
RLLC0224	12/10/19 18:16	58.6	41.3	0	0.1	-0.8	104	-1.5	104
RLLC0225	12/16/19 9:18	51.3	37	0.4	11.3	-12.5	93	-12.5	93
RLLC0226	12/10/19 15:16	58.1	41.2	0	0.7	-3.3	94	-4.6	95
RLLC0227	12/3/19 16:03	53.5	36.1	0	10.4	-3.2	86	-3.4	86
RLLC0228	12/16/19 9:35	59.6	40	0.2	0.2	-8.5	92	-17.2	97
RLLC0229	12/20/19 14:33	57.8	42.1	0	0.1	-0.9	85	-1.2	85
RLLC0230	12/19/19 8:19	55.4	43.7	0	0.9	-1.6	109	-1.9	109
RLLC0231	12/19/19 11:42	52.5	38.4	0	9.1	-2.5	93	-2.5	93
RLLC0232	12/20/19 14:26	56.7	41	0	2.3	-4.4	91	-4.8	92
RLLC0233	12/19/19 8:14	57.3	42	0	0.7	-0.8	98	-1	98
RLLC0234	12/4/19 10:37	55	44	0.3	0.7	-7.7	91	-9.4	91
RLLC0234	12/30/19 14:03	54.1	42.9	0.3	2.7	-9.8	90	-11.4	91
RLLC0235	12/4/19 10:40	52.5	42.4	0.2	4.9	-5.2	90	-5.9	90
RLLC0235	12/30/19 13:59	53.8	41.5	0.2	4.5	-6.1	89	-6.9	89
RLLC0236	12/4/19 10:44	54	41.3	0	4.7	-1.6	89	-1.9	90
RLLC0236	12/30/19 13:54	56	41	0	3	-1.9	89	-2.4	89

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - December 2, 3, 4, 5, 10, 16, 17, 19, 20, 23, and 30, 2019

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	12/16/19 10:09	57.5	41.2	0	1.3	-1	98	-1.2	99
RLHC0156	12/23/19 8:53	56.6	36.4	1.6	5.4	-5.9	61	-23.7	73
RLLC0237	12/4/19 11:05	56.4	42.6	0	1	-3.8	99	-4.9	99
RLLC0238	12/4/19 11:01	45.6	39.2	0	15.2	-2.7	100	-1.8	100
RLLC0239	12/4/19 11:51	55.1	40.5	0	4.4	-0.3	98	-0.5	99
RLLC0240	12/4/19 11:48	51.8	38.6	0.1	9.5	-1.9	103	-1.9	104
RLLC0241	12/4/19 9:53	54.8	44.8	0	0.4	-34.8	97	-37	98
RLLC0241	12/30/19 14:07	54.3	43.6	0.2	1.9	-38.7	97	-39	97
RLLC0242	12/4/19 9:48	52.9	44	0	3.1	-1.7	97	-2.3	98
RLLC0242	12/30/19 14:10	53.9	43.7	0	2.4	-2.4	97	-3.1	98
RLLC0243	12/3/19 15:46	49.3	44	0	6.7	-0.3	94	-0.2	94
RLLC0244	12/3/19 15:43	51.4	43.9	0	4.7	-0.5	99	-0.5	99
RLLC0245	12/3/19 15:41	44	46.7	0	9.3	-0.2	88	-0.2	88

There are 118 total collectors; 109 vertical wells and 9 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

"H2O = in. w.c.= inches in water column

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - January 2, 6, 7, 8, and 14, 2020

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	1/6/20 11:06	58	41	0	1	-1.2	99	-1.5	99
RLHC0156	1/8/20 9:08	61.3	38.6	0	0.1	-1.5	74	-3.2	81
RLI00003	1/7/20 8:36	49.9	46.1	0	4	-14.2	61	-13.5	61
RLI00008	1/7/20 13:43	62.9	36.6	0.4	0.1	-48.1	69	-48.3	70
RLI00016	1/7/20 14:00	62.7	30.2	1.4	5.7	-47	62	-47.7	62
RLI00017	1/7/20 13:56	61.9	36.7	0.5	0.9	-33.6	67	-39.1	68
RLI00018	1/7/20 13:51	62.3	31.8	0	5.9	-7	65	-9.3	66
RLI00019	1/7/20 13:47	61.7	35.8	0.9	1.6	-46.8	61	-46.7	61
RLI00029	1/6/20 9:04	60.5	39.4	0	0.1	-46.8	83	-49.2	83
RLI00034	1/7/20 14:25	59.4	40.5	0	0.1	-31.3	77	-32.1	77
RLI00035	1/7/20 14:31	60.5	39.4	0	0.1	-25	73	-27.1	74
RLI00045	1/7/20 14:39	50.2	34.3	0	15.5	-5.3	71	-5.3	71
RLI00047	1/7/20 14:36	56.6	37.3	0	6.1	-3.9	74	-4	75
RLI00065	1/6/20 8:54	50.4	43.9	0	5.7	-10.2	96	-10.2	96
RLI00083	1/2/20 14:00	61.5	38.4	0	0.1	-46.7	92	-46.5	93
RLI00089	1/6/20 8:13	43.4	34.7	3.4	18.5	-22.5	93	-16.2	92
RLI00095	1/2/20 14:04	60.7	37.3	0	2	-2	93	-2.3	93
RLI00132	1/7/20 10:20	50.4	36.6	0	13	-26.7	102	-26.7	102
RLI00134	1/7/20 10:38	58.3	39.9	0	1.8	-25.8	108	-29	108
RLI00135	1/7/20 10:41	55.6	39.2	0.1	5.1	-32	103	-32.2	103
RLI00137	1/6/20 8:31	63.4	36.3	0.2	0.1	-44	70	-44.5	73
RLI00138	1/8/20 8:11	31.8	15.9	9.8	42.5	-8	59	-8.3	60
RLI00138	1/8/20 8:16	35.1	17	8.7	39.2	-8.3	61	-6.6	59
RLI00138	1/8/20 9:56	70.4	29.5	0	0.1	-46.7	53	-46.7	53
RLI00138	1/8/20 10:00	68.9	28	0.8	2.3	-47.1	52	-46.3	52
RLI00139	1/8/20 9:51	56.1	21.1	4.3	18.5	-2.6	56	-13	57
RLI00140	1/8/20 7:50	63.2	27.9	2	6.9	-46.4	55	-46.4	55
RLI00141	1/6/20 10:09	54.9	35.5	0.2	9.4	-20.7	91	-21.6	91
RLI00142	1/8/20 7:53	60.6	31.9	0.6	6.9	-46	76	-45.9	76
RLI00220	1/6/20 7:41	52.4	38.6	0.5	8.5	-1.3	41	-1.3	41
RLI0100C	1/7/20 8:41	55.1	36.8	1.2	6.9	-35.4	75	-35.3	75
RLI0102C	1/7/20 8:32	60	38.9	0.3	0.8	-42.3	90	-42.4	90
RLI0105C	1/7/20 9:33	48.4	36.4	1	14.2	-19.9	104	-19.2	105
RLI0106C	1/7/20 9:26	57.3	37.4	1.2	4.1	-45.4	96	-45.4	96
RLI0107C	1/7/20 9:17	54.5	36.4	1.2	7.9	-16.3	99	-18.1	100
RLI0108A	1/7/20 14:06	11	15.1	1.8	72.1	-12.2	68	-2.5	67
RLI0114A	1/6/20 9:33	49.8	28.9	3.7	17.6	-27.6	65	-25	65
RLI0115E	1/2/20 14:32	61	38.7	0.2	0.1	-38.6	78	-37.6	80
RLI0116E	1/6/20 8:35	51.7	35.7	2.5	10.1	-45.8	53	-45.9	53
RLI0117D	1/6/20 8:48	57	42.8	0	0.2	-42.2	91	-42.5	91
RLI0120D	1/2/20 14:16	50.9	30.3	3.4	15.4	-3.4	67	-3.4	68
RLI0124G	1/2/20 13:25	53.6	36.7	0	9.7	-9.1	86	-9.8	86
RLI0126C	1/7/20 8:21	56.7	28.9	3	11.4	-41.5	54	-41.4	54
RLI0127B	1/7/20 10:29	54.6	37.8	0	7.6	-36.7	105	-36.9	105
RLI0128A	1/7/20 9:22	45.1	36.5	0	18.4	-1.8	107	-1	107
RLI0129E	1/8/20 9:20	65	34.6	0.2	0.2	-46	72	-46.1	72
RLI0130E	1/8/20 9:13	58.2	35.2	0	6.6	-30.1	75	-34	76
RLIHC101	1/2/20 13:32	53.5	38.4	0	8.1	-32.1	91	-32.1	91
RLIHC102	1/2/20 13:29	53.9	40.2	0	5.9	-7.3	94	-7.9	94
RLIHC102	1/14/20 7:57	50.5	39.3	0.1	10.1	-9.8	95	-9.8	95
RLIHC105	1/6/20 8:10	51.1	41.2	0	7.7	-4.8	92	-4.8	92
RLIHC107	1/6/20 8:00	28.4	30	0.1	41.5	-5.4	126	-0.5	124
RLLC0165	1/8/20 8:34	61.9	37.7	0.3	0.1	-45.1	73	-45.9	73
RLLC0166	1/8/20 8:42	51.1	31.4	2	15.5	-46.9	74	-46.8	73
RLLC0169	1/8/20 8:31	60.6	35.6	0.6	3.2	-41.7	101	-44	101
RLLC0170	1/8/20 8:27	50.5	36.1	0.2	13.2	-13.2	82	-13.3	83

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - January 2, 6, 7, 8, and 14, 2020

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (^{o}F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (^{o}F)
RLHC0153	1/6/20 11:06	58	41	0	1	-1.2	99	-1.5	99
RLHC0156	1/8/20 9:08	61.3	38.6	0	0.1	-1.5	74	-3.2	81
RLLC0171	1/6/20 8:08	20.4	28.2	0.8	50.6	-1.1	62	-0.7	62
RLLC0175	1/7/20 10:02	60.3	39.5	0.1	0.1	-32.5	92	-32.2	92
RLLC0176	1/7/20 10:12	50.5	49.3	0	0.2	-0.1	91	-0.2	91
RLLC0179	1/2/20 13:51	43.4	27.5	0.1	29	-49.3	69	-48.8	69
RLLC0180	1/7/20 10:44	53.1	39.5	0	7.4	-3.7	90	-4.1	91
RLLC0181	1/7/20 14:11	52	38.9	0	9.1	-14.1	103	-13.8	103
RLLC0183	1/7/20 10:24	38.8	31.7	0.5	29	-5.6	72	-4.9	70
RLLC0184	1/7/20 10:34	59.6	39.1	0	1.3	-8.1	95	-8.9	97
RLLC0185	1/7/20 10:08	51.7	48.2	0	0.1	-0.8	88	-0.8	88
RLLC0186	1/7/20 9:55	53.9	39.8	0	6.3	-16.9	94	-19.4	94
RLLC0187	1/7/20 9:50	57.2	38.2	1	3.6	-43.4	99	-42.8	99
RLLC0188	1/7/20 9:45	54.5	39.8	0	5.7	-7.8	103	-8.2	104
RLLC0189	1/7/20 9:41	55.9	39.1	0	5	-8.8	106	-9.9	107
RLLC0190	1/7/20 9:38	41.7	33.8	0	24.5	-2.5	102	-2.1	100
RLLC0191	1/2/20 13:48	55.3	36.1	0	8.6	-0.7	75	-1	78
RLLC0193	1/2/20 14:36	54.7	39.5	0	5.8	-12.7	106	-13.5	106
RLLC0194	1/6/20 11:19	54.6	40.5	0	4.9	-21.9	99	-26	99
RLLC0195	1/6/20 11:15	60.2	39.7	0	0.1	-42.8	78	-44.5	78
RLLC0196	1/6/20 11:12	50.6	34.1	2.8	12.5	-28.5	100	-28.5	100
RLLC0198	1/6/20 14:02	60.3	39.2	0.3	0.2	-36.5	95	-37.9	95
RLLC0199	1/6/20 13:59	58.5	41.4	0	0.1	-43.1	103	-44.5	103
RLLC0200	1/6/20 13:49	51.8	36.4	0	11.8	-7.3	95	-7.3	95
RLLC0201	1/6/20 13:46	54.7	40	0	5.3	-22.5	98	-26.4	99
RLLC0202	1/6/20 14:14	56.9	37.7	1.2	4.2	-8.4	94	-14.4	96
RLLC0203	1/7/20 7:57	59.5	39.5	0.7	0.3	-42.7	88	-44.7	89
RLLC0204	1/7/20 8:00	56.9	38.9	0.5	3.7	-3.9	95	-7.1	96
RLLC0205	1/8/20 11:55	45.7	34.1	0	20.2	-0.2	85	-0.1	85
RLLC0206	1/7/20 8:14	45.8	33.2	0.3	20.7	-1	96	-0.8	94
RLLC0207	1/7/20 8:24	50.1	34.8	0	15.1	-0.1	80	-0.1	82
RLLC0208	1/7/20 8:28	56.3	37.4	1.2	5.1	-9.4	66	-15.7	68
RLLC0209	1/7/20 8:10	43.6	33.8	0	22.6	-0.9	94	-0.6	93
RLLC0210	1/7/20 8:03	48.3	36.6	0	15.1	-0.4	98	-0.3	98
RLLC0212	1/6/20 10:31	56.6	40.9	0	2.5	-28.1	87	-29.5	87
RLLC0212	1/14/20 7:47	55.7	40.6	0.4	3.3	-30.6	87	-30.8	87
RLLC0213	1/6/20 10:14	67.1	32.5	0	0.4	-9.3	66	-23.3	70
RLLC0214	1/6/20 10:21	62.1	37.6	0.1	0.2	-43.2	92	-44.6	93
RLLC0215	1/6/20 10:18	60.1	39.8	0	0.1	-3	85	-4.8	88
RLLC0217	1/6/20 14:25	56.8	38.2	0	5	-9.7	91	-11.6	92
RLLC0219	1/6/20 9:36	43.9	34.6	1.6	19.9	-2.5	98	-1.5	98
RLLC0221	1/6/20 14:10	58.5	41.4	0	0.1	-44.8	94	-45.8	94
RLLC0222	1/6/20 7:50	57.4	41.7	0.1	0.8	-10.8	97	-12	98
RLLC0222	1/14/20 7:24	55.6	41.8	0	2.6	-12.3	97	-15.6	98
RLLC0223	1/6/20 7:53	53.3	42.2	0	4.5	-4.9	98	-5.2	98
RLLC0223	1/14/20 7:28	53.5	42.3	0	4.2	-5.4	98	-6.4	99
RLLC0224	1/6/20 7:56	57.2	40.9	0.1	1.8	-3.2	103	-4	104
RLLC0224	1/14/20 7:31	55.9	40.9	0	3.2	-4.1	103	-6.1	104
RLLC0225	1/6/20 13:43	43.1	33.6	0.2	23.1	-17.2	94	-14.7	94
RLLC0226	1/6/20 10:25	58.2	41.7	0	0.1	-28.8	90	-31.8	90
RLLC0226	1/14/20 7:43	57.9	41.7	0.2	0.2	-37.9	87	-43.3	89
RLLC0227	1/2/20 14:10	55.7	36.6	0	7.7	-3.7	83	-4.3	82
RLLC0228	1/6/20 14:07	59.6	40.3	0	0.1	-8.4	96	-28.5	102
RLLC0229	1/6/20 13:55	57	40.8	0	2.2	-1.7	104	-2.1	105
RLLC0230	1/6/20 8:04	49.7	41	0	9.3	-2.8	109	-2.1	109
RLLC0231	1/6/20 9:29	49.1	37.4	0	13.5	-3.4	92	-2.9	92

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - January 2, 6, 7, 8, and 14, 2020

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	1/6/20 11:06	58	41	0	1	-1.2	99	-1.5	99
RLHC0156	1/8/20 9:08	61.3	38.6	0	0.1	-1.5	74	-3.2	81
RLLC0232	1/6/20 9:24	49.6	39.1	0	11.3	-4.8	91	-3.5	91
RLLC0233	1/6/20 8:20	49.3	40.2	0	10.5	-1.7	98	-1.5	98
RLLC0234	1/6/20 9:07	52.4	42.1	0.2	5.3	-11.2	91	-12.4	91
RLLC0235	1/6/20 9:10	50.5	40.2	0.5	8.8	-7.1	89	-7.1	89
RLLC0236	1/6/20 9:14	49.3	39.5	0	11.2	-2.5	89	-2	89
RLLC0237	1/6/20 8:27	57.6	41.9	0	0.5	-5.2	96	-6.9	97
RLLC0238	1/6/20 8:43	53.8	46.1	0	0.1	-1.7	97	-2	97
RLLC0239	1/6/20 8:38	54.3	40.3	0	5.4	-0.9	98	-1.1	98
RLLC0240	1/6/20 8:17	50.9	39.2	0.2	9.7	-1.8	98	-1.8	98
RLLC0241	1/6/20 9:01	53.9	43.8	0	2.3	-39	97	-39.6	97
RLLC0242	1/6/20 8:57	47	41	0	12	-3.3	98	-2.5	98
RLLC0243	1/2/20 13:45	51.4	48.5	0	0.1	-0.4	92	-0.4	92
RLLC0244	1/2/20 13:43	54	45.9	0	0.1	-0.5	98	-0.6	98
RLLC0245	1/2/20 13:39	49.3	48.6	0	2.1	-0.2	90	-0.2	89

There are 118 total collectors; 109 vertical wells and 9 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

"H2O = in. w.c.= inches in water column

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - February 5, 6, 11, 12, 13, 14, and 17, 2020

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (^{o}F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (^{o}F)
RLHC0153	2/12/20 10:08	52.4	40	0	7.6	-1.9	101	-2.2	101
RLHC0156	2/13/20 13:25	48.2	33.4	0.5	17.9	-0.7	95	-0.6	95
RLI00003	2/12/20 15:14	61.9	37.7	0	0.4	-36.3	76	-37.5	76
RLI00008	2/12/20 13:55	62.1	36.6	0.2	1.1	-46.4	97	-46.4	97
RLI00016	2/12/20 13:37	51.7	26.5	2.2	19.6	-46.6	79	-46.6	79
RLI00017	2/12/20 13:40	51.7	34.3	0.9	13.1	-37.4	77	-37.5	77
RLI00018	2/12/20 13:46	57.1	33.5	0.9	8.5	-39.6	83	-41.3	83
RLI00019	2/12/20 13:51	60.9	33.6	1.4	4.1	-45.1	80	-45	79
RLI00029	2/5/20 9:44	52.1	38.1	1.7	8.1	-39.9	82	-40.1	82
RLI00034	2/12/20 15:06	56	38	1.4	4.6	-27.1	80	-25.7	80
RLI00035	2/12/20 15:01	59.8	39.6	0	0.6	-31.2	77	-36.6	77
RLI00045	2/12/20 14:48	37.5	30.1	0.2	32.2	-5.4	83	-4.5	84
RLI00047	2/12/20 14:52	43.9	33.5	0	22.6	-5.1	83	-4.9	84
RLI00065	2/5/20 9:06	51.2	44	0	4.8	-7.1	97	-7.1	97
RLI00083	2/5/20 8:25	55.3	34.8	2.2	7.7	-46.3	91	-46.3	91
RLI00083	2/11/20 8:07	57.6	35.2	1.5	5.7	-45.4	91	-45.3	91
RLI00089	2/13/20 14:03	49.8	36.1	2.5	11.6	-11.7	97	-10.6	97
RLI00095	2/11/20 8:03	52.7	35.8	0	11.5	-3	93	-3.3	93
RLI00132	2/13/20 9:23	51.4	35.6	0.4	12.6	-28.3	102	-28.3	102
RLI00134	2/13/20 9:47	56	39.4	0	4.6	-31.1	109	-33	109
RLI00135	2/13/20 10:22	56.6	39.9	0	3.5	-33.7	105	-33.6	106
RLI00137	2/12/20 8:22	63.7	36.2	0	0.1	-42	75	-40.1	75
RLI00138	2/17/20 8:27	60.8	23.9	3.2	12.1	-45.3	57	-45.3	56
RLI00139	2/17/20 8:24	43.4	30	2.3	24.3	-45.2	56	-45.2	56
RLI00140	2/11/20 8:49	63.5	27.9	1.5	7.1	-44.2	69	-44.1	69
RLI00141	2/11/20 9:28	49.3	34.2	0.5	16	-20.8	89	-20.2	90
RLI00142	2/11/20 8:53	63	32.8	0.1	4.1	-43.7	83	-43.6	84
RLI00220	2/5/20 7:28	51.2	38.6	0.5	9.7	-0.7	40	-0.7	40
RLI0100C	2/12/20 15:10	60.5	39.4	0	0.1	-29.2	84	-29.3	84
RLI0102C	2/13/20 9:14	60	39.4	0.4	0.2	-40.6	88	-40.4	88
RLI0105C	2/13/20 10:27	51	36.7	1	11.3	-16.1	105	-16.1	105
RLI0106C	2/13/20 8:40	54.8	35.7	1.5	8	-44	95	-44.1	95
RLI0107C	2/12/20 11:18	54	36.5	0	9.5	-10.3	101	-11.4	102
RLI0108A	2/12/20 14:07	16	14.6	8.6	60.8	-43.7	82	-43.7	82
RLI0108A	2/12/20 14:11	16	14.5	8.5	61	-43.6	80	-43.1	80
RLI0108A	2/13/20 13:53	2.4	11.9	5.4	80.3	-43.6	66	-43.7	66
RLI0108A	2/14/20 11:16	0.6	2.8	18.1	78.5	-44.8	67	-44.8	66
RLI0108A	2/17/20 8:15	1.9	5.5	14.5	78.1	-45.4	61	-45.2	57
RLI0114A	2/11/20 18:16	49.3	29.8	2.9	18	-34.1	83	-26.4	83
RLI0115E	2/11/20 18:03	60.8	37.7	0.3	1.2	-37.5	77	-35.9	77
RLI0116E	2/12/20 8:27	53.3	36.7	1.9	8.1	-42	65	-42.4	65
RLI0117D	2/12/20 8:32	59.3	40.5	0	0.2	-38.2	92	-41.5	92
RLI0120D	2/5/20 8:21	45.7	30.2	4.8	19.3	-3.3	65	-2.5	66
RLI0120D	2/11/20 8:11	45.4	29	4.8	20.8	-4.1	73	-3.2	73
RLI0124G	2/5/20 7:50	48.9	35.9	0	15.2	-16.9	82	-15.4	81
RLI0124G	2/11/20 8:18	49.7	35.8	0	14.5	-13.5	82	-13	81
RLI0126C	2/13/20 9:03	60.5	30.2	2	7.3	-40.8	67	-40.8	67
RLI0127B	2/13/20 9:37	52.8	36.9	0.7	9.6	-33	104	-33.2	104
RLI0128A	2/12/20 11:22	50	38.6	0	11.4	-0.4	104	-0.4	104
RLI0129E	2/13/20 13:35	66.3	32.7	0.8	0.2	-44.7	75	-44.6	75
RLI0130E	2/13/20 13:29	54	34.7	0	11.3	-29.2	77	-30.4	77
RLIHC101	2/5/20 7:56	54.1	38.6	0	7.3	-33.1	90	-33.1	90
RLIHC101	2/11/20 8:25	53.5	37.5	0.4	8.6	-33.2	91	-32.8	90
RLIHC102	2/5/20 7:54	50.8	39.3	0	9.9	-9.6	95	-9.6	95
RLIHC102	2/11/20 8:21	51.1	39	0	9.9	-9.9	95	-9.9	95
RLIHC105	2/12/20 8:50	45.7	39.2	0	15.1	-5.4	93	-3.2	93

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - February 5, 6, 11, 12, 13, 14, and 17, 2020

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	2/12/20 10:08	52.4	40	0	7.6	-1.9	101	-2.2	101
RLHC0156	2/13/20 13:25	48.2	33.4	0.5	17.9	-0.7	95	-0.6	95
RLIHC107	2/12/20 8:42	29.5	31.5	0.2	38.8	-1.2	126	-0.3	125
RLLC0165	2/13/20 14:16	62.8	37.1	0	0.1	-45.6	77	-44.7	78
RLLC0166	2/13/20 14:19	63.3	36.6	0	0.1	-45.2	85	-45	85
RLLC0169	2/13/20 14:13	59.3	35.5	0	5.2	-42.4	101	-43.1	101
RLLC0170	2/13/20 14:10	48.7	35.3	0	16	-10.9	83	-9.7	79
RLLC0171	2/12/20 8:46	22.8	29.5	0.8	46.9	-5.4	93	-0.5	91
RLLC0175	2/13/20 10:37	59.6	40.2	0	0.2	-29.1	92	-29.3	93
RLLC0176	2/13/20 9:28	38.5	42.9	0	18.6	-1	94	-0.5	95
RLLC0177	2/6/20 14:49	58.8	41.1	0	0.1	-5.4	95	-6.5	96
RLLC0177	2/11/20 18:42	55.6	42.2	0.3	1.9	-26.4	102	-29	103
RLLC0178	2/6/20 14:42	62	37.9	0	0.1	-20.3	71	-24.5	71
RLLC0179	2/11/20 8:38	42.3	31.5	0	26.2	-13.1	74	-5.6	73
RLLC0180	2/13/20 10:16	56	39.8	0	4.2	-4.1	92	-4.4	93
RLLC0181	2/12/20 14:01	53.4	39.2	0	7.4	-14.1	104	-15.6	104
RLLC0183	2/13/20 9:33	32	29.9	0.1	38	-6.5	84	-5.7	84
RLLC0184	2/13/20 9:42	57	38.7	0	4.3	-13.3	99	-13.7	99
RLLC0185	2/6/20 14:52	51.5	44.7	0	3.8	-2.1	103	-2.2	103
RLLC0186	2/13/20 9:52	54.5	40.1	0	5.4	-17.6	96	-18.5	96
RLLC0187	2/13/20 10:02	60	39.9	0	0.1	-41.6	99	-42	99
RLLC0188	2/13/20 10:06	56	40.9	0	3.1	-8.7	105	-9.3	105
RLLC0189	2/13/20 10:11	51.5	38.7	0	9.8	-10.5	108	-10.5	108
RLLC0190	2/13/20 10:18	38.6	34.5	0.1	26.8	-2.3	94	-2	94
RLLC0191	2/5/20 8:11	48.8	35.9	0	15.3	-2	86	-1.7	85
RLLC0193	2/11/20 18:08	52.5	38.5	0	9	-14.9	106	-16.3	107
RLLC0194	2/12/20 10:21	52.8	39.7	0	7.5	-25.6	101	-27.9	102
RLLC0195	2/12/20 10:18	46	35.4	0	18.6	-42.3	85	-38.9	85
RLLC0196	2/12/20 10:04	51	34.7	2.5	11.8	-25	102	-25	102
RLLC0198	2/12/20 9:39	52.2	37	0.8	10	-37.6	98	-37.1	97
RLLC0199	2/12/20 9:36	52.3	38.9	0	8.8	-42.9	106	-43.5	106
RLLC0200	2/12/20 9:31	37.3	31.9	0.6	30.2	-5.2	98	-4.1	98
RLLC0201	2/12/20 9:11	41.3	35.1	0.7	22.9	-3.8	105	-3.2	105
RLLC0202	2/12/20 11:07	53.3	38.5	0.1	8.1	-13.4	98	-20.1	100
RLLC0203	2/12/20 11:12	47	36	0	17	-39.3	96	-33	96
RLLC0204	2/13/20 8:44	49.8	37	0.4	12.8	-3.6	101	-3.6	101
RLLC0205	2/13/20 8:50	28.2	28.5	0.5	42.8	-0.3	88	-0.2	87
RLLC0206	2/13/20 8:57	38.4	32.7	0.4	28.5	-3.9	101	-3	101
RLLC0207	2/13/20 9:06	57.3	37	0.4	5.3	-0.1	77	-0.3	82
RLLC0208	2/13/20 9:08	49.9	34.9	2.7	12.5	-9.2	72	-9.2	72
RLLC0209	2/13/20 8:53	44	34	0	22	-0.7	93	-0.6	93
RLLC0210	2/13/20 8:47	27.7	29.2	0	43.1	-1.6	101	-1.1	100
RLLC0212	2/12/20 7:53	57.9	41	0.3	0.8	-29.7	88	-29.4	88
RLLC0213	2/12/20 7:37	57.2	32.7	0	10.1	-15.7	68	-19.4	69
RLLC0214	2/12/20 7:46	54.9	36	0.9	8.2	-41.4	94	-42.2	94
RLLC0215	2/12/20 7:41	59.1	36.2	0	4.7	-5.1	92	-10.2	94
RLLC0217	2/5/20 7:35	47.9	37.2	0.6	14.3	-13.8	91	-11.2	91
RLLC0217	2/11/20 8:44	52.5	38.4	0	9.1	-10.5	92	-12.5	92
RLLC0219	2/11/20 18:21	42.1	35.6	0.7	21.6	-18.5	102	-8.5	102
RLLC0221	2/12/20 9:47	50.4	37	0.4	12.2	-39.2	97	-39.3	97
RLLC0222	2/11/20 14:00	44.5	37.9	0.2	17.4	-15.6	97	-11.3	97
RLLC0223	2/11/20 13:56	42.2	38.2	0	19.6	-6.2	98	-4.4	98
RLLC0224	2/11/20 13:53	47.3	38.7	0	14	-5.8	101	-4.5	101
RLLC0225	2/12/20 9:07	26.6	27.5	1.5	44.4	-29.6	96	-15	94
RLLC0226	2/12/20 7:50	58	41.9	0	0.1	-39.2	85	-42.8	86
RLLC0227	2/11/20 7:58	54.8	35.9	0	9.3	-5.4	79	-8.3	80

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - **February 5, 6, 11, 12, 13, 14, and 17, 2020**

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	2/12/20 10:08	52.4	40	0	7.6	-1.9	101	-2.2	101
RLHC0156	2/13/20 13:25	48.2	33.4	0.5	17.9	-0.7	95	-0.6	95
RLLC0228	2/12/20 9:44	51.3	35.9	1.7	11.1	-15.9	102	-15.9	102
RLLC0229	2/12/20 9:58	48.7	38.4	0	12.9	-1.7	103	-1.3	102
RLLC0230	2/12/20 8:39	50.8	41.5	0	7.7	-3.3	110	-3.3	110
RLLC0231	2/12/20 10:54	49.1	37.3	0	13.6	-2.8	93	-2.2	93
RLLC0232	2/11/20 18:31	52.7	39.6	0.1	7.6	-2.8	89	-3.3	89
RLLC0233	2/5/20 10:51	46.8	39	0.2	14	-1.1	99	-0.8	99
RLLC0234	2/5/20 9:40	50.6	41.4	0.6	7.4	-10.7	91	-10.7	91
RLLC0235	2/5/20 9:37	49.5	40.3	0.4	9.8	-5.2	89	-4.2	89
RLLC0236	2/5/20 9:32	49.9	39.4	0	10.7	-1.5	89	-1.3	89
RLLC0237	2/5/20 10:59	55.1	41.4	0	3.5	-7.4	94	-8.6	94
RLLC0238	2/5/20 11:05	54	44.4	0	1.6	-2.1	97	-2.4	97
RLLC0239	2/5/20 10:56	48.8	38.5	0	12.7	-0.8	97	-0.5	97
RLLC0240	2/5/20 10:53	50.5	39.1	0	10.4	-0.9	99	-0.9	99
RLLC0241	2/5/20 9:12	52.3	43.6	0	4.1	-37.8	97	-37.7	97
RLLC0242	2/5/20 9:09	47.6	52.3	0	0.1	-2.4	98	-1.6	97
RLLC0243	2/5/20 8:07	53.3	46.6	0	0.1	-0.4	93	-0.5	93
RLLC0244	2/5/20 8:04	54.5	45.4	0	0.1	-0.6	98	-0.8	98
RLLC0245	2/5/20 8:01	52.9	47	0	0.1	-0.5	94	-0.6	94

There are 117 total collectors; 108 vertical wells and 9 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

"H2O = in. w.c.= inches in water column

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - March 2, 3, 9, 10, 11, and 13, 2020

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (^{o}F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (^{o}F)
RLHC0153	3/3/20 8:48	47.5	39.1	0	13.4	-2.5	101	-2	101
RLHC0156	3/11/20 12:31	61.7	36.8	0	1.5	-0.2	91	-0.9	94
RLI00003	3/9/20 13:44	51.1	44.1	0.1	4.7	-17.5	74	-17.6	74
RLI00008	3/2/20 13:42	56.7	34.6	0.6	8.1	-48	78	-47.8	79
RLI00016	3/9/20 13:07	32.2	25.6	0.3	41.9	-45.6	74	-42.6	73
RLI00017	3/9/20 13:13	40.1	31.2	0.4	28.3	-37.6	75	-34.4	75
RLI00018	3/9/20 13:22	36.1	28	1.5	34.4	-43.4	77	-43.4	77
RLI00019	3/9/20 13:28	59.2	32.2	1.5	7.1	-45.7	72	-46.2	72
RLI00029	3/3/20 7:29	60.6	39.3	0	0.1	-49.3	87	-49.3	87
RLI00029	3/9/20 9:51	50.7	37.6	1.4	10.3	-47.9	87	-47.8	87
RLI00034	3/9/20 13:57	53.5	37.1	1.4	8	-27.2	78	-28.3	79
RLI00035	3/9/20 14:06	55.3	37.4	0.2	7.1	-38.2	76	-38.9	76
RLI00045	3/9/20 14:10	45.8	29.8	0.2	24.2	-6.6	74	-1.8	74
RLI00047	3/9/20 14:14	49.7	33.9	0	16.4	-2.5	78	-2.4	79
RLI00065	3/3/20 7:38	51.3	42.6	0	6.1	-5.3	98	-5.3	99
RLI00083	3/2/20 9:09	56.3	35	1.6	7.1	-46.1	92	-46.1	92
RLI00089	3/10/20 7:43	47.7	36	3	13.3	-4.5	97	-3.7	96
RLI00095	3/2/20 9:04	44.2	34.4	0	21.4	-3.4	94	-2.7	94
RLI00132	3/2/20 14:03	52.1	36.4	0	11.5	-31.2	102	-31.5	102
RLI00134	3/2/20 10:55	51.7	38.3	0	10	-34.1	109	-34.2	109
RLI00134	3/9/20 9:19	51.7	37.9	0	10.4	-34.5	109	-34.8	109
RLI00135	3/2/20 10:59	54.5	38.6	0	6.9	-35.1	106	-35.1	105
RLI00135	3/9/20 9:23	55	38.6	0	6.4	-35.4	99	-35.9	100
RLI00137	3/9/20 9:35	57.2	32.5	1.9	8.4	-43.5	84	-42.3	85
RLI00138	3/10/20 6:58	67.5	30.8	0.7	1	-47	49	-47.1	47
RLI00139	3/10/20 7:15	12.3	16	9.7	62	-38.5	48	-42.8	48
RLI00139	3/10/20 7:17	9.8	13	11.8	65.4	-47.2	50	-47.1	50
RLI00139	3/13/20 13:43	31.7	28	5.6	34.7	-44.5	70	-44.4	70
RLI00140	3/10/20 6:50	60.7	26.5	2.5	10.3	-46.8	59	-46.8	57
RLI00141	3/10/20 9:03	51.5	35.2	0	13.3	-20.1	91	-20.2	92
RLI00142	3/10/20 6:54	61.9	32.6	0.4	5.1	-46.3	79	-46.2	80
RLI00220	3/2/20 8:28	50.5	38.6	0.5	10.4	-0.9	51	-0.9	51
RLI0100C	3/9/20 13:52	60.7	39.2	0	0.1	-30.2	83	-30	83
RLI0102C	3/11/20 10:54	57.8	38.5	0.4	3.3	-41.4	90	-41.2	90
RLI0105C	3/11/20 10:09	50.4	37.6	0.2	11.8	-17	106	-17.1	106
RLI0106C	3/11/20 10:03	56.1	36.6	0.9	6.4	-45.2	99	-45.2	99
RLI0107C	3/11/20 7:58	59.9	40	0	0.1	-2.1	88	-5.1	91
RLI0114A	3/2/20 13:22	51.4	29.2	3.2	16.2	-27.5	87	-29.5	88
RLI0115E	3/2/20 11:37	55.5	36.2	0.6	7.7	-37.7	84	-41.2	85
RLI0116E	3/10/20 8:18	56.8	37.9	1.2	4.1	-42.5	66	-42	66
RLI0117D	3/10/20 8:23	60	39.8	0.1	0.1	-43.7	91	-40.9	91
RLI0120D	3/2/20 9:14	45.5	29.4	4.2	20.9	-5.6	81	-3.1	81
RLI0124G	3/2/20 8:33	50.6	36	0	13.4	-12.7	84	-12.7	84
RLI0126C	3/11/20 10:39	60.1	30.6	1.6	7.7	-41.6	80	-41.5	80
RLI0127B	3/2/20 13:52	50.5	35.4	1	13.1	-31.6	103	-31.8	103
RLI0128A	3/11/20 9:58	51.4	38.9	0	9.7	-0.3	106	-0.4	106
RLI0129E	3/11/20 12:38	53	28.4	3.7	14.9	-45.2	80	-45.3	80
RLI0130E	3/11/20 12:26	45.9	32.5	0	21.6	-28.1	79	-24.9	79
RLIHC101	3/2/20 8:44	55.9	38.9	0	5.2	-35.2	92	-35.3	93
RLIHC102	3/2/20 8:38	49.9	38.2	0	11.9	-9.9	97	-9.4	97
RLIHC105	3/10/20 7:38	50.4	40	0	9.6	-2.5	93	-2.5	93
RLIHC107	3/3/20 13:32	43.8	38	0	18.2	-0.7	123	-0.3	123
RLLC0165	3/10/20 7:31	60.1	36.6	1	2.3	-47.1	84	-46.7	85
RLLC0166	3/10/20 7:28	58.5	33.3	1.8	6.4	-47.6	85	-47.3	85
RLLC0169	3/10/20 8:36	54.4	34.5	0	11.1	-45	101	-45.4	101
RLLC0170	3/10/20 8:34	49.5	35.2	0	15.3	-9.3	68	-9.3	68

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - March 2, 3, 9, 10, 11, and 13, 2020

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	3/3/20 8:48	47.5	39.1	0	13.4	-2.5	101	-2	101
RLHC0156	3/11/20 12:31	61.7	36.8	0	1.5	-0.2	91	-0.9	94
RLLC0171	3/3/20 13:35	39.5	37.7	0	22.8	-0.6	96	-0.6	96
RLLC0175	3/2/20 10:50	59.9	40	0	0.1	-30	91	-30	92
RLLC0176	3/2/20 10:45	38.4	41.5	0	20.1	-0.4	96	-0.1	96
RLLC0177	3/2/20 10:25	53	43.2	0	3.8	-36.5	105	-36.2	105
RLLC0177	3/11/20 10:59	52.2	43.1	0	4.7	-36.8	104	-36.2	104
RLLC0178	3/2/20 10:40	44.9	43.3	1.3	10.5	-39.4	72	-37.7	70
RLLC0179	3/2/20 9:17	41.4	31.4	0	27.2	-3.6	77	-3.6	77
RLLC0180	3/9/20 8:49	50.9	37.5	0	11.6	-4.2	94	-4.2	94
RLLC0181	3/11/20 10:13	49.6	37.9	0	12.5	-17.5	104	-17	105
RLLC0183	3/2/20 13:55	39.4	30.4	0.4	29.8	-3	78	-3	78
RLLC0184	3/2/20 13:47	50.8	36.9	0	12.3	-13.7	99	-13.7	100
RLLC0185	3/2/20 10:31	25.4	36.8	1.2	36.6	-1.2	105	-1.3	109
RLLC0186	3/9/20 9:11	47.9	37.4	0	14.7	-19.5	96	-17.8	96
RLLC0187	3/9/20 9:14	56.9	38.9	0	4.2	-43.2	99	-43.6	100
RLLC0188	3/9/20 9:06	46.3	37.8	0	15.9	-9.9	103	-8.4	103
RLLC0189	3/9/20 9:00	44.9	36.2	0	18.9	-10.9	107	-8.1	107
RLLC0190	3/9/20 8:53	33.8	32.2	0	34	-2.3	93	-2	91
RLLC0191	3/10/20 9:07	49	34.6	0.1	16.3	-1.1	82	-1.1	83
RLLC0193	3/2/20 13:17	52.9	38	0	9.1	-17.8	107	-18.5	107
RLLC0194	3/3/20 8:35	49.9	39.4	0	10.7	-28.6	101	-27.1	101
RLLC0195	3/3/20 8:40	43.4	34.5	0	22.1	-39.5	87	-32.8	87
RLLC0196	3/3/20 8:45	59.6	39.7	0	0.7	-27.2	105	-27.3	105
RLLC0198	3/3/20 8:25	38.1	31.9	0.1	29.9	-38.7	104	-28.4	104
RLLC0199	3/3/20 8:20	51.4	38.9	0	9.7	-43.9	108	-44.4	108
RLLC0200	3/3/20 8:12	50.7	35.8	0	13.5	-1.4	91	-1.5	91
RLLC0201	3/3/20 8:08	49	38.4	0	12.6	-2.4	106	-2.4	106
RLLC0202	3/11/20 7:45	54.6	37.5	0.2	7.7	-2.8	89	-5.5	91
RLLC0203	3/11/20 7:50	46.6	36.1	0	17.3	-24.1	96	-21.6	96
RLLC0204	3/11/20 10:21	48.8	36.6	0	14.6	-2.8	102	-2.7	102
RLLC0205	3/11/20 10:29	32.8	30.8	0	36.4	-0.2	88	-0.1	88
RLLC0206	3/11/20 10:35	52.3	33.6	0	14.1	-0.5	98	-0.6	99
RLLC0207	3/11/20 10:47	45.1	33.2	0	21.7	-0.1	84	-0.1	85
RLLC0208	3/11/20 10:50	50.6	35.7	1.4	12.3	-7	79	-7	79
RLLC0209	3/11/20 10:32	51.6	35.4	0	13	-0.3	94	-0.3	94
RLLC0210	3/11/20 10:25	32.9	31.7	0	35.4	-0.7	100	-0.4	99
RLLC0212	3/2/20 9:47	54.9	39.3	0.5	5.3	-28.4	88	-28.2	88
RLLC0213	3/2/20 9:32	29.5	26.4	0	44.1	-14.6	80	-10.4	80
RLLC0214	3/2/20 9:40	46.8	34.1	0.2	18.9	-37.6	96	-16.7	95
RLLC0215	3/2/20 9:35	42.9	32.7	0	24.4	-10	95	-8.1	95
RLLC0217	3/10/20 6:47	51.2	40	0	8.8	-13.3	94	-13	93
RLLC0219	3/2/20 13:26	47.2	37.4	0.2	15.2	-3.3	101	-1.9	101
RLLC0221	3/11/20 7:42	45	33.9	0	21.1	-36	100	-28.1	100
RLLC0222	3/2/20 10:08	49.8	38.8	0.5	10.9	-11.3	98	-9.9	98
RLLC0223	3/2/20 10:11	49.8	40.4	0	9.8	-5.3	99	-4.7	99
RLLC0224	3/2/20 10:14	49.9	38.3	0.2	11.6	-4.4	102	-3.8	102
RLLC0225	3/3/20 8:04	40.8	32.6	1.4	25.2	-5.6	96	-5.6	96
RLLC0226	3/2/20 9:43	59.3	40.6	0	0.1	-43.7	87	-44.7	87
RLLC0227	3/2/20 9:21	41.5	32	1	25.5	-8.5	80	-5.4	80
RLLC0228	3/3/20 8:29	43	33.6	0	23.4	-11.4	107	-8.3	107
RLLC0229	3/3/20 8:16	42.9	34.5	1.4	21.2	-0.7	97	-0.7	97
RLLC0230	3/3/20 13:28	51.3	41.6	0	7.1	-3.1	111	-3.2	111
RLLC0231	3/2/20 13:31	52.5	37.8	0	9.7	-1.7	92	-2.1	92
RLLC0232	3/2/20 13:35	51.7	38.8	0	9.5	-3.4	89	-3.4	89
RLLC0233	3/3/20 13:24	47.5	39.5	0	13	-0.9	100	-0.7	100

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - March 2, 3, 9, 10, 11, and 13, 2020

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	3/3/20 8:48	47.5	39.1	0	13.4	-2.5	101	-2	101
RLHC0156	3/11/20 12:31	61.7	36.8	0	1.5	-0.2	91	-0.9	94
RLLC0234	3/3/20 7:25	53.3	41.3	0.5	4.9	-8.8	91	-9.9	91
RLLC0235	3/3/20 7:22	51.8	39.8	0.5	7.9	-3.3	89	-3.3	90
RLLC0236	3/3/20 7:41	52.2	39.8	0	8	-1.3	89	-1.8	89
RLLC0237	3/9/20 9:38	53.1	39.7	0	7.2	-9.5	93	-10.6	93
RLLC0238	3/9/20 9:42	54.3	41.5	0	4.2	-3.2	97	-4	97
RLLC0239	3/9/20 10:43	47.7	36.7	0	15.6	-0.7	97	-0.5	97
RLLC0240	3/9/20 10:41	52.6	37.8	0.1	9.5	-1.1	99	-1.2	99
RLLC0241	3/3/20 7:33	53.3	43.4	0	3.3	-39.2	98	-39.4	99
RLLC0242	3/9/20 9:46	53	46.9	0	0.1	-2.5	99	-3.4	99
RLLC0243	3/2/20 8:53	47.9	42.1	0	10	-0.6	97	-0.4	97
RLLC0244	3/2/20 8:49	43.5	38.4	0	18.1	-0.4	98	-0.3	98
RLLC0245	3/2/20 8:46	32.6	35	0	32.4	-0.7	95	-0.4	95

There are 115 total collectors; 106 vertical wells and 9 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

"H2O = in. w.c.= inches in water column

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - April 1, 2, 3, 6, 7, 8, and 9, 2020

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	4/7/20 9:26	48.9	39.7	0	11.4	-1.7	101	-1.4	101
RLHC0156	4/8/20 8:56	54.7	34.5	0.6	10.2	-10.2	91	-13.4	96
RLI00003	4/1/20 9:28	50.3	37.7	0.2	11.8	-46.2	73	-46.4	73
RLI00008	4/7/20 10:27	54.7	34.8	0.6	9.9	-49	83	-48.4	83
RLI00016	4/1/20 9:56	28.7	23.8	1.1	46.4	-29.8	62	-28.7	62
RLI00017	4/1/20 9:50	37	29.9	0.5	32.6	-31.7	69	-28.1	68
RLI00018	4/1/20 9:46	31.2	26.8	1.9	40.1	-42	67	-41.6	68
RLI00019	4/1/20 9:42	47.1	28.3	3.7	20.9	-48.4	61	-48.3	61
RLI00029	4/7/20 8:50	59.8	40.1	0	0.1	-48.8	84	-48.7	85
RLI00034	4/7/20 9:59	59	40.9	0	0.1	-27.8	78	-28.2	78
RLI00035	4/7/20 10:03	55.5	38.7	0	5.8	-40.2	75	-41.1	75
RLI00045	4/7/20 10:11	60.3	33.2	0	6.5	-1.5	68	-2.1	70
RLI00047	4/7/20 10:08	62.2	37.7	0	0.1	-0.3	68	-0.6	71
RLI00065	4/7/20 8:37	50.8	42	0	7.2	-4.9	99	-5	99
RLI00083	4/1/20 11:30	55.3	34.1	2	8.6	-43.6	92	-43.6	92
RLI00089	4/7/20 9:17	47.8	36.9	2.4	12.9	-9.9	104	-5.1	104
RLI00095	4/1/20 11:26	54.8	35.7	0	9.5	-1.3	94	-1.7	95
RLI00132	4/7/20 10:48	55.6	38	0	6.4	-26.2	102	-29.3	102
RLI00134	4/6/20 8:31	45.9	35.4	1.9	16.8	-37.1	109	-32.6	110
RLI00135	4/6/20 8:35	48.8	35.9	1.9	13.4	-39	107	-34.8	107
RLI00137	4/1/20 10:14	59.9	32.2	1.6	6.3	-42.6	81	-41.9	81
RLI00140	4/2/20 14:00	66.5	29	0.9	3.6	-46.8	79	-46.9	79
RLI00141	4/1/20 10:25	51.8	35.2	0	13	-20.2	91	-20.2	91
RLI00142	4/1/20 10:20	61.3	32.3	0.5	5.9	-46.9	83	-46.9	83
RLI00220	4/6/20 8:51	51.4	39.3	0.4	8.9	-1.2	45	-1.3	46
RLI0100C	4/7/20 9:54	60.6	39.3	0	0.1	-30	76	-30.4	76
RLI0102C	4/7/20 9:50	59.6	38.5	1.8	0.1	-42.9	91	-42.8	92
RLI0105C	4/8/20 9:08	52.1	37.4	0.1	10.4	-16.6	106	-17	106
RLI0106C	4/1/20 9:34	57.4	35.9	1.3	5.4	-46.1	98	-46	98
RLI0107C	4/7/20 11:31	55.6	38.4	0	6	-5.2	97	-9.1	100
RLI0114A	4/6/20 10:34	51.9	29.5	3.4	15.2	-26.8	68	-24.8	68
RLI0115E	4/1/20 10:08	60.4	36.6	0.7	2.3	-41.3	66	-41.6	67
RLI0116E	4/7/20 8:16	58.5	38.7	0.7	2.1	-38.8	61	-38.5	61
RLI0117D	4/7/20 8:34	58.6	41.3	0	0.1	-43.4	90	-41.4	90
RLI0120D	4/1/20 11:35	51.1	34.4	1.5	13	-0.1	75	-0.1	75
RLI0124G	4/2/20 8:48	50.1	35.1	0.4	14.4	-12	83	-12	83
RLI0126C	4/8/20 9:12	57.1	30.1	1.7	11.1	-40.7	74	-40.7	73
RLI0127B	4/7/20 10:42	54.2	38.1	0	7.7	-35.8	106	-36	107
RLI0128A	4/7/20 11:26	58.9	41	0	0.1	-0.1	90	-0.5	100
RLI0129E	4/1/20 9:21	63.4	33.3	0.8	2.5	-46.6	77	-46.4	77
RLI0130E	4/8/20 8:50	51	33.9	0	15.1	-18.1	76	-18.2	76
RLIHC101	4/2/20 8:55	52.3	37.1	0.5	10.1	-36.7	92	-36.7	92
RLIHC102	4/2/20 8:51	52.5	38.7	0	8.8	-7.4	97	-7.6	97
RLIHC105	4/7/20 9:14	43.8	38.6	0.2	17.4	-2.6	91	-1.9	91
RLIHC107	4/6/20 9:04	36.1	35.8	0	28.1	-0.4	121	-0.4	121
RLLC0165	4/2/20 14:12	57.6	35.3	1.4	5.7	-46.5	91	-47.1	91
RLLC0166	4/2/20 14:15	62.4	35.2	0.6	1.8	-47.2	90	-47.4	91
RLLC0169	4/2/20 14:09	51.9	33.7	0	14.4	-45.2	101	-45.5	101
RLLC0170	4/2/20 14:03	51.8	35.2	0	13	-9.7	80	-9.7	81
RLLC0170	4/2/20 14:05	52.4	35.5	0	12.1	-14	92	-14	93
RLLC0170	4/9/20 9:39	51.3	35	0.1	13.6	-10.5	67	-10.6	69
RLLC0170	4/9/20 9:41	52.7	35.2	0	12.1	-31.8	92	-31.7	93
RLLC0171	4/3/20 9:47	34.8	35	0	30.2	-1.7	92	-1.7	93
RLLC0171	4/3/20 9:49	35.6	35.5	0	28.9	-10	102	-10	103
RLLC0175	4/2/20 11:09	59.5	40.4	0	0.1	-28.8	92	-29	91
RLLC0176	4/2/20 11:03	40	41.6	0.3	18.1	-0.1	96	-0.1	95

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Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	4/7/20 9:26	48.9	39.7	0	11.4	-1.7	101	-1.4	101
RLHC0156	4/8/20 8:56	54.7	34.5	0.6	10.2	-10.2	91	-13.4	96
RLLC0177	4/2/20 10:42	55.8	43.2	0	1	-36.4	105	-37.9	106
RLLC0178	4/2/20 10:57	58.7	41.2	0	0.1	-44.4	62	-44.4	61
RLLC0179	4/1/20 11:38	40.8	30.9	0	28.3	-4.1	78	-4.1	79
RLLC0179	4/2/20 10:12	39	30.4	0	30.6	-4.2	78	-4.2	78
RLLC0179	4/2/20 10:14	40.3	31.1	0	28.6	-25.5	84	-25.6	84
RLLC0180	4/6/20 8:12	52.4	38.1	0	9.5	-4	92	-4.5	93
RLLC0181	4/8/20 9:34	55.4	38.5	0	6.1	-9	104	-10.2	104
RLLC0183	4/3/20 11:18	33.2	28.7	2	36.1	-3.6	66	-3.7	67
RLLC0183	4/3/20 11:24	31	30.1	0	38.9	-14.1	91	-14.1	91
RLLC0184	4/7/20 10:31	44.8	35.4	0	19.8	-14.7	100	-13.8	99
RLLC0185	4/2/20 10:50	23.7	33.8	2.2	40.3	-0.6	76	-0.6	76
RLLC0185	4/2/20 10:52	29.3	34.5	1.8	34.4	-8.9	113	-8.9	114
RLLC0186	4/6/20 8:23	48.9	38.2	0	12.9	-17.2	95	-15.8	95
RLLC0187	4/6/20 8:26	48.9	35	2.5	13.6	-44.4	100	-42.7	100
RLLC0188	4/6/20 8:19	48.6	38.5	0	12.9	-7.2	105	-6.2	105
RLLC0189	4/6/20 8:15	47.6	37.1	0	15.3	-8.3	108	-6.9	108
RLLC0190	4/3/20 11:08	37.2	33.5	0	29.3	-1.2	82	-1.2	82
RLLC0190	4/3/20 11:10	40	34.6	0	25.4	-5	104	-5	104
RLLC0191	4/2/20 9:11	47.4	35	0	17.6	-1.5	87	-1.4	87
RLLC0191	4/2/20 9:30	47	34.5	0	18.5	-3.2	93	-3.2	93
RLLC0193	4/6/20 10:30	51	38.8	0	10.2	-16.9	108	-16.9	108
RLLC0194	4/7/20 9:39	52.7	40.2	0	7.1	-24.7	101	-25.3	101
RLLC0195	4/7/20 9:34	43.3	34.4	0	22.3	-27.4	88	-18.8	88
RLLC0196	4/7/20 9:31	59.8	40.1	0	0.1	-25.5	104	-26.1	105
RLLC0198	4/8/20 9:55	44.4	35	0	20.6	-20.3	111	-12.2	110
RLLC0199	4/8/20 9:59	48.3	37.6	0	14.1	-42.5	110	-39.8	110
RLLC0200	4/3/20 10:04	48.9	35.1	0	16	-1	84	-1	85
RLLC0200	4/3/20 10:05	49.8	35.2	0	15	-9.9	96	-10	97
RLLC0200	4/9/20 8:42	45.6	34.1	0	20.3	-1.5	86	-1.5	87
RLLC0200	4/9/20 8:44	46.9	35	0	18.1	-28.9	100	-28.9	100
RLLC0201	4/3/20 9:57	48.7	37.7	0	13.6	-2.4	106	-2.4	106
RLLC0201	4/3/20 9:59	49	38	0	13	-12.6	107	-12.7	107
RLLC0201	4/9/20 8:34	57.6	39.3	0	3.1	-1.6	104	-1.6	105
RLLC0201	4/9/20 8:36	57.8	39.9	0	2.3	-16.7	108	-16.8	108
RLLC0202	4/8/20 9:44	53.8	38.2	0	8	-1.9	97	-4.9	101
RLLC0203	4/8/20 9:26	52.1	38	0	9.9	-19	97	-21.3	98
RLLC0204	4/8/20 9:22	50.5	37.7	0	11.8	-2.5	103	-2.6	103
RLLC0205	4/8/20 9:16	33.9	32	0	34.1	-0.2	88	-0.1	88
RLLC0206	4/3/20 10:39	54.5	35.1	0	10.4	-0.7	99	-1	100
RLLC0206	4/3/20 10:40	54.8	35.2	0	10	-5.1	101	-5.2	101
RLLC0206	4/9/20 9:23	49.5	34.8	0	15.7	-1.3	100	-1.3	100
RLLC0206	4/9/20 9:26	49.9	35.2	0	14.9	-10.9	104	-10.9	104
RLLC0207	4/3/20 10:45	36.8	30.3	0	32.9	-0.1	61	-0.1	61
RLLC0207	4/3/20 10:47	39.4	31.5	0	29.1	-6.7	62	-6.7	62
RLLC0208	4/3/20 10:50	59.7	40.2	0	0.1	-11.4	74	-25.3	78
RLLC0208	4/3/20 10:52	59.9	40	0	0.1	-41.9	87	-41.7	87
RLLC0209	4/3/20 10:33	52.8	35.5	0	11.7	-0.3	93	-0.5	93
RLLC0209	4/3/20 10:35	53.3	36	0	10.7	-3.4	97	-3.4	97
RLLC0209	4/9/20 9:16	47.6	35	0	17.4	-0.5	93	-0.5	93
RLLC0209	4/9/20 9:19	48.2	35.4	0	16.4	-10.8	97	-10.8	97
RLLC0210	4/8/20 9:19	37.7	34	0	28.3	-0.5	100	-0.3	100
RLLC0212	4/8/20 8:36	58.7	41.2	0	0.1	-21.9	90	-21.7	90
RLLC0212	4/8/20 8:40	58.7	41.2	0	0.1	-22	90	-21.9	90
RLLC0212	4/8/20 11:21	59	40.9	0	0.1	-22.3	90	-22.3	90

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - April 1, 2, 3, 6, 7, 8, and 9, 2020

Device Name	Date Time	CH4 (Methane) (%)	CO2 (Carbon Dioxide) (%)	O2 (Oxygen) (%)	Balance Gas (%)	Initial Static Pressure ("H2O)	Initial Temperature (°F)	Adjusted Static Pressure ("H2O)	Adjusted Temperature (°F)
RLHC0153	4/7/20 9:26	48.9	39.7	0	11.4	-1.7	101	-1.4	101
RLHC0156	4/8/20 8:56	54.7	34.5	0.6	10.2	-10.2	91	-13.4	96
RLLC0213	4/3/20 11:40	38.2	28.1	0	33.7	-6	75	-6	75
RLLC0213	4/3/20 11:42	39	28.4	0	32.6	-24.7	81	-24.9	82
RLLC0214	4/6/20 9:40	48	35.1	0	16.9	-11.5	94	-9.2	94
RLLC0215	4/6/20 9:44	44.9	33.5	0	21.6	-6.6	94	-5.7	94
RLLC0217	4/2/20 13:57	50.9	37.6	0.9	10.6	-9.1	93	-9.2	94
RLLC0219	4/3/20 11:31	52.3	39.7	0	8	-1	98	-1.8	99
RLLC0219	4/3/20 11:33	51.6	39	0.1	9.3	-9	104	-9	104
RLLC0221	4/8/20 9:50	53.9	38	0	8.1	-18.2	100	-20.8	101
RLLC0222	4/6/20 9:01	52.8	41.1	0	6.1	-11	99	-11.7	99
RLLC0223	4/6/20 9:08	54.6	42.3	0	3.1	-4.5	99	-5.4	99
RLLC0224	4/6/20 9:11	53.6	40.4	0	6	-3.8	102	-4.6	102
RLLC0225	4/8/20 10:12	47.5	36.1	0	16.4	-4	99	-3.5	99
RLLC0226	4/6/20 9:50	58.5	41.4	0	0.1	-46.3	89	-46	89
RLLC0227	4/1/20 11:21	52.7	34.6	0.2	12.5	-3.9	78	-4.4	78
RLLC0228	4/3/20 10:20	59.8	38.4	0	1.8	-2.1	96	-6.9	100
RLLC0228	4/9/20 9:00	41	33.6	0	25.4	-7.5	101	-7.5	101
RLLC0228	4/9/20 9:02	39.5	33.2	0.1	27.2	-39.8	109	-39.9	109
RLLC0229	4/3/20 10:10	48.2	38.1	0	13.7	-0.8	94	-0.8	94
RLLC0229	4/3/20 10:12	49.5	39	0	11.5	-2.4	104	-2.5	104
RLLC0229	4/9/20 8:49	39.4	35.8	0	24.8	-2	104	-2	105
RLLC0229	4/9/20 8:52	39.7	36.4	0	23.9	-20.7	112	-20.8	112
RLLC0230	4/6/20 10:16	50.2	40.5	0	9.3	-3.4	111	-3.4	111
RLLC0231	4/6/20 10:39	52.3	38.1	0	9.6	-1.4	90	-2.1	91
RLLC0232	4/7/20 11:15	55.1	39.5	0	5.4	-3	89	-3.3	90
RLLC0233	4/6/20 10:12	51.2	39.7	0	9.1	-1.1	100	-1.1	100
RLLC0233	4/7/20 8:20	47.8	39.4	0	12.8	-1.1	99	-1	99
RLLC0233	4/7/20 8:22	48.7	39.9	0	11.4	-6.7	102	-6.7	102
RLLC0233	4/8/20 13:49	47.9	39	0	13.1	-0.5	98	-0.5	98
RLLC0233	4/8/20 13:51	49.2	39.7	0	11.1	-11.6	101	-11.6	101
RLLC0234	4/7/20 8:54	52.9	41.7	0	5.4	-9.9	93	-10.8	93
RLLC0235	4/7/20 8:58	55	41.9	0	3.1	-3.1	91	-3.9	91
RLLC0236	4/7/20 9:03	49.4	38.8	0	11.8	-1.6	89	-1.4	89
RLLC0237	4/7/20 8:27	52	39.9	0	8.1	-6.4	91	-6.6	91
RLLC0238	4/7/20 8:30	52.4	41.8	0	5.8	-5.1	96	-5.6	96
RLLC0239	4/6/20 10:23	48.7	37.8	0	13.5	-0.4	98	-0.3	98
RLLC0240	4/6/20 10:20	51.3	38.8	0	9.9	-1.2	99	-1.2	99
RLLC0241	4/7/20 8:44	52.4	43.3	0	4.3	-39.4	101	-39.1	101
RLLC0242	4/7/20 8:40	52.4	47.5	0	0.1	-4.1	100	-4.7	100
RLLC0243	4/2/20 9:06	55.4	44.5	0	0.1	-0.3	96	-0.5	97
RLLC0244	4/2/20 9:03	56.7	43.1	0	0.2	-0.5	99	-0.7	100
RLLC0245	4/2/20 8:58	49.9	43.4	0	6.7	-0.3	92	-0.3	92
RLLC0245	4/2/20 9:24	49.7	43	0.1	7.2	-5.7	99	-5.6	100
RLLC0245	4/8/20 13:35	51.2	43.6	0.4	4.8	-0.5	94	-0.5	95
RLLC0245	4/8/20 13:39	52.4	44	0	3.6	-20.4	102	-20.3	102

There are 115 total collectors; 106 vertical wells and 9 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

"H2O = in. w.c.= inches in water column

APPENDIX J

WELLFIELD DEVIATION LOGS

REDWOOD LANDFILL, INC
WELLFIELD DEVIATIONS AND 15-DAY REMONITORING REPORT

MONITORING PERFORMED BY: Mark McKeever and Sean Johnson
UPDATED DATE: 05/26/20
FLOW SENSING DEVICE: Landtec GEM

Well ID	Time	CH_4 (%)	CO_2 (%)	O_2 (%)	Balance Gas (%)	Initial Static Pressure (" w.c.)	Initial Temperature (°F)	Adjusted Static Pressure (" w.c.)	Adjusted Temperature (°F)	Comments	Duration of Exceedance (Days)
RLI0120D	11/5/19 11:08	16.9	14.8	11.5	56.8	-1.7	89	-1.4	90	NSPS/EG CAI;Dec. Flow/Vac.	
RLI0120D	11/5/19 11:11	32.8	23.1	6.4	37.7	-1.4	90	-1.3	90	NSPS/EG CAI;Dec. Flow/Vac.	
RLI0120D	11/5/19 15:29	43.8	28	4.7	23.5	-1.8	95	-1.8	95	No Adj. Made	0
RLI0120D was monitored on 11/5/2019 and was found to be in exceedance for oxygen. Corrective actions were initiated. The well was re-monitored on 11/5/2019. The exceedance was cleared on 11/5/2019.											
No well exceedances in December 2019.											
RLI00138	1/8/20 8:11	31.8	15.9	9.8	42.5	-8	59	-8.3	60	NSPS/EG CAI;Barely Open	
RLI00138	1/8/20 8:16	35.1	17	8.7	39.2	-8.3	61	-6.6	59	Dec. Flow/Vac.;NSPS/EG CAI	
RLI00138	1/8/20 9:56	70.4	29.5	0	0.1	-46.7	53	-46.7	53	Inc. Flow/Vac.	0
RLI00138 was monitored on 1/8/2020 and was found to be in exceedance for oxygen. Corrective actions were initiated. The well was re-monitored on 1/8/2020. The exceedance was cleared on 1/8/2020.											
RLI0108A	2/12/20 14:07	16	14.6	8.6	60.8	-43.7	82	-43.7	82	NSPS/EG CAI	
RLI0108A	2/12/20 14:11	16	14.5	8.5	61	-43.6	80	-43.1	80	NSPS/EG CAI;Barely Open;Dec. Flow/Vac.	
RLI0108A	2/13/20 13:53	2.4	11.9	5.4	80.3	-43.6	66	-43.7	66	NSPS/EG CAI;Barely Open	
RLI0108A	2/14/20 11:16	0.6	2.8	18.1	78.5	-44.8	67	-44.8	66	NSPS/EG CAI;Barely Open;Dec. Flow/Vac.	
RLI0108A	2/17/20 8:15	1.9	5.5	14.5	78.1	-45.4	61	-45.2	57	Barely Open;NSPS/EG CAI	5
RLI0108A was monitored on 2/12/2020 and was found to be in exceedance for oxygen. Corrective actions were initiated. The well was re-monitored on 2/13/2020, 2/14/2020, and 2/17/2020. Well RLI0108A decommissioned pursuant to AN #30065 on 2/17/2020.											
RLI00139	3/10/20 7:15	12.3	16	9.7	62	-38.5	48	-42.8	48	NSPS/EG CAI;Barely Open	
RLI00139	3/10/20 7:17	9.8	13	11.8	65.4	-47.2	50	-47.1	50	Barely Open;NSPS/EG CAI;Dec. Flow/Vac.	
RLI00139	3/13/20 13:43	31.7	28	5.6	34.7	-44.5	70	-44.4	70	NSPS/EG CAI;Barely Open	3
RLI00139 was monitored on 3/10/2020 and was found to be in exceedance for oxygen. Corrective actions were initiated. The well was re-monitored on 3/10/2020 and 3/13/2020. Well RLI00139 decommissioned pursuant to AN #30065 on 3/24/2020.											
No well exceedances in April 2020.											

APPENDIX K

MONTHLY LANDFILL GAS FLOW RATES

REDWOOD LANDFILL, INC.
Novato, CA

Yearly LFG for A-51 & A-60 Flares and S64 & S65 Engines (Engines #1 & #2)

Month	A-51 Flare Total Flow Corrected to HHV of 500 BTU/scf (scf)	A-60 Flare Total Flow Corrected to HHV of 500 BTU/scf (scf)	S-64 Engine Total Flow Corrected to HHV of 500 BTU/scf (scf)	S-65 Engine Total Flow Corrected to HHV of 500 BTU/scf (scf)	Combined A-51, A-60, S64, and S65 Corrected to HHV of 500 BTU/scf (scf)	Consecutive 12-Month Corrected Total for A-51 Flare (scf)	Consecutive 12-Month Corrected Total for A-60 Flare (scf)	Consecutive 12-Month Corrected Total for S-64 Engine (#1) (scf)	Consecutive 12-Month Corrected Total for S-65 Engine (#2) (scf)	Combined A-51, A-60, S-64, and S-65 Corrected 12-Month Throughput[1]
May-19	359,425	72,844,691	33,173,968	32,753,467	139,131,551	20,136,570	732,479,772	353,513,769	349,379,854	1,455,509,964
Jun-19	1,953,080	74,502,493	25,819,953	29,211,006	131,486,532	22,089,650	745,196,724	353,271,912	353,558,984	1,474,117,269
Jul-19	0	75,154,413	32,306,708	31,309,176	138,770,298	18,667,386	763,388,831	359,706,275	360,511,498	1,502,273,990
Aug-19	12,729,084	81,386,151	20,523,222	25,534,172	140,172,628	31,396,470	789,773,417	350,511,651	357,134,743	1,528,816,280
Sep-19	4,523,142	70,759,263	24,737,412	26,349,899	126,369,717	28,658,345	807,926,445	348,652,080	355,936,760	1,541,173,629
Oct-19	3,440,722	60,255,670	21,479,455	22,502,695	107,678,541	26,817,355	816,240,535	339,431,431	345,201,859	1,527,691,180
Nov-19	95,904	61,957,370	24,055,775	25,637,735	111,746,784	26,633,919	817,726,068	339,960,652	347,008,336	1,531,328,975
Dec-19	9,551,094	69,027,971	16,381,240	13,144,857	108,105,162	35,807,080	832,532,646	321,960,468	327,376,254	1,517,676,448
Jan-20	1,425,218	67,952,766	25,610,471	25,251,350	120,239,805	35,135,791	842,427,521	318,599,193	321,375,535	1,517,538,040
Feb-20	0	66,206,251	24,224,108	24,529,452	114,959,811	35,135,791	849,046,138	313,224,192	318,175,286	1,515,581,406
Mar-20	0	61,289,914	26,420,068	26,705,291	114,415,273	34,863,306	836,430,849	306,102,948	314,039,339	1,491,436,442
Apr-20	210,062	61,717,075	20,236,086	25,380,894	107,544,116	34,287,730	823,054,029	294,968,466	308,309,993	1,460,620,218

Notes:

[1] Pursuant to Title V Permit Condition Number 19867 Part 20, as modified in renewal application dated September 22, 2016 to match BAAQMD Permit To Operate, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 and A-60 Landfill Gas Flares shall each not exceed 4,320,000 scf during any one day, and the combined throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 and A-60 Flares shall not exceed 2,625 million scf during any consecutive 12-month period.

HHV= higher heating value

BTU = British Thermal Units

scf= standard cubic feet

MONTHLY LFG Input to Flare (A-51)

WM - REDWOOD LANDFILL, Novato, CA

A-51 (Flare)

Month	Total Available Runtime (hours)	Total Downtime (hours)	Total Runtime (hours)	Average Flow (scfm)	Average CH_4 (%)[1]	Total Flow LFG Volume (scf)	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf	Total CH_4 Volume (scf)	Total Heat Input (MMBTU)	CO Emission Factor (lb/MMBtu)[1]	CO Emissions (tons)	SO2 Emission Factor (lb/MMscf)[2]	SO2 Emissions (tons)[2]
November-19	721.00	720.20	0.80	1,925	51.2	92,394	95,904	47,336	48	0.030	0.00	131.38	0.01
December-19	744.00	665.67	78.33	1,958	51.2	9,201,558	9,551,094	4,714,262	4,776	0.030	0.07	131.38	0.60
January-20	744.00	730.20	13.80	1,658	51.2	1,373,060	1,425,218	703,464	713	0.030	0.01	127.25	0.09
February-20	696.00	696.00	0.00	0		0	0	0	0	0.030	0.00	127.25	0.00
March-20	743.00	743.00	0.00	0		0	0	0	0	0.020	0.00	127.25	0.00
April-20	720.00	717.60	2.40	1,476	48.8	212,610	210,062	103,683	105	0.020	0.00	TBD	TBD
TOTAL/ AVG:	**4,368.00**	**4,272.67**	**95.33**	**1,902**	**50.6**	**10,879,622**	**11,282,278**	**5,568,745**	**5,641.14**	**--**	**--**	**--**	**--**

NOTES:

The A-51 Flare commenced operation on June 21, 2005.

[1] CH_4 content and CO emission factor was determined from the January 30, 2019 (March 28, 2019 - March 15, 2020) and January 22, 2020 (March 16, 2020 - present) source tests.

[2] SO_2 emission factors are calculated on a quarterly basis and are derived from the average of all weekly samples and the quarterly lab sample (flare inlets only). SO2 Emissions are updated at the end of each quarter when the quarterly average emission factor is calculated.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,625 million scf combined with the A-60 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-51 Flare Heat Input Rate

MONTH: Nov-19

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total Flow LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf
11/1/2019	0.00	51.2	0	0	0	1,013	0	0
11/2/2019	0.00	51.2	0	0	0	1,013	0	0
11/3/2019	0.00	51.2	0	0	0	1,013	0	0
11/4/2019	0.00	51.2	0	0	0	1,013	0	0
11/5/2019	0.00	51.2	0	0	0	1,013	0	0
11/6/2019	0.00	51.2	0	0	0	1,013	0	0
11/7/2019	0.00	51.2	0	0	0	1,013	0	0
11/8/2019	0.00	51.2	0	0	0	1,013	0	0
11/9/2019	0.00	51.2	0	0	0	1,013	0	0
11/10/2019	0.00	51.2	0	0	0	1,013	0	0
11/11/2019	0.00	51.2	0	0	0	1,013	0	0
11/12/2019	0.00	51.2	0	0	0	1,013	0	0
11/13/2019	0.00	51.2	0	0	0	1,013	0	0
11/14/2019	0.00	51.2	0	0	0	1,013	0	0
11/15/2019	0.00	51.2	0	0	0	1,013	0	0
11/16/2019	0.00	51.2	0	0	0	1,013	0	0
11/17/2019	0.00	51.2	0	0	0	1,013	0	0
11/18/2019	0.00	51.2	0	0	0	1,013	0	0
11/19/2019	0.00	51.2	0	0	0	1,013	0	0
11/20/2019	0.00	51.2	0	0	0	1,013	0	0
11/21/2019	0.00	51.2	0	0	0	1,013	0	0
11/22/2019	0.00	51.2	0	0	0	1,013	0	0
11/23/2019	0.00	51.2	0	0	0	1,013	0	0
11/24/2019	0.00	51.2	0	0	0	1,013	0	0
11/25/2019	0.00	51.2	0	0	0	1,013	0	0
11/26/2019	0.00	51.2	0	0	0	1,013	0	0
11/27/2019	0.80	51.2	1,925	92,394	47,336	1,013	48	95,904
11/28/2019	0.00	51.2	0	0	0	1,013	0	0
11/29/2019	0.00	51.2	0	0	0	1,013	0	0
11/30/2019	0.00	51.2	0	0	0	1,013	0	0
Totals/ Average:	**0.80**	**51.2**	**1,925**	**92,394.0**	**47,336**	**1,013**	**48**	**95,904**
						Maximum:	**48**	**95,904**

Notes:

The A-51 Flare commenced operation on June 21, 2005.

*CH_4 content was determined from the January 31, 2018 (March 16, 2018 - March 27, 2019) and January 30, 2019 (March 28, 2019 - present) source tests.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,625 million scf combined with the A-60 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-51 Flare Heat Input Rate

MONTH: Dec-19

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total Flow LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf
12/1/2019	0.00	51.2	0	0	0	1,013	0	0
12/2/2019	0.00	51.2	0	0	0	1,013	0	0
12/3/2019	0.00	51.2	0	0	0	1,013	0	0
12/4/2019	0.00	51.2	0	0	0	1,013	0	0
12/5/2019	0.00	51.2	0	0	0	1,013	0	0
12/6/2019	0.00	51.2	0	0	0	1,013	0	0
12/7/2019	0.00	51.2	0	0	0	1,013	0	0
12/8/2019	0.00	51.2	0	0	0	1,013	0	0
12/9/2019	14.97	51.2	2,248	2,018,299	1,034,041	1,013	1,047	2,094,967
12/10/2019	24.00	51.2	1,982	2,853,591	1,461,989	1,013	1,481	2,961,989
12/11/2019	24.00	51.2	1,880	2,707,676	1,387,232	1,013	1,405	2,810,532
12/12/2019	14.33	51.2	1,774	1,525,987	781,813	1,013	792	1,583,954
12/13/2019	0.00	51.2	0	0	0	1,013	0	0
12/14/2019	0.00	51.2	0	0	0	1,013	0	0
12/15/2019	0.00	51.2	0	0	0	1,013	0	0
12/16/2019	0.47	51.2	1,695	47,461	24,316	1,013	25	49,264
12/17/2019	0.57	51.2	1,428	48,544	24,871	1,013	25	50,388
12/18/2019	0.00	51.2	0	0	0	1,013	0	0
12/19/2019	0.00	51.2	0	0	0	1,013	0	0
12/20/2019	0.00	51.2	0	0	0	1,013	0	0
12/21/2019	0.00	51.2	0	0	0	1,013	0	0
12/22/2019	0.00	51.2	0	0	0	1,013	0	0
12/23/2019	0.00	51.2	0	0	0	1,013	0	0
12/24/2019	0.00	51.2	0	0	0	1,013	0	0
12/25/2019	0.00	51.2	0	0	0	1,013	0	0
12/26/2019	0.00	51.2	0	0	0	1,013	0	0
12/27/2019	0.00	51.2	0	0	0	1,013	0	0
12/28/2019	0.00	51.2	0	0	0	1,013	0	0
12/29/2019	0.00	51.2	0	0	0	1,013	0	0
12/30/2019	0.00	51.2	0	0	0	1,013	0	0
12/31/2019	0.00	51.2	0	0	0	1,013	0	0
Totals/ Average:	**78.33**	**51.2**	**1,958**	**9,201,558.0**	**4,714,262**	**1,013**	**4,776**	**9,551,094**
						Maximum:	**1,481**	**2,961,989**

Notes:

The A-51 Flare commenced operation on June 21, 2005.

*CH_4 content was determined from the January 31, 2018 (March 16, 2018 - March 27, 2019) and January 30, 2019 (March 28, 2019 - present) source tests. Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,625 million scf combined with the A-60 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-51 Flare Heat Input Rate

MONTH: Jan-20

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total Flow LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf
1/1/2020	0.00	51.2	0	0	0	1,013	0	0
1/2/2020	0.00	51.2	0	0	0	1,013	0	0
1/3/2020	1.03	51.2	1,485	92,088	47,180	1,013	48	95,586
1/4/2020	0.00	51.2	0	0	0	1,013	0	0
1/5/2020	0.00	51.2	0	0	0	1,013	0	0
1/6/2020	0.00	51.2	0	0	0	1,013	0	0
1/7/2020	0.00	51.2	0	0	0	1,013	0	0
1/8/2020	0.00	51.2	0	0	0	1,013	0	0
1/9/2020	0.00	51.2	0	0	0	1,013	0	0
1/10/2020	0.00	51.2	0	0	0	1,013	0	0
1/11/2020	0.00	51.2	0	0	0	1,013	0	0
1/12/2020	0.00	51.2	0	0	0	1,013	0	0
1/13/2020	0.00	51.2	0	0	0	1,013	0	0
1/14/2020	0.00	51.2	0	0	0	1,013	0	0
1/15/2020	0.97	51.2	2,359	136,819	70,097	1,013	71	142,016
1/16/2020	0.00	51.2	0	0	0	1,013	0	0
1/17/2020	0.00	51.2	0	0	0	1,013	0	0
1/18/2020	0.00	51.2	0	0	0	1,013	0	0
1/19/2020	0.00	51.2	0	0	0	1,013	0	0
1/20/2020	1.63	51.2	2,238	219,287	112,348	1,013	114	227,617
1/21/2020	4.73	51.2	1,539	437,111	223,946	1,013	227	453,715
1/22/2020	5.43	51.2	1,496	487,755	249,893	1,013	253	506,283
1/23/2020	0.00	51.2	0	0	0	1,013	0	0
1/24/2020	0.00	51.2	0	0	0	1,013	0	0
1/25/2020	0.00	51.2	0	0	0	1,013	0	0
1/26/2020	0.00	51.2	0	0	0	1,013	0	0
1/27/2020	0.00	51.2	0	0	0	1,013	0	0
1/28/2020	0.00	51.2	0	0	0	1,013	0	0
1/29/2020	0.00	51.2	0	0	0	1,013	0	0
1/30/2020	0.00	51.2	0	0	0	1,013	0	0
1/31/2020	0.00	51.2	0	0	0	1,013	0	0
Totals/ Average:	**13.80**	**51.2**	**1,658**	**1,373,060.0**	**703,464**	**1,013**	**713**	**1,425,218**
						Maximum:	**253**	**506,283**

Notes:

The A-51 Flare commenced operation on June 21, 2005.

*CH_4 content was determined from the January 30, 2019 (March 28, 2019 - present) source test.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,625 million scf combined with the A-60 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-51 Flare Heat Input Rate

MONTH: Feb-20

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total Flow LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf
2/1/2020	0.00	51.2	0	0	0	1,013	0	0
2/2/2020	0.00	51.2	0	0	0	1,013	0	0
2/3/2020	0.00	51.2	0	0	0	1,013	0	0
2/4/2020	0.00	51.2	0	0	0	1,013	0	0
2/5/2020	0.00	51.2	0	0	0	1,013	0	0
2/6/2020	0.00	51.2	0	0	0	1,013	0	0
2/7/2020	0.00	51.2	0	0	0	1,013	0	0
2/8/2020	0.00	51.2	0	0	0	1,013	0	0
2/9/2020	0.00	51.2	0	0	0	1,013	0	0
2/10/2020	0.00	51.2	0	0	0	1,013	0	0
2/11/2020	0.00	51.2	0	0	0	1,013	0	0
2/12/2020	0.00	51.2	0	0	0	1,013	0	0
2/13/2020	0.00	51.2	0	0	0	1,013	0	0
2/14/2020	0.00	51.2	0	0	0	1,013	0	0
2/15/2020	0.00	51.2	0	0	0	1,013	0	0
2/16/2020	0.00	51.2	0	0	0	1,013	0	0
2/17/2020	0.00	51.2	0	0	0	1,013	0	0
2/18/2020	0.00	51.2	0	0	0	1,013	0	0
2/19/2020	0.00	51.2	0	0	0	1,013	0	0
2/20/2020	0.00	51.2	0	0	0	1,013	0	0
2/21/2020	0.00	51.2	0	0	0	1,013	0	0
2/22/2020	0.00	51.2	0	0	0	1,013	0	0
2/23/2020	0.00	51.2	0	0	0	1,013	0	0
2/24/2020	0.00	51.2	0	0	0	1,013	0	0
2/25/2020	0.00	51.2	0	0	0	1,013	0	0
2/26/2020	0.00	51.2	0	0	0	1,013	0	0
2/27/2020	0.00	51.2	0	0	0	1,013	0	0
2/28/2020	0.00	51.2	0	0	0	1,013	0	0
2/29/2020	0.00	51.2	0	0	0	1,013	0	0
Totals/ Average:	**0.00**			**0.0**	**0**	**1,013**	**0**	**0**
						Maximum:	**0**	**0**

Notes:

The A-51 Flare commenced operation on June 21, 2005.

*CH_4 content was determined from the January 30, 2019 (March 28, 2019 - present) source test.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,625 million scf combined with the A-60 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-51 Flare Heat Input Rate

MONTH: Mar-20

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total Flow LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf
3/1/2020	0.00	51.2	0	0	0	1,013	0	0
3/2/2020	0.00	51.2	0	0	0	1,013	0	0
3/3/2020	0.00	51.2	0	0	0	1,013	0	0
3/4/2020	0.00	51.2	0	0	0	1,013	0	0
3/5/2020	0.00	51.2	0	0	0	1,013	0	0
3/6/2020	0.00	51.2	0	0	0	1,013	0	0
3/7/2020	0.00	51.2	0	0	0	1,013	0	0
3/8/2020	0.00	51.2	0	0	0	1,013	0	0
3/9/2020	0.00	51.2	0	0	0	1,013	0	0
3/10/2020	0.00	51.2	0	0	0	1,013	0	0
3/11/2020	0.00	51.2	0	0	0	1,013	0	0
3/12/2020	0.00	51.2	0	0	0	1,013	0	0
3/13/2020	0.00	51.2	0	0	0	1,013	0	0
3/14/2020	0.00	51.2	0	0	0	1,013	0	0
3/15/2020	0.00	51.2	0	0	0	1,013	0	0
3/16/2020	0.00	48.8	0	0	0	1,013	0	0
3/17/2020	0.00	48.8	0	0	0	1,013	0	0
3/18/2020	0.00	48.8	0	0	0	1,013	0	0
3/19/2020	0.00	48.8	0	0	0	1,013	0	0
3/20/2020	0.00	48.8	0	0	0	1,013	0	0
3/21/2020	0.00	48.8	0	0	0	1,013	0	0
3/22/2020	0.00	48.8	0	0	0	1,013	0	0
3/23/2020	0.00	48.8	0	0	0	1,013	0	0
3/24/2020	0.00	48.8	0	0	0	1,013	0	0
3/25/2020	0.00	48.8	0	0	0	1,013	0	0
3/26/2020	0.00	48.8	0	0	0	1,013	0	0
3/27/2020	0.00	48.8	0	0	0	1,013	0	0
3/28/2020	0.00	48.8	0	0	0	1,013	0	0
3/29/2020	0.00	48.8	0	0	0	1,013	0	0
3/30/2020	0.00	48.8	0	0	0	1,013	0	0
3/31/2020	0.00	48.8	0	0	0	1,013	0	0
Totals/ Average:	**0.00**			**0.0**	**0**	**1,013**	**0**	**0**
						Maximum:	**0**	**0**

Notes:

The A-51 Flare commenced operation on June 21, 2005.

*CH_4 content was determined from the January 30, 2019 (March 28, 2019 - March 15, 2020) and January 22, 2020 (March 16, 2020 - present) source tests.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,625 million scf combined with the A-60 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-51 Flare Heat Input Rate

MONTH: Apr-20

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total Flow LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf
4/1/2020	0.00	48.8	0	0	0	1,013	0	0
4/2/2020	0.00	48.8	0	0	0	1,013	0	0
4/3/2020	0.00	48.8	0	0	0	1,013	0	0
4/4/2020	0.00	48.8	0	0	0	1,013	0	0
4/5/2020	0.00	48.8	0	0	0	1,013	0	0
4/6/2020	0.00	48.8	0	0	0	1,013	0	0
4/7/2020	0.00	48.8	0	0	0	1,013	0	0
4/8/2020	0.00	48.8	0	0	0	1,013	0	0
4/9/2020	0.00	48.8	0	0	0	1,013	0	0
4/10/2020	0.00	48.8	0	0	0	1,013	0	0
4/11/2020	0.00	48.8	0	0	0	1,013	0	0
4/12/2020	0.00	48.8	0	0	0	1,013	0	0
4/13/2020	0.00	48.8	0	0	0	1,013	0	0
4/14/2020	0.63	48.8	992	37,679	18,375	1,013	19	37,227
4/15/2020	0.00	48.8	0	0	0	1,013	0	0
4/16/2020	0.00	48.8	0	0	0	1,013	0	0
4/17/2020	0.00	48.8	0	0	0	1,013	0	0
4/18/2020	0.00	48.8	0	0	0	1,013	0	0
4/19/2020	0.00	48.8	0	0	0	1,013	0	0
4/20/2020	0.00	48.8	0	0	0	1,013	0	0
4/21/2020	0.23	48.8	1,168	16,355	7,976	1,013	8	16,159
4/22/2020	0.00	48.8	0	0	0	1,013	0	0
4/23/2020	0.00	48.8	0	0	0	1,013	0	0
4/24/2020	0.00	48.8	0	0	0	1,013	0	0
4/25/2020	0.00	48.8	0	0	0	1,013	0	0
4/26/2020	0.00	48.8	0	0	0	1,013	0	0
4/27/2020	0.00	48.8	0	0	0	1,013	0	0
4/28/2020	0.00	48.8	0	0	0	1,013	0	0
4/29/2020	0.00	48.8	0	0	0	1,013	0	0
4/30/2020	1.53	48.8	1,724	158,576	77,332	1,013	78	156,675
Totals/ Average:	**2.40**	**48.8**	**1,476**	**212,610.0**	**103,683**	**1,013**	**105**	**210,062**
						Maximum:	**78**	**156,675**

Notes:

The A-51 Flare commenced operation on June 21, 2005.

*CH_4 content was determined from the January 30, 2019 (March 28, 2019 - March 15, 2020) and January 22, 2020 (March 16, 2020 - present) source tests.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-51 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,625 million scf combined with the A-60 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

MONTHLY LFG Input to Flare (A-60)

WM - REDWOOD LANDFILL, Novato, CA

A-60 (Flare)

Month	Total Available Runtime (hours)	Total Downtime (hours)	Total Runtime (hours)	Average Flow (scfm)	Average CH_4 (%)[1]	Total Flow LFG Volume (scf)	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf	Total CH_4 Volume (scf)	Total Heat Input (MMBTU)	CO Emission Factor (lb/MMBtu)[1]	CO Emissions (tons)	SO2 Emission Factor (lb/MMBtu)[2]	SO2 Emissions (tons)[2]
November-19	721.00	2.00	719.00	1,500	47.3	64,699,102	61,957,370	30,581,130	30,979	0.100	1.55	131.38	4.25
December-19	744.00	78.47	665.53	1,805	47.3	72,082,590	69,027,971	34,071,062	34,514	0.100	1.73	131.38	4.73
January-20	744.00	14.10	729.90	1,620	47.3	70,959,805	67,952,766	33,540,358	33,976	0.100	1.70	127.25	4.51
February-20	696.00	0.00	696.00	1,656	47.3	69,136,004	66,206,251	32,678,308	33,103	0.100	1.66	127.25	4.40
March-20	743.00	0.00	743.00	1,436	47.3	64,002,110	61,289,914	30,251,685	30,645	0.100	1.53	127.25	4.07
April-20	720.00	1.87	718.13	1,496	47.3	64,448,173	61,717,075	30,462,525	30,859	0.100	1.54	TBD	TBD
TOTAL/ AVG:	**4,368.00**	**96.43**	**4,271.57**	**1,581**	**47.3**	**405,327,784**	**388,151,347**	**191,585,068**	**194,075.67**	**--**	**--**	**--**	**--**

NOTES:

The A-60 Flare commenced operation on April 1, 2009.

[1] CH_4 content and CO emission factor was determined from the July 25, 2019 (9/20/19 to current) source test.

[2] SO_2 emission factors are calculated on a quarterly basis and are derived from the average of all weekly samples and the quarterly lab sample (flare inlets only). SO2 Emissions are updated at the end of each quarter when the quarterly average emission factor is calculated.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-60 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,625 million scf combined with the A-51 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-60 Flare Heat Input Rate

MONTH: Nov-19

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow Corrected to HHV of 500 BTU/scf
11/1/2019	24.00	47.3	1,593	2,294,153	1,084,370	1,013	1,098	2,196,934
11/2/2019	24.00	47.3	1,607	2,314,432	1,093,956	1,013	1,108	2,216,354
11/3/2019	25.00	47.3	1,565	2,346,801	1,109,255	1,013	1,124	2,247,351
11/4/2019	24.00	47.3	1,606	2,312,694	1,093,134	1,013	1,107	2,214,690
11/5/2019	24.00	47.3	1,605	2,311,065	1,092,364	1,013	1,107	2,213,130
11/6/2019	24.00	47.3	1,594	2,295,771	1,085,135	1,013	1,099	2,198,484
11/7/2019	23.37	47.3	1,575	2,207,972	1,043,636	1,013	1,057	2,114,406
11/8/2019	24.00	47.3	1,580	2,275,440	1,075,525	1,013	1,090	2,179,014
11/9/2019	24.00	47.3	1,544	2,223,192	1,050,829	1,013	1,064	2,128,981
11/10/2019	24.00	47.3	1,593	2,293,838	1,084,222	1,013	1,098	2,196,633
11/11/2019	24.00	47.3	1,527	2,198,586	1,039,199	1,013	1,053	2,105,417
11/12/2019	24.00	47.3	1,579	2,273,152	1,074,444	1,013	1,088	2,176,823
11/13/2019	24.00	47.3	1,491	2,146,887	1,014,763	1,013	1,028	2,055,909
11/14/2019	24.00	47.3	1,468	2,114,391	999,403	1,013	1,012	2,024,790
11/15/2019	24.00	47.3	1,470	2,116,330	1,000,319	1,013	1,013	2,026,647
11/16/2019	24.00	47.3	1,469	2,115,001	999,691	1,013	1,013	2,025,374
11/17/2019	24.00	47.3	1,472	2,119,580	1,001,856	1,013	1,015	2,029,759
11/18/2019	24.00	47.3	1,664	2,395,822	1,132,426	1,013	1,147	2,294,295
11/19/2019	24.00	47.3	1,455	2,095,231	990,347	1,013	1,003	2,006,442
11/20/2019	24.00	47.3	1,448	2,085,723	985,852	1,013	999	1,997,337
11/21/2019	24.00	47.3	1,403	2,020,386	954,970	1,013	967	1,934,769
11/22/2019	24.00	47.3	1,404	2,022,167	955,812	1,013	968	1,936,474
11/23/2019	24.00	47.3	1,409	2,029,510	959,282	1,013	972	1,943,506
11/24/2019	24.00	47.3	1,411	2,032,367	960,633	1,013	973	1,946,242
11/25/2019	24.00	47.3	1,406	2,024,575	956,950	1,013	969	1,938,780
11/26/2019	24.00	47.3	1,416	2,039,045	963,789	1,013	976	1,952,637
11/27/2019	22.63	47.3	1,431	1,942,772	918,284	1,013	930	1,860,444
11/28/2019	24.00	47.3	1,409	2,029,331	959,198	1,013	972	1,943,335
11/29/2019	24.00	47.3	1,402	2,019,561	954,580	1,013	967	1,933,979
11/30/2019	24.00	47.3	1,391	2,003,327	946,907	1,013	959	1,918,433
Totals/ Average:	**719.00**	**47.3**	**1,500**	**64,699,102.0**	**30,581,130**	**1,013**	**30,979**	**61,957,370**
						Maximum:	**1,147**	**2,294,295**

Notes:

The A-60 Flare commenced operation on April 1, 2009.

*CH_4 content was determined from the July 17, 2018 (9/14/18 to 9/19/19) and July 25, 2019 (9/20/19 to current) source test.

Pursuant to Title V Permit Condition Number 19867 Part 30(g), the Annual Source Test at A-60 may be conducted while it is operating in either zone, providing that each operating zone is tested at least once every five years.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-60 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,207,520,000 scf combined with the A-51 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-60 Flare Heat Input Rate

MONTH: Dec-19

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow Corrected to HHV of 500 BTU/scf
12/1/2019	24.00	47.3	1,390	2,001,720	946,147	1,013	958	1,916,894
12/2/2019	24.00	47.3	1,358	1,955,506	924,303	1,013	936	1,872,638
12/3/2019	24.00	47.3	1,345	1,936,760	915,443	1,013	927	1,854,687
12/4/2019	24.00	47.3	1,355	1,950,543	921,957	1,013	934	1,867,886
12/5/2019	24.00	47.3	1,534	2,208,344	1,043,811	1,013	1,057	2,114,762
12/6/2019	24.00	47.3	1,796	2,585,848	1,222,245	1,013	1,238	2,476,268
12/7/2019	24.00	47.3	1,469	2,116,047	1,000,186	1,013	1,013	2,026,376
12/8/2019	24.00	47.3	1,442	2,076,685	981,580	1,013	994	1,988,682
12/9/2019	8.97	47.3	1,438	773,759	365,730	1,013	370	740,970
12/10/2019	0.00	47.3	0	0	0	1,013	0	0
12/11/2019	0.00	47.3	0	0	0	1,013	0	0
12/12/2019	9.77	47.3	2,349	1,376,477	650,615	1,013	659	1,318,147
12/13/2019	24.00	47.3	2,352	3,386,917	1,600,884	1,013	1,622	3,243,391
12/14/2019	24.00	47.3	2,339	3,367,880	1,591,886	1,013	1,613	3,225,161
12/15/2019	24.00	47.3	2,324	3,346,220	1,581,648	1,013	1,602	3,204,418
12/16/2019	23.47	47.3	2,346	3,303,299	1,561,360	1,013	1,582	3,163,316
12/17/2019	23.40	47.3	2,380	3,341,353	1,579,347	1,013	1,600	3,199,758
12/18/2019	23.93	47.3	2,206	3,167,902	1,497,363	1,013	1,517	3,033,657
12/19/2019	24.00	47.3	2,105	3,031,824	1,433,043	1,013	1,452	2,903,345
12/20/2019	24.00	47.3	2,044	2,942,749	1,390,940	1,013	1,409	2,818,045
12/21/2019	24.00	47.3	2,001	2,880,850	1,361,683	1,013	1,379	2,758,769
12/22/2019	24.00	47.3	1,779	2,561,050	1,210,524	1,013	1,226	2,452,521
12/23/2019	24.00	47.3	1,712	2,464,584	1,164,928	1,013	1,180	2,360,143
12/24/2019	24.00	47.3	1,632	2,350,058	1,110,795	1,013	1,125	2,250,470
12/25/2019	24.00	47.3	1,626	2,341,354	1,106,681	1,013	1,121	2,242,135
12/26/2019	24.00	47.3	1,609	2,316,602	1,094,981	1,013	1,109	2,218,432
12/27/2019	24.00	47.3	1,732	2,494,148	1,178,901	1,013	1,194	2,388,454
12/28/2019	24.00	47.3	1,941	2,794,970	1,321,090	1,013	1,338	2,676,529
12/29/2019	24.00	47.3	1,584	2,280,555	1,077,943	1,013	1,092	2,183,913
12/30/2019	24.00	47.3	1,607	2,313,484	1,093,508	1,013	1,108	2,215,446
12/31/2019	24.00	47.3	1,677	2,415,102	1,141,539	1,013	1,156	2,312,758
Totals/ Average:	**665.53**	**47.3**	**1,805**	**72,082,590.0**	**34,071,062**	**1,013**	**34,514**	**69,027,971**
						Maximum:	**1,622**	**3,243,391**

Notes:

The A-60 Flare commenced operation on April 1, 2009.

*CH_4 content was determined from the July 17, 2018 (9/14/18 to 9/19/19) and July 25, 2019 (9/20/19 to current) source test.

Pursuant to Title V Permit Condition Number 19867 Part 30(g), the Annual Source Test at A-60 may be conducted while it is operating in either zone, providing that each operating zone is tested at least once every five years.

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BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-60 Flare Heat Input Rate

MONTH: Jan-20

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow Corrected to HHV of 500 BTU/scf
1/1/2020	24.00	47.3	1,558	2,243,326	1,060,346	1,013	1,074	2,148,261
1/2/2020	24.00	47.3	1,565	2,253,204	1,065,015	1,013	1,079	2,157,721
1/3/2020	22.90	47.3	1,569	2,156,275	1,019,200	1,013	1,032	2,064,899
1/4/2020	24.00	47.3	1,565	2,253,551	1,065,179	1,013	1,079	2,158,053
1/5/2020	24.00	47.3	1,695	2,440,531	1,153,558	1,013	1,169	2,337,109
1/6/2020	24.00	47.3	1,640	2,361,984	1,116,432	1,013	1,131	2,261,891
1/7/2020	24.00	47.3	1,589	2,288,380	1,081,642	1,013	1,096	2,191,406
1/8/2020	24.00	47.3	1,612	2,321,659	1,097,372	1,013	1,112	2,223,275
1/9/2020	24.00	47.3	1,565	2,254,045	1,065,413	1,013	1,079	2,158,526
1/10/2020	24.00	47.3	1,511	2,176,078	1,028,560	1,013	1,042	2,083,863
1/11/2020	24.00	47.3	1,515	2,181,773	1,031,252	1,013	1,045	2,089,317
1/12/2020	24.00	47.3	1,518	2,186,429	1,033,453	1,013	1,047	2,093,775
1/13/2020	24.00	47.3	1,516	2,183,321	1,031,984	1,013	1,045	2,090,799
1/14/2020	24.00	47.3	1,919	2,763,357	1,306,148	1,013	1,323	2,646,255
1/15/2020	22.87	47.3	2,125	2,916,140	1,378,363	1,013	1,396	2,792,564
1/16/2020	24.00	47.3	1,797	2,587,614	1,223,080	1,013	1,239	2,477,960
1/17/2020	24.00	47.3	1,613	2,323,163	1,098,082	1,013	1,112	2,224,715
1/18/2020	24.00	47.3	1,590	2,289,522	1,082,181	1,013	1,096	2,192,500
1/19/2020	24.00	47.3	1,706	2,456,911	1,161,301	1,013	1,176	2,352,795
1/20/2020	22.43	47.3	1,877	2,525,883	1,193,902	1,013	1,209	2,418,845
1/21/2020	19.20	47.3	1,707	1,966,953	929,714	1,013	942	1,883,600
1/22/2020	18.50	47.3	1,610	1,787,125	844,715	1,013	856	1,711,393
1/23/2020	24.00	47.3	1,552	2,234,424	1,056,138	1,013	1,070	2,139,737
1/24/2020	24.00	47.3	1,546	2,226,746	1,052,509	1,013	1,066	2,132,384
1/25/2020	24.00	47.3	1,548	2,229,147	1,053,644	1,013	1,067	2,134,683
1/26/2020	24.00	47.3	1,533	2,208,110	1,043,701	1,013	1,057	2,114,538
1/27/2020	24.00	47.3	1,573	2,265,583	1,070,866	1,013	1,085	2,169,575
1/28/2020	24.00	47.3	1,543	2,221,832	1,050,187	1,013	1,064	2,127,678
1/29/2020	24.00	47.3	1,543	2,222,602	1,050,551	1,013	1,064	2,128,416
1/30/2020	24.00	47.3	1,533	2,208,093	1,043,693	1,013	1,057	2,114,521
1/31/2020	24.00	47.3	1,546	2,226,044	1,052,178	1,013	1,066	2,131,712
Totals/ Average:	**729.90**	**47.3**	**1,620**	**70,959,805.0**	**33,540,358**	**1,013**	**33,976**	**67,952,766**
						Maximum:	**1,396**	**2,792,564**

Notes:

The A-60 Flare commenced operation on April 1, 2009.

*CH_4 content was determined from the July 25, 2019 (9/20/19 to current) source test.

Pursuant to Title V Permit Condition Number 19867 Part 30(g), the Annual Source Test at A-60 may be conducted while it is operating in either zone, providing that each operating zone is tested at least once every five years.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-60 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,207,520,000 scf combined with the A-51 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-60 Flare Heat Input Rate

MONTH: Feb-20

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow Corrected to HHV of 500 BTU/scf
2/1/2020	24.00	47.3	1,559	2,245,449	1,061,350	1,013	1,075	2,150,294
2/2/2020	24.00	47.3	1,553	2,235,836	1,056,806	1,013	1,071	2,141,089
2/3/2020	24.00	47.3	1,550	2,232,264	1,055,118	1,013	1,069	2,137,668
2/4/2020	24.00	47.3	1,553	2,236,244	1,056,999	1,013	1,071	2,141,479
2/5/2020	24.00	47.3	1,667	2,401,129	1,134,934	1,013	1,150	2,299,377
2/6/2020	24.00	47.3	1,527	2,198,376	1,039,100	1,013	1,053	2,105,216
2/7/2020	24.00	47.3	1,560	2,245,707	1,061,472	1,013	1,075	2,150,541
2/8/2020	24.00	47.3	1,880	2,706,960	1,279,491	1,013	1,296	2,592,248
2/9/2020	24.00	47.3	1,730	2,490,950	1,177,390	1,013	1,193	2,385,392
2/10/2020	24.00	47.3	1,822	2,624,052	1,240,303	1,013	1,256	2,512,853
2/11/2020	24.00	47.3	1,801	2,594,124	1,226,157	1,013	1,242	2,484,194
2/12/2020	24.00	47.3	1,682	2,421,466	1,144,547	1,013	1,159	2,318,852
2/13/2020	24.00	47.3	1,647	2,371,523	1,120,941	1,013	1,136	2,271,026
2/14/2020	24.00	47.3	1,616	2,326,882	1,099,840	1,013	1,114	2,228,277
2/15/2020	24.00	47.3	1,608	2,315,385	1,094,406	1,013	1,109	2,217,267
2/16/2020	24.00	47.3	1,607	2,313,606	1,093,565	1,013	1,108	2,215,563
2/17/2020	24.00	47.3	1,714	2,467,646	1,166,375	1,013	1,182	2,363,075
2/18/2020	24.00	47.3	1,811	2,608,511	1,232,957	1,013	1,249	2,497,971
2/19/2020	24.00	47.3	1,606	2,312,843	1,093,205	1,013	1,107	2,214,832
2/20/2020	24.00	47.3	1,605	2,311,702	1,092,665	1,013	1,107	2,213,740
2/21/2020	24.00	47.3	1,629	2,345,606	1,108,691	1,013	1,123	2,246,207
2/22/2020	24.00	47.3	1,761	2,536,423	1,198,883	1,013	1,214	2,428,938
2/23/2020	24.00	47.3	1,589	2,287,978	1,081,452	1,013	1,096	2,191,021
2/24/2020	24.00	47.3	1,663	2,394,056	1,131,591	1,013	1,146	2,292,604
2/25/2020	24.00	47.3	1,745	2,512,569	1,187,608	1,013	1,203	2,406,095
2/26/2020	24.00	47.3	1,573	2,264,774	1,070,484	1,013	1,084	2,168,800
2/27/2020	24.00	47.3	1,954	2,813,081	1,329,651	1,013	1,347	2,693,872
2/28/2020	24.00	47.3	1,510	2,173,713	1,027,442	1,013	1,041	2,081,598
2/29/2020	24.00	47.3	1,491	2,147,149	1,014,886	1,013	1,028	2,056,160
Totals/ Average:	**696.00**	**47.3**	**1,656**	**69,136,004.0**	**32,678,308**	**1,013**	**33,103**	**66,206,251**
						Maximum:	**1,347**	**2,693,872**

Notes:

The A-60 Flare commenced operation on April 1, 2009.

*CH_4 content was determined from the July 25, 2019 (9/20/19 to current) source test.

Pursuant to Title V Permit Condition Number 19867 Part 30(g), the Annual Source Test at A-60 may be conducted while it is operating in either zone, providing that each operating zone is tested at least once every five years.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-60 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,207,520,000 scf combined with the A-51 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-60 Flare Heat Input Rate

MONTH: Mar-20

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow Corrected to HHV of 500 BTU/scf
3/1/2020	24.00	47.3	1,488	2,143,026	1,012,938	1,013	1,026	2,052,212
3/2/2020	24.00	47.3	1,452	2,091,599	988,630	1,013	1,001	2,002,964
3/3/2020	24.00	47.3	1,415	2,037,258	962,945	1,013	975	1,950,926
3/4/2020	24.00	47.3	1,403	2,020,509	955,028	1,013	967	1,934,887
3/5/2020	24.00	47.3	1,392	2,004,442	947,434	1,013	960	1,919,500
3/6/2020	24.00	47.3	1,391	2,003,209	946,851	1,013	959	1,918,320
3/7/2020	24.00	47.3	1,389	2,000,774	945,700	1,013	958	1,915,988
3/8/2020	23.00	47.3	1,378	1,901,965	898,996	1,013	911	1,821,366
3/9/2020	24.00	47.3	1,403	2,020,909	955,217	1,013	968	1,935,270
3/10/2020	24.00	47.3	1,453	2,091,677	988,667	1,013	1,002	2,003,039
3/11/2020	24.00	47.3	1,485	2,139,052	1,011,059	1,013	1,024	2,048,406
3/12/2020	24.00	47.3	1,644	2,366,899	1,118,755	1,013	1,133	2,266,598
3/13/2020	24.00	47.3	1,483	2,136,150	1,009,688	1,013	1,023	2,045,627
3/14/2020	24.00	47.3	1,438	2,070,601	978,705	1,013	991	1,982,856
3/15/2020	24.00	47.3	1,438	2,071,247	979,010	1,013	992	1,983,474
3/16/2020	24.00	47.3	1,439	2,072,863	979,774	1,013	993	1,985,022
3/17/2020	24.00	47.3	1,444	2,079,428	982,877	1,013	996	1,991,309
3/18/2020	24.00	47.3	1,446	2,081,729	983,965	1,013	997	1,993,512
3/19/2020	24.00	47.3	1,446	2,082,427	984,295	1,013	997	1,994,181
3/20/2020	24.00	47.3	1,945	2,800,630	1,323,765	1,013	1,341	2,681,949
3/21/2020	24.00	47.3	1,647	2,371,654	1,121,003	1,013	1,136	2,271,151
3/22/2020	24.00	47.3	1,408	2,026,917	958,057	1,013	971	1,941,023
3/23/2020	24.00	47.3	1,440	2,073,874	980,252	1,013	993	1,985,990
3/24/2020	24.00	47.3	1,371	1,973,589	932,850	1,013	945	1,889,955
3/25/2020	24.00	47.3	1,323	1,905,454	900,645	1,013	912	1,824,707
3/26/2020	24.00	47.3	1,299	1,870,448	884,099	1,013	896	1,791,185
3/27/2020	24.00	47.3	1,428	2,056,124	971,862	1,013	984	1,968,992
3/28/2020	24.00	47.3	1,293	1,862,424	880,306	1,013	892	1,783,501
3/29/2020	24.00	47.3	1,287	1,853,562	876,118	1,013	888	1,775,014
3/30/2020	24.00	47.3	1,289	1,855,982	877,261	1,013	889	1,777,332
3/31/2020	24.00	47.3	1,344	1,935,688	914,936	1,013	927	1,853,660
Totals/ Average:	**743.00**	**47.3**	**1,436**	**64,002,110.0**	**30,251,685**	**1,013**	**30,645**	**61,289,914**
						Maximum:	**1,341**	**2,681,949**

Notes:

The A-60 Flare commenced operation on April 1, 2009.

*CH_4 content was determined from the July 25, 2019 (9/20/19 to current) source test.

Pursuant to Title V Permit Condition Number 19867 Part 30(g), the Annual Source Test at A-60 may be conducted while it is operating in either zone, providing that each operating zone is tested at least once every five years.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-60 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,207,520,000 scf combined with the A-51 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

REDWOOD LANDFILL
Novato, CA

A-60 Flare Heat Input Rate

MONTH: Apr-20

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU) / Day	Total Flow Corrected to HHV of 500 BTU/scf
4/1/2020	24.00	47.3	1,296	1,866,179	882,081	1,013	894	1,787,097
4/2/2020	24.00	47.3	1,341	1,931,397	912,908	1,013	925	1,849,551
4/3/2020	24.00	47.3	1,573	2,264,907	1,070,547	1,013	1,084	2,168,928
4/4/2020	24.00	47.3	1,306	1,880,540	888,869	1,013	900	1,800,849
4/5/2020	24.00	47.3	1,331	1,917,238	906,215	1,013	918	1,835,992
4/6/2020	24.00	47.3	1,756	2,528,797	1,195,279	1,013	1,211	2,421,635
4/7/2020	24.00	47.3	1,577	2,270,993	1,073,423	1,013	1,087	2,174,756
4/8/2020	24.00	47.3	1,567	2,256,924	1,066,773	1,013	1,081	2,161,283
4/9/2020	24.00	47.3	1,476	2,125,487	1,004,648	1,013	1,018	2,035,416
4/10/2020	24.00	47.3	1,365	1,965,401	928,980	1,013	941	1,882,114
4/11/2020	24.00	47.3	1,352	1,946,274	919,939	1,013	932	1,863,797
4/12/2020	24.00	47.3	1,394	2,007,098	948,689	1,013	961	1,922,044
4/13/2020	24.00	47.3	1,763	2,538,855	1,200,033	1,013	1,216	2,431,267
4/14/2020	24.00	47.3	1,825	2,627,896	1,242,120	1,013	1,258	2,516,535
4/15/2020	24.00	47.3	1,384	1,992,255	941,673	1,013	954	1,907,830
4/16/2020	24.00	47.3	1,365	1,966,125	929,322	1,013	941	1,882,807
4/17/2020	24.00	47.3	1,446	2,082,917	984,526	1,013	997	1,994,650
4/18/2020	24.00	47.3	1,923	2,768,770	1,308,706	1,013	1,326	2,651,439
4/19/2020	24.00	47.3	1,922	2,768,063	1,308,372	1,013	1,325	2,650,762
4/20/2020	24.00	47.3	1,569	2,259,672	1,068,072	1,013	1,082	2,163,915
4/21/2020	23.70	47.3	1,525	2,168,532	1,024,994	1,013	1,038	2,076,637
4/22/2020	24.00	47.3	1,379	1,985,972	938,703	1,013	951	1,901,813
4/23/2020	24.00	47.3	1,444	2,079,407	982,867	1,013	996	1,991,289
4/24/2020	24.00	47.3	1,378	1,984,947	938,219	1,013	950	1,900,832
4/25/2020	24.00	47.3	1,329	1,913,879	904,627	1,013	916	1,832,775
4/26/2020	24.00	47.3	1,356	1,952,784	923,017	1,013	935	1,870,032
4/27/2020	24.00	47.3	1,400	2,016,537	953,150	1,013	966	1,931,083
4/28/2020	24.00	47.3	1,455	2,095,807	990,619	1,013	1,003	2,006,994
4/29/2020	24.00	47.3	1,604	2,309,114	1,091,442	1,013	1,106	2,211,261
4/30/2020	22.43	47.3	1,468	1,975,406	933,709	1,013	946	1,891,695
Totals/ Average:	**718.13**	**47.3**	**1,496**	**64,448,173.0**	**30,462,525**	**1,013**	**30,859**	**61,717,075**
						Maximum:	**1,326**	**2,651,439**

Notes:

The A-60 Flare commenced operation on April 1, 2009.

*CH_4 content was determined from the July 25, 2019 (9/20/19 to current) source test.

Pursuant to Title V Permit Condition Number 19867 Part 30(g), the Annual Source Test at A-60 may be conducted while it is operating in either zone, providing that each operating zone is tested at least once every five years.

Pursuant to Title V Permit Condition Number 19867 Part 20, as modified by Authority To Construct (ATC) 19098, the throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-60 Landfill Gas Flare shall not exceed 4,320,000 scf during any one day, and shall not exceed 2,207,520,000 scf combined with the A-51 Landfill Gas Flare during any consecutive 12-month period.

scfm= standard cubic feet per minute
BTU/scf= British thermal unit per square cubic feet
scf= standard cubic feet
MMBTU= million British thermal units
LFG= landfill gas
CH_4= methane
HHV= higher heating value

MONTHLY LFG Input to Landfill Gas Engine (S-64)

WM - REDWOOD LANDFILL, Novato, CA

S-64 (Engine #1)

Month	Total Available Runtime (hours)	Total Downtime (hours)	Total Runtime (hours)	Average Flow (scfm)	Average CH_4 (%)[1]	Total Flow LFG Volume (scf)	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf	Total CH_4 Volume (scf)	Total Heat Input (MMBTU)	CO Emission Factor (lb/MMBtu)[1]	CO Emissions (tons)	SO2 Emission Factor (lb/MMBtu)[2]	SO2 Emissions (tons)[2]
November-19	721.00	13.75	707.25	587	47.7	24,892,100	24,055,775	11,873,532	12,028	0.093	0.56	1.50	1.87E-02
December-19	744.00	245.08	498.92	566	47.7	16,950,751	16,381,240	8,085,508	8,191	0.093	0.38	1.50	1.27E-02
January-20	744.00	22.75	721.25	612	47.7	26,500,847	25,610,471	12,640,904	12,805	0.093	0.60	1.50	1.99E-02
February-20	696.00	43.50	652.50	640	47.7	25,066,285	24,224,108	11,956,618	12,112	0.093	0.57	1.50	1.88E-02
March-20	743.00	42.17	700.83	650	47.7	27,338,590	26,420,068	13,040,507	13,210	0.093	0.62	1.50	2.06E-02
April-20	720.00	159.50	560.50	623	47.7	20,939,615	20,236,086	9,988,196	10,118	0.093	0.47	1.50	1.57E-02
TOTAL/ AVG:	**4,368.00**	**526.75**	**3,841.25**	**615**	**47.7**	**141,688,188**	**136,927,748**	**67,585,265**	**68,464**	**--**	**--**	**--**	**--**

NOTES:

The S-64 Engine (#1) commenced operation on April 27, 2017.

[1] CH_4, CO, and SO_2 content was determined from the July 18 & 19, 2018 (9/14/18 - current) source test.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Nov-19

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
11/01/2019	24.00	47.7	521	750,636	358,053	1,013	363	725,416
11/02/2019	24.00	47.7	526	756,822	361,004	1,013	366	731,395
11/03/2019	25.00	47.7	534	769,335	366,973	1,013	372	743,487
11/04/2019	24.00	47.7	553	795,730	379,563	1,013	384	768,995
11/05/2019	24.00	47.7	579	833,734	397,691	1,013	403	805,723
11/06/2019	24.00	47.7	571	856,358	408,483	1,013	414	827,586
11/07/2019	24.00	47.7	601	865,374	412,783	1,013	418	836,299
11/08/2019	23.42	47.7	582	837,979	399,716	1,013	405	809,825
11/09/2019	24.00	47.7	603	867,919	413,997	1,013	419	838,758
11/10/2019	21.50	47.7	538	775,431	369,881	1,013	375	749,378
11/11/2019	24.00	47.7	606	872,834	416,342	1,013	422	843,509
11/12/2019	22.58	47.7	555	799,431	381,328	1,013	386	772,571
11/13/2019	24.00	47.7	605	871,391	415,654	1,013	421	842,114
11/14/2019	24.00	47.7	589	847,989	404,491	1,013	410	819,499
11/15/2019	24.00	47.7	568	818,411	390,382	1,013	395	790,914
11/16/2019	24.00	47.7	563	811,290	386,985	1,013	392	784,032
11/17/2019	24.00	47.7	561	808,027	385,429	1,013	390	780,879
11/18/2019	15.75	47.7	338	487,212	232,400	1,013	235	470,843
11/19/2019	24.00	47.7	556	801,308	382,224	1,013	387	774,385
11/20/2019	24.00	47.7	555	798,778	381,017	1,013	386	771,940
11/21/2019	24.00	47.7	589	848,223	404,602	1,013	410	819,725
11/22/2019	24.00	47.7	598	861,407	410,891	1,013	416	832,466
11/23/2019	24.00	47.7	597	860,176	410,304	1,013	416	831,276
11/24/2019	24.00	47.7	595	857,455	409,006	1,013	414	828,646
11/25/2019	24.00	47.7	595	856,374	408,491	1,013	414	827,602
11/26/2019	24.00	47.7	590	849,667	405,291	1,013	411	821,120
11/27/2019	23.00	47.7	613	883,188	421,280	1,013	427	853,514
11/28/2019	24.00	47.7	655	943,250	449,930	1,013	456	911,558
11/29/2019	24.00	47.7	662	953,352	454,749	1,013	461	921,321
11/30/2019	24.00	47.7	662	953,019	454,590	1,013	460	921,000
Totals/ Average:	**707.25**	**47.7**	**587**	**24,892,099.7**	**11,873,532**	**1,013**	**12,028**	**24,055,775**
						Maximum:	**461**	**921,321**

Notes:

The S-64 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 18 & 19, 2018 (9/14/18 - 9/5/19) and July 10 & 11, 2019 (9/6/19 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Dec-19

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
12/01/2019	24.00	47.7	654	942,356	449,504	1,013	455	910,695
12/02/2019	24.00	47.7	648	932,998	445,040	1,013	451	901,651
12/03/2019	24.00	47.7	642	924,034	440,764	1,013	446	892,989
12/04/2019	24.00	47.7	637	917,966	437,870	1,013	444	887,124
12/05/2019	24.00	47.7	636	916,250	437,051	1,013	443	885,466
12/06/2019	24.00	47.7	630	906,790	432,539	1,013	438	876,323
12/07/2019	23.00	47.7	557	802,156	382,628	1,013	388	775,205
12/08/2019	24.00	47.7	570	820,408	391,334	1,013	396	792,844
12/09/2019	9.50	47.7	212	305,529	145,737	1,013	148	295,264
12/10/2019	0.00							
12/11/2019	0.00							
12/12/2019	0.00							
12/13/2019	0.00							
12/14/2019	0.00							
12/15/2019	0.00							
12/16/2019	0.00							
12/17/2019	1.00	47.7	5	7,353	3,507	1,013	4	7,106
12/18/2019	17.00	47.7	141	202,472	96,579	1,013	98	195,669
12/19/2019	9.75	47.7	76	109,661	52,308	1,013	53	105,977
12/20/2019	11.75	47.7	257	370,448	176,704	1,013	179	358,001
12/21/2019	24.00	47.7	570	820,127	391,200	1,013	396	792,572
12/22/2019	24.00	47.7	575	827,887	394,902	1,013	400	800,072
12/23/2019	24.00	47.7	578	833,034	397,357	1,013	403	805,046
12/24/2019	24.00	47.7	583	839,444	400,415	1,013	406	811,240
12/25/2019	24.00	47.7	582	838,308	399,873	1,013	405	810,142
12/26/2019	24.00	47.7	550	792,344	377,948	1,013	383	765,723
12/27/2019	24.00	47.7	558	803,316	383,182	1,013	388	776,326
12/28/2019	24.00	47.7	558	803,633	383,333	1,013	388	776,633
12/29/2019	24.00	47.7	577	830,893	396,336	1,013	401	802,977
12/30/2019	23.33	47.7	548	789,712	376,692	1,013	382	763,179
12/31/2019	19.58	47.7	426	613,633	292,703	1,013	297	593,016
Totals/ Average:	**498.92**	**47.7**	**566**	**16,950,751.2**	**8,085,508**	**1,013**	**8,191**	**16,381,240**
						Maximum:	**455**	**910,695**

Notes:

The S-64 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 18 & 19, 2018 (9/14/18 - 9/5/19) and July 10 & 11, 2019 (9/6/19 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Jan-20

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
1/01/2020	24.00	47.7	551	793,742	378,615	1,013	384	767,074
1/02/2020	24.00	47.7	552	795,499	379,453	1,013	384	768,771
1/03/2020	24.00	47.7	561	807,864	385,351	1,013	390	780,721
1/04/2020	24.00	47.7	560	806,744	384,817	1,013	390	779,639
1/05/2020	18.42	47.7	419	602,964	287,614	1,013	291	582,706
1/06/2020	21.00	47.7	479	690,369	329,306	1,013	334	667,174
1/07/2020	23.50	47.7	531	764,829	364,824	1,013	370	739,132
1/08/2020	22.92	47.7	507	729,916	348,170	1,013	353	705,392
1/09/2020	22.83	47.7	557	801,491	382,311	1,013	387	774,562
1/10/2020	24.00	47.7	587	844,975	403,053	1,013	408	816,585
1/11/2020	24.00	47.7	586	844,176	402,672	1,013	408	815,813
1/12/2020	24.00	47.7	586	844,360	402,759	1,013	408	815,991
1/13/2020	24.00	47.7	586	844,386	402,772	1,013	408	816,017
1/14/2020	24.00	47.7	580	835,874	398,712	1,013	404	807,790
1/15/2020	24.00	47.7	614	884,275	421,799	1,013	427	854,566
1/16/2020	20.83	47.7	547	787,772	375,767	1,013	381	761,304
1/17/2020	24.00	47.7	657	946,671	451,562	1,013	457	914,864
1/18/2020	24.00	47.7	656	944,453	450,504	1,013	456	912,721
1/19/2020	22.92	47.7	590	848,966	404,957	1,013	410	820,443
1/20/2020	16.83	47.7	596	617,348	294,475	1,013	298	596,607
1/21/2020	24.00	47.7	658	947,616	452,013	1,013	458	915,778
1/22/2020	24.00	47.7	665	957,657	456,802	1,013	463	925,481
1/23/2020	24.00	47.7	662	953,550	454,843	1,013	461	921,512
1/24/2020	24.00	47.7	662	953,520	454,829	1,013	461	921,484
1/25/2020	24.00	47.7	659	948,882	452,617	1,013	459	917,001
1/26/2020	24.00	47.7	660	949,749	453,030	1,013	459	917,839
1/27/2020	24.00	47.7	661	952,353	454,273	1,013	460	920,356
1/28/2020	24.00	47.7	660	950,979	453,617	1,013	460	919,028
1/29/2020	24.00	47.7	658	947,019	451,728	1,013	458	915,201
1/30/2020	24.00	47.7	660	949,918	453,111	1,013	459	918,003
1/31/2020	24.00	47.7	662	952,931	454,548	1,013	460	920,915
Totals/ Average:	**721.25**	**47.7**	**612**	**26,500,846.6**	**12,640,904**	**1,013**	**12,805**	**25,610,471**
						Maximum:	**463**	**925,481**

Notes:

The S-64 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - current) source test.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Feb-20

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
2/01/2020	24.00	47.7	660	949,845	453,076	1,013	459	917,932
2/02/2020	24.00	47.7	656	945,283	450,900	1,013	457	913,523
2/03/2020	24.00	47.7	658	947,139	451,785	1,013	458	915,317
2/04/2020	24.00	47.7	659	949,510	452,916	1,013	459	917,608
2/05/2020	19.58	47.7	523	753,734	359,531	1,013	364	728,410
2/06/2020	24.00	47.7	658	947,883	452,140	1,013	458	916,036
2/07/2020	24.00	47.7	659	949,046	452,695	1,013	459	917,160
2/08/2020	15.67	47.7	415	598,003	285,247	1,013	289	577,911
2/09/2020	24.00	47.7	662	953,279	454,714	1,013	461	921,251
2/10/2020	22.25	47.7	549	791,063	377,337	1,013	382	764,485
2/11/2020	22.92	47.7	537	773,935	369,167	1,013	374	747,933
2/12/2020	24.00	47.7	614	883,829	421,586	1,013	427	854,134
2/13/2020	24.00	47.7	628	904,737	431,560	1,013	437	874,340
2/14/2020	24.00	47.7	643	925,308	441,372	1,013	447	894,219
2/15/2020	24.00	47.7	646	930,808	443,995	1,013	450	899,534
2/16/2020	24.00	47.7	647	931,005	444,089	1,013	450	899,725
2/17/2020	19.50	47.7	521	750,751	358,108	1,013	363	725,527
2/18/2020	16.75	47.7	411	591,777	282,278	1,013	286	571,895
2/19/2020	24.00	47.7	641	922,359	439,965	1,013	446	891,370
2/20/2020	24.00	47.7	644	927,003	442,180	1,013	448	895,857
2/21/2020	23.08	47.7	624	898,187	428,435	1,013	434	868,010
2/22/2020	19.58	47.7	520	748,549	357,058	1,013	362	723,399
2/23/2020	24.00	47.7	658	947,973	452,183	1,013	458	916,123
2/24/2020	24.00	47.7	657	946,248	451,360	1,013	457	914,456
2/25/2020	24.00	47.7	655	942,574	449,608	1,013	455	910,905
2/26/2020	23.00	47.7	615	885,543	422,404	1,013	428	855,791
2/27/2020	14.17	47.7	346	498,916	237,983	1,013	241	482,153
2/28/2020	24.00	47.7	643	925,972	441,689	1,013	447	894,862
2/29/2020	24.00	47.7	657	946,027	451,255	1,013	457	914,242
Totals/ Average:	**652.50**	**47.7**	**640**	**25,066,285.0**	**11,956,618**	**1,013**	**12,112**	**24,224,108**
						Maximum:	**461**	**921,251**

Notes:

The S-64 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - current) source test.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Mar-20

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
3/01/2020	24.00	47.7	656	944,354	450,457	1,013	456	912,626
3/02/2020	24.00	47.7	656	944,191	450,379	1,013	456	912,468
3/03/2020	24.00	47.7	658	948,045	452,218	1,013	458	916,193
3/04/2020	24.00	47.7	660	950,993	453,623	1,013	460	919,041
3/05/2020	24.00	47.7	658	948,045	452,218	1,013	458	916,193
3/06/2020	24.00	47.7	662	953,965	455,041	1,013	461	921,914
3/07/2020	23.67	47.7	651	938,126	447,486	1,013	453	906,607
3/08/2020	23.00	47.7	665	917,274	437,540	1,013	443	886,456
3/09/2020	23.25	47.7	642	924,757	441,109	1,013	447	893,687
3/10/2020	23.75	47.7	627	903,092	430,775	1,013	436	872,750
3/11/2020	21.67	47.7	552	794,848	379,143	1,013	384	768,143
3/12/2020	16.67	47.7	427	615,427	293,559	1,013	297	594,750
3/13/2020	21.67	47.7	577	830,181	395,996	1,013	401	802,288
3/14/2020	24.00	47.7	628	903,623	431,028	1,013	437	873,263
3/15/2020	24.00	47.7	628	904,138	431,274	1,013	437	873,761
3/16/2020	24.00	47.7	628	904,000	431,208	1,013	437	873,627
3/17/2020	24.00	47.7	631	909,233	433,704	1,013	439	878,685
3/18/2020	24.00	47.7	631	908,387	433,301	1,013	439	877,867
3/19/2020	24.00	47.7	641	922,534	440,049	1,013	446	891,539
3/20/2020	3.00	47.7	82	117,448	56,022	1,013	57	113,502
3/21/2020	16.50	47.7	415	596,897	284,720	1,013	288	576,842
3/22/2020	24.00	47.7	671	965,537	460,561	1,013	467	933,096
3/23/2020	23.67	47.7	614	884,554	421,932	1,013	427	854,835
3/24/2020	24.00	47.7	679	977,796	466,409	1,013	472	944,944
3/25/2020	24.00	47.7	673	969,713	462,553	1,013	469	937,133
3/26/2020	24.00	47.7	665	957,209	456,589	1,013	463	925,049
3/27/2020	24.00	47.7	664	956,873	456,428	1,013	462	924,724
3/28/2020	24.00	47.7	669	963,949	459,804	1,013	466	931,562
3/29/2020	24.00	47.7	667	961,062	458,427	1,013	464	928,772
3/30/2020	24.00	47.7	668	961,314	458,547	1,013	465	929,016
3/31/2020	24.00	47.7	667	961,025	458,409	1,013	464	928,736
Totals/ Average:	**700.83**	**47.7**	**650**	**27,338,589.8**	**13,040,507**	**1,013**	**13,210**	**26,420,068**
						Maximum:	**472**	**944,944**

Notes:

The S-64 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - current) source test.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Apr-20

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
4/01/2020	24.00	47.7	669	963,935	459,797	1,013	466	931,549
4/02/2020	24.00	47.7	671	966,501	461,021	1,013	467	934,029
4/03/2020	14.33	47.7	374	538,851	257,032	1,013	260	520,746
4/04/2020	24.00	47.7	670	965,168	460,385	1,013	466	932,740
4/05/2020	24.00	47.7	663	954,168	455,138	1,013	461	922,110
4/06/2020	13.67	47.7	377	542,580	258,811	1,013	262	524,350
4/07/2020	14.50	47.7	383	552,005	263,306	1,013	267	533,459
4/08/2020	16.42	47.7	410	590,617	281,724	1,013	285	570,773
4/09/2020	24.00	47.7	623	897,341	428,032	1,013	434	867,192
4/10/2020	24.00	47.7	649	934,787	445,894	1,013	452	903,380
4/11/2020	24.00	47.7	653	940,324	448,535	1,013	454	908,731
4/12/2020	22.25	47.7	604	869,402	414,705	1,013	420	840,192
4/13/2020	10.00	47.7	229	329,396	157,122	1,013	159	318,329
4/14/2020	13.25	47.7	336	483,248	230,509	1,013	234	467,012
4/15/2020	24.00	47.7	648	933,089	445,083	1,013	451	901,739
4/16/2020	23.17	47.7	631	908,289	433,254	1,013	439	877,773
4/17/2020	19.17	47.7	526	757,762	361,452	1,013	366	732,303
4/18/2020	0.00							
4/19/2020	0.00							
4/20/2020	17.08	47.7	387	557,182	265,776	1,013	269	538,462
4/21/2020	22.50	47.7	555	799,754	381,483	1,013	386	772,884
4/22/2020	23.83	47.7	596	858,499	409,504	1,013	415	829,655
4/23/2020	20.08	47.7	502	722,531	344,647	1,013	349	698,255
4/24/2020	22.50	47.7	571	821,782	391,990	1,013	397	794,172
4/25/2020	24.00	47.7	614	884,709	422,006	1,013	427	854,985
4/26/2020	22.83	47.7	576	829,576	395,708	1,013	401	801,704
4/27/2020	20.00	47.7	493	709,666	338,510	1,013	343	685,822
4/28/2020	18.08	47.7	415	596,907	284,725	1,013	288	576,852
4/29/2020	15.42	47.7	348	501,005	238,980	1,013	242	484,172
4/30/2020	15.42	47.7	368	530,541	253,068	1,013	256	512,716
Totals/ Average:	**560.50**	**47.7**	**623**	**20,939,615.2**	**9,988,196**	**1,013**	**10,118**	**20,236,086**
						Maximum:	**467**	**934,029**

Notes:

The S-64 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - current) source test.

MONTHLY LFG Input to Landfill Gas Engine (S-65)

WM - REDWOOD LANDFILL, Novato, CA

S-65 (Engine #2)

Month	Total Available Runtime (hours)	Total Downtime (hours)	Total Runtime (hours)	Average Flow (scfm)	Average CH$_4$ (%)[1]	Total Flow LFG Volume (scf)	Total Flow LFG Volume Corrected to HHV of 500 BTU/scf	Total CH$_4$ Volume (scf)	Total Heat Input (MMBTU)	CO Emission Factor (lb/MMBtu)[1]	CO Emissions (tons)	SO2 Emission Factor (lb/MMBtu)[2]	SO2 Emissions (tons)[2]
November-19	721.00	1.83	719.17	613	47.8	26,455,128	25,637,735	12,654,361	12,819	0.093	0.59	1.5895	2.10E-02
December-19	744.00	318.17	425.83	531	47.8	13,563,947	13,144,857	6,488,083	6,572	0.093	0.30	1.5895	1.08E-02
January-20	744.00	37.17	706.83	614	47.8	26,056,424	25,251,350	12,463,648	12,626	0.093	0.59	1.5895	2.07E-02
February-20	696.00	20.92	675.08	625	47.8	25,311,510	24,529,452	12,107,330	12,265	0.093	0.57	1.5895	2.01E-02
March-20	743.00	10.17	732.83	627	47.8	27,556,720	26,705,291	13,181,289	13,353	0.093	0.62	1.5895	2.19E-02
April-20	720.00	26.50	693.50	629	47.8	26,190,098	25,380,894	12,527,588	12,690	0.093	0.59	1.5895	2.08E-02
TOTAL/ AVG:	**4,368.00**	**414.75**	**3,953.25**	**612**	**47.8**	**145,133,827**	**140,649,578**	**69,422,299**	**70,325**	**--**	**--**	**--**	**--**

NOTES:

The S-65 Engine (#2) commenced operation on April 27, 2017.

[1]CH$_4$, CO, and SO$_2$ content was determined from the July 10 & 11, 2019 (9/6/19 - current) source test.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Nov-19

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
11/01/2019	24.00	47.8	582	837,618	400,660	1,013	406	811,738
11/02/2019	23.50	47.8	557	801,578	383,421	1,013	388	776,812
11/03/2019	25.00	47.8	588	847,285	405,284	1,013	411	821,106
11/04/2019	24.00	47.8	599	861,914	412,282	1,013	418	835,283
11/05/2019	24.00	47.8	618	889,475	425,465	1,013	431	861,993
11/06/2019	24.00	47.8	602	903,671	432,255	1,013	438	875,750
11/07/2019	24.00	47.8	633	910,983	435,753	1,013	441	882,836
11/08/2019	23.67	47.8	618	889,246	425,356	1,013	431	861,771
11/09/2019	24.00	47.8	637	916,698	438,487	1,013	444	888,374
11/10/2019	24.00	47.8	639	920,870	440,482	1,013	446	892,417
11/11/2019	24.00	47.8	640	921,325	440,700	1,013	446	892,859
11/12/2019	24.00	47.8	638	918,051	439,134	1,013	445	889,686
11/13/2019	24.00	47.8	638	918,903	439,542	1,013	445	890,511
11/14/2019	24.00	47.8	643	925,891	442,884	1,013	449	897,284
11/15/2019	24.00	47.8	632	910,543	435,543	1,013	441	882,409
11/16/2019	24.00	47.8	627	903,245	432,052	1,013	438	875,337
11/17/2019	24.00	47.8	625	899,564	430,291	1,013	436	871,770
11/18/2019	24.00	47.8	632	910,021	435,293	1,013	441	881,904
11/19/2019	24.00	47.8	621	893,609	427,443	1,013	433	865,999
11/20/2019	24.00	47.8	618	890,017	425,724	1,013	431	862,518
11/21/2019	24.00	47.8	626	901,351	431,146	1,013	437	873,501
11/22/2019	24.00	47.8	630	906,895	433,798	1,013	439	878,875
11/23/2019	24.00	47.8	630	907,205	433,946	1,013	440	879,175
11/24/2019	24.00	47.8	630	906,883	433,792	1,013	439	878,863
11/25/2019	24.00	47.8	627	903,092	431,979	1,013	438	875,189
11/26/2019	24.00	47.8	622	896,163	428,664	1,013	434	868,474
11/27/2019	23.00	47.8	521	750,713	359,091	1,013	364	727,518
11/28/2019	24.00	47.8	554	798,374	381,889	1,013	387	773,706
11/29/2019	24.00	47.8	561	807,251	386,135	1,013	391	782,310
11/30/2019	24.00	47.8	560	806,693	385,868	1,013	391	781,768
Totals/ Average:	**719.17**	**47.8**	**613**	**26,455,128.3**	**12,654,361**	**1,013**	**12,819**	**25,637,735**
						Maximum:	**449**	**897,284**

Notes:

The S-65 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 18 & 19, 2018 (9/14/18 - 9/5/19) and July 10 & 11, 2019 (9/6/19 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Dec-19

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
12/01/2019	24.00	47.8	554	798,068	381,742	1,013	387	773,409
12/02/2019	24.00	47.8	583	840,075	401,836	1,013	407	814,119
12/03/2019	24.00	47.8	614	884,097	422,893	1,013	428	856,781
12/04/2019	24.00	47.8	604	870,300	416,293	1,013	422	843,410
12/05/2019	16.50	47.8	415	596,932	285,532	1,013	289	578,488
12/06/2019	7.83	47.8	143	205,936	98,506	1,013	100	199,573
12/07/2019	23.75	47.8	551	793,078	379,356	1,013	384	768,574
12/08/2019	24.00	47.8	555	799,800	382,571	1,013	388	775,088
12/09/2019	9.00	47.8	207	298,189	142,634	1,013	144	288,976
12/10/2019	0.00							
12/11/2019	0.00							
12/12/2019	0.00							
12/13/2019	0.00							
12/14/2019	0.00							
12/15/2019	0.00							
12/16/2019	0.00							
12/17/2019	0.00							
12/18/2019	0.00							
12/19/2019	7.00	47.8	155	222,790	106,568	1,013	108	215,907
12/20/2019	15.67	47.8	293	421,593	201,662	1,013	204	408,567
12/21/2019	8.25	47.8	147	211,527	101,181	1,013	102	204,992
12/22/2019	24.00	47.8	342	492,909	235,774	1,013	239	477,679
12/23/2019	24.00	47.8	418	601,920	287,918	1,013	292	583,322
12/24/2019	24.00	47.8	497	716,399	342,677	1,013	347	694,264
12/25/2019	24.00	47.8	496	714,886	341,954	1,013	346	692,798
12/26/2019	24.00	47.8	542	781,090	373,621	1,013	378	756,956
12/27/2019	17.50	47.8	410	590,228	282,325	1,013	286	571,991
12/28/2019	8.75	47.8	191	275,259	131,665	1,013	133	266,754
12/29/2019	24.00	47.8	550	792,234	378,952	1,013	384	767,757
12/30/2019	23.58	47.8	544	783,449	374,749	1,013	380	759,242
12/31/2019	24.00	47.8	606	873,188	417,675	1,013	423	846,209
Totals/ Average:	**425.83**	**47.8**	**531**	**13,563,946.7**	**6,488,083**	**1,013**	**6,572**	**13,144,857**
						Maximum:	**428**	**856,781**

Notes:
The S-65 Engine (#1) commenced operation on April 27, 2017.
*Methane (CH_4) content was determined from the July 18 & 19, 2018 (9/14/18 - 9/5/19) and July 10 & 11, 2019 (9/6/19 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Jan-20

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
1/01/2020	24.00	47.8	604	869,834	416,070	1,013	421	842,959
1/02/2020	24.00	47.8	603	868,234	415,305	1,013	421	841,408
1/03/2020	24.00	47.8	609	876,903	419,452	1,013	425	849,809
1/04/2020	24.00	47.8	611	879,662	420,771	1,013	426	852,482
1/05/2020	24.00	47.8	622	895,686	428,436	1,013	434	868,012
1/06/2020	24.00	47.8	614	883,484	422,600	1,013	428	856,187
1/07/2020	24.00	47.8	607	874,283	418,199	1,013	424	847,270
1/08/2020	23.25	47.8	578	832,497	398,211	1,013	403	806,775
1/09/2020	22.50	47.8	545	785,402	375,684	1,013	381	761,135
1/10/2020	24.00	47.8	606	873,108	417,636	1,013	423	846,131
1/11/2020	24.00	47.8	610	878,117	420,032	1,013	425	850,986
1/12/2020	24.00	47.8	607	874,143	418,132	1,013	424	847,135
1/13/2020	24.00	47.8	607	874,327	418,220	1,013	424	847,313
1/14/2020	10.00	47.8	247	356,168	170,367	1,013	173	345,164
1/15/2020	12.25	47.8	276	398,050	190,401	1,013	193	385,752
1/16/2020	24.00	47.8	625	900,003	430,501	1,013	436	872,196
1/17/2020	24.00	47.8	633	911,263	435,887	1,013	442	883,108
1/18/2020	24.00	47.8	632	910,363	435,457	1,013	441	882,236
1/19/2020	22.33	47.8	568	817,808	391,184	1,013	396	792,539
1/20/2020	17.00	47.8	588	608,349	290,993	1,013	295	589,553
1/21/2020	24.00	47.8	626	901,867	431,393	1,013	437	874,001
1/22/2020	24.00	47.8	634	913,612	437,011	1,013	443	885,384
1/23/2020	24.00	47.8	630	907,439	434,058	1,013	440	879,401
1/24/2020	24.00	47.8	629	905,693	433,223	1,013	439	877,709
1/25/2020	24.00	47.8	628	903,764	432,300	1,013	438	875,840
1/26/2020	24.00	47.8	630	906,980	433,838	1,013	439	878,957
1/27/2020	23.50	47.8	593	853,678	408,342	1,013	414	827,301
1/28/2020	24.00	47.8	624	898,801	429,926	1,013	436	871,030
1/29/2020	24.00	47.8	622	895,075	428,144	1,013	434	867,419
1/30/2020	24.00	47.8	625	899,559	430,289	1,013	436	871,765
1/31/2020	24.00	47.8	627	902,271	431,586	1,013	437	874,393
Totals/ Average:	**706.83**	**47.8**	**614**	**26,056,424.1**	**12,463,648**	**1,013**	**12,626**	**25,251,350**
						Maximum:	**443**	**885,384**

Notes:

The S-65 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - current) source test.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Feb-20

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
2/01/2020	24.00	47.8	624	898,874	429,961	1,013	436	871,101
2/02/2020	24.00	47.8	622	896,179	428,672	1,013	434	868,489
2/03/2020	24.00	47.8	622	895,149	428,180	1,013	434	867,492
2/04/2020	24.00	47.8	627	902,812	431,845	1,013	437	874,918
2/05/2020	23.75	47.8	609	877,239	419,613	1,013	425	850,135
2/06/2020	24.00	47.8	625	899,759	430,384	1,013	436	871,958
2/07/2020	24.00	47.8	625	899,567	430,292	1,013	436	871,773
2/08/2020	24.00	47.8	636	915,485	437,907	1,013	444	887,199
2/09/2020	24.00	47.8	628	904,968	432,876	1,013	439	877,007
2/10/2020	24.00	47.8	632	909,947	435,258	1,013	441	881,832
2/11/2020	24.00	47.8	636	916,323	438,307	1,013	444	888,011
2/12/2020	24.00	47.8	630	906,833	433,768	1,013	439	878,814
2/13/2020	24.00	47.8	627	902,354	431,626	1,013	437	874,473
2/14/2020	24.00	47.8	628	904,360	432,585	1,013	438	876,417
2/15/2020	24.00	47.8	631	908,363	434,500	1,013	440	880,297
2/16/2020	24.00	47.8	632	909,591	435,087	1,013	441	881,487
2/17/2020	24.00	47.8	634	913,645	437,026	1,013	443	885,416
2/18/2020	24.00	47.8	639	920,312	440,216	1,013	446	891,877
2/19/2020	24.00	47.8	633	912,168	436,320	1,013	442	883,984
2/20/2020	24.00	47.8	634	912,995	436,716	1,013	442	884,786
2/21/2020	24.00	47.8	632	909,476	435,032	1,013	441	881,376
2/22/2020	20.17	47.8	522	751,688	359,557	1,013	364	728,463
2/23/2020	24.00	47.8	638	919,352	439,756	1,013	445	890,946
2/24/2020	21.83	47.8	544	783,626	374,834	1,013	380	759,414
2/25/2020	17.25	47.8	427	614,365	293,871	1,013	298	595,382
2/26/2020	23.58	47.8	613	882,019	421,899	1,013	427	854,766
2/27/2020	16.50	47.8	377	542,753	259,617	1,013	263	525,984
2/28/2020	24.00	47.8	625	900,673	430,822	1,013	436	872,844
2/29/2020	24.00	47.8	625	900,637	430,804	1,013	436	872,810
Totals/ Average:	**675.08**	**47.8**	**625**	**25,311,510.0**	**12,107,330**	**1,013**	**12,265**	**24,529,452**
						Maximum:	**446**	**891,877**

Notes:

The S-65 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - current) source test.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Mar-20

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
3/01/2020	24.00	47.8	625	900,139	430,566	1,013	436	872,327
3/02/2020	24.00	47.8	626	901,603	431,266	1,013	437	873,746
3/03/2020	24.00	47.8	626	901,978	431,446	1,013	437	874,110
3/04/2020	24.00	47.8	628	904,063	432,443	1,013	438	876,130
3/05/2020	24.00	47.8	633	911,914	436,199	1,013	442	883,738
3/06/2020	24.00	47.8	632	910,437	435,492	1,013	441	882,307
3/07/2020	24.00	47.8	633	911,625	436,060	1,013	442	883,458
3/08/2020	23.00	47.8	633	873,202	417,681	1,013	423	846,223
3/09/2020	24.00	47.8	635	914,982	437,666	1,013	443	886,711
3/10/2020	23.33	47.8	590	850,260	406,708	1,013	412	823,989
3/11/2020	23.92	47.8	633	911,469	435,986	1,013	442	883,307
3/12/2020	22.33	47.8	584	840,307	401,946	1,013	407	814,344
3/13/2020	23.50	47.8	592	851,810	407,449	1,013	413	825,491
3/14/2020	24.00	47.8	596	858,737	410,762	1,013	416	832,205
3/15/2020	24.00	47.8	596	858,550	410,673	1,013	416	832,023
3/16/2020	24.00	47.8	595	857,390	410,118	1,013	415	830,899
3/17/2020	24.00	47.8	600	863,401	412,993	1,013	418	836,724
3/18/2020	24.00	47.8	599	862,903	412,755	1,013	418	836,241
3/19/2020	24.00	47.8	608	875,926	418,984	1,013	424	848,862
3/20/2020	24.00	47.8	663	954,563	456,599	1,013	463	925,070
3/21/2020	24.00	47.8	652	938,817	449,067	1,013	455	909,810
3/22/2020	24.00	47.8	646	929,564	444,641	1,013	450	900,843
3/23/2020	24.00	47.8	654	941,220	450,217	1,013	456	912,139
3/24/2020	24.00	47.8	655	943,706	451,406	1,013	457	914,548
3/25/2020	24.00	47.8	649	935,093	447,286	1,013	453	906,201
3/26/2020	24.00	47.8	640	921,508	440,788	1,013	447	893,036
3/27/2020	18.92	47.8	499	718,786	343,819	1,013	348	696,577
3/28/2020	24.00	47.8	635	914,051	437,221	1,013	443	885,809
3/29/2020	24.00	47.8	634	912,569	436,512	1,013	442	884,373
3/30/2020	23.50	47.8	609	877,644	419,806	1,013	425	850,527
3/31/2020	22.33	47.8	561	808,505	386,734	1,013	392	783,524
Totals/ Average:	**732.83**	**47.8**	**627**	**27,556,720.2**	**13,181,289**	**1,013**	**13,353**	**26,705,291**
						Maximum:	**463**	**925,070**

Notes:

The S-65 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - current) source test.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Apr-20

Date	Runtime (hours)	CH4 (%)*	Average Flow (scfm)	Total LFG Volume (scf)	CH4 Volume (scf)	Heating Value of CH4 (BTU/scf)	Heat Input (MMBTU)/Day	Total Flow Corrected to HHV of 500 BTU/scf
4/01/2020	24.00	47.8	620	893,245	427,269	1,013	433	865,646
4/02/2020	22.58	47.8	575	828,566	396,331	1,013	401	802,966
4/03/2020	24.00	47.8	637	917,941	439,081	1,013	445	889,579
4/04/2020	24.00	47.8	621	893,760	427,515	1,013	433	866,145
4/05/2020	22.83	47.8	584	841,670	402,599	1,013	408	815,665
4/06/2020	16.92	47.8	421	605,671	289,712	1,013	293	586,957
4/07/2020	24.00	47.8	635	914,960	437,655	1,013	443	886,690
4/08/2020	24.00	47.8	631	909,156	434,879	1,013	441	881,065
4/09/2020	21.75	47.8	528	760,758	363,895	1,013	369	737,252
4/10/2020	24.00	47.8	628	903,958	432,393	1,013	438	876,028
4/11/2020	24.00	47.8	630	907,525	434,099	1,013	440	879,485
4/12/2020	24.00	47.8	633	911,270	435,890	1,013	442	883,114
4/13/2020	23.42	47.8	620	892,266	426,800	1,013	432	864,697
4/14/2020	16.58	47.8	396	570,530	272,903	1,013	276	552,902
4/15/2020	24.00	47.8	599	862,294	412,463	1,013	418	835,651
4/16/2020	24.00	47.8	622	896,127	428,647	1,013	434	868,439
4/17/2020	24.00	47.8	633	911,095	435,807	1,013	441	882,945
4/18/2020	24.00	47.8	657	945,592	452,308	1,013	458	916,376
4/19/2020	24.00	47.8	658	947,636	453,285	1,013	459	918,356
4/20/2020	24.00	47.8	641	923,499	441,740	1,013	447	894,965
4/21/2020	20.58	47.8	525	755,421	361,343	1,013	366	732,081
4/22/2020	23.75	47.8	632	909,593	435,088	1,013	441	881,489
4/23/2020	24.00	47.8	646	930,533	445,105	1,013	451	901,782
4/24/2020	24.00	47.8	642	924,329	442,137	1,013	448	895,770
4/25/2020	24.00	47.8	642	924,254	442,101	1,013	448	895,697
4/26/2020	24.00	47.8	643	926,514	443,182	1,013	449	897,887
4/27/2020	24.00	47.8	650	935,559	447,509	1,013	453	906,652
4/28/2020	24.00	47.8	650	935,444	447,454	1,013	453	906,542
4/29/2020	21.08	47.8	542	780,784	373,475	1,013	378	756,660
4/30/2020	24.00	47.8	646	930,150	444,922	1,013	451	901,411
Totals/ Average:	**693.50**	**47.8**	**629**	**26,190,098.1**	**12,527,588**	**1,013**	**12,690**	**25,380,894**
						Maximum:	**459**	**918,356**

Notes:

The S-65 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH_4) content was determined from the July 10 & 11, 2019 (9/6/19 - current) source test.

APPENDIX L

VOC SOILS LOGS

Redwood Landfill

Facility Number A1179
Title V Permit Condition Number 19867, Part 14

VOC Laden Soil

Month	VOC Emission Rate (lbs/month)	12-Month Rolling Total (lbs)
May-19	0.00	0.00
June-19	0.00	0.00
July-19	0.00	0.00
August-19	0.00	0.00
September-19	0.00	0.00
October-19	0.00	0.00
November-19	0.00	0.00
December-19	0.00	0.00
January-20	0.00	0.00
February-20	0.00	0.00
March-20	0.00	0.00
April-20	0.00	0.00
TOTALS:	**0.00**	

VOC Laden Soils is defined as soils containing concentrations of VOC less than 50 parts per million by weight (ppm_w).

APPENDIX M

H_2S TWICE WEEKLY AND QUARTERLY MONITORING

REDWOOD LANDFILL, INC.
Novato, CA

Total Reduced Sulfur Content - Quarter 4 - 2019

Date	H_2S Reading (ppm_v)	Calculated TRS (ppm_v)
10/3/2019	1,082.1	1,098.3
10/7/2019	1,019.1	1,034.4
10/13/2019	1,011.2	1,026.4
10/14/2019	998.7	1,013.7
10/17/2019	944.2	958.4
10/21/2019	997.4	1,012.4
10/25/2019	1,025.0	1,040.4
10/29/2019	1,050.0	1,065.8
10/31/2019	1,066.7	1,082.7
11/4/2019	978.9	993.6
11/7/2019	963.4	977.8
11/11/2019	916.2	929.9
11/14/2019	958.6	973.0
11/14/19*	1,514.1	1,534.7
11/19/2019	962.6	977.0
11/21/2019	979.8	994.5
11/26/2019	953.8	968.1
11/27/2019	917.5	931.2
12/2/2019	947.7	961.9
12/5/2019	982.6	997.4
12/9/2019	1,041.8	1,057.4
12/12/2019	1,000.0	1,015.0
12/16/2019	1,050.0	1,065.8
12/19/2019	850.0	862.8
12/23/2019	1,027.2	1,042.6
12/27/2019	1,000.9	1,015.9
12/30/2019	1,033.3	1,048.8
Quarterly Average:	1,010.1	1,025.2

ppm_v= parts per million by volume

TRS= total reduced sulfur

* Quarterly LFG lab analysis

Title V Permit Condition Number 19867 Part 31b

As of March 31, 2005, the Permit Holder shall analyze the landfill gas for H2S concentration on a weekly basis. The landfill gas sample shall be drawn from the main landfill gas header using a Draeger/RAE tube. The TRS content of the landfill gas shall be calculated using the average ratio of TRS/H2S for this site according to the following equation: TRS=1.015*H2S measured by the Draeger/RAE Tube. The Permit Holder shall maintain records of all Draeger/RAE tube test dates and test results and shall summarize the average H2S concentrations and the calculated TRS content of the landfill gas on a quarterly basis. Each Draeger/RAE tube test result (after conversion to TRS content) and the quarterly laboratory analysis in Part 31a shall be compared to the Peak TRS Limit in Part 18c. The concentration of TRS in collected landfill gas shall not exceed a peak of 410 ppmv, and on a rolling quarterly basis, the Permit Holder shall determine the annual average TRS content for comparison to the Annual Average TRS Limit of 350 ppmv.

November 22, 2016 Compliance Agreement

Per Condition 2.1 of the Compliance Agreement, H2S sampling using Draeger/RAE tubes shall be twice per week. Analytical sampling shall remain on quarterly intervals.

REDWOOD LANDFILL, INC.
Novato, CA

Total Reduced Sulfur Content - Quarter 1 - 2020

Date	H_2S Reading (ppm_v)	Calculated TRS (ppm_v)
1/2/2020	1,046.0	1,061.7
1/6/2020	988.1	1,002.9
1/9/2020	1,000.0	1,015.0
1/13/2020	1,107.9	1,124.6
1/16/2020	988.4	1,003.2
1/20/2020	1,007.7	1,022.9
1/23/2020	1,019.0	1,034.3
1/27/2020	1,003.1	1,018.1
1/30/2020	999.8	1,014.8
2/3/2020	971.6	986.1
2/6/2020	1,027.4	1,042.8
2/10/2020	980.3	995.0
2/13/2020	910.4	924.0
2/17/2020	965.3	979.8
2/18/20*	1,298.9	1,307.5
2/20/2020	978.5	993.2
2/24/2020	991.4	1,006.3
2/26/2020	1,025.5	1,040.9
3/2/2020	931.7	945.6
3/5/2020	952.7	967.0
3/9/2020	944.4	958.6
3/12/2020	943.4	957.6
3/17/2020	952.6	966.9
3/19/2020	935.2	949.2
3/23/2020	920.8	934.7
3/26/2020	977.1	991.8
3/30/2020	951.4	965.7
Quarterly Average:	993.3	1,007.8

ppm_v= parts per million by volume TRS= total reduced sulfur * Quarterly LFG lab analysis

Title V Permit Condition Number 19867 Part 31b

As of March 31, 2005, the Permit Holder shall analyze the landfill gas for H2S concentration on a weekly basis. The landfill gas sample shall be drawn from the main landfill gas header using a Draeger/RAE tube. The TRS content of the landfill gas shall be calculated using the average ratio of TRS/H2S for this site according to the following equation: TRS=1.015*H2S measured by the Draeger/RAE Tube. The Permit Holder shall maintain records of all Draeger/RAE tube test dates and test results and shall summarize the average H2S concentrations and the calculated TRS content of the landfill gas on a quarterly basis. Each Draeger/RAE tube test result (after conversion to TRS content) and the quarterly laboratory analysis in Part 31a shall be compared to the Peak TRS Limit in Part 18c. The concentration of TRS in collected landfill gas shall not exceed a peak of 410 ppmv, and on a rolling quarterly basis, the Permit Holder shall determine the annual average TRS content for comparison to the Annual Average TRS Limit of 350 ppmv.

November 22, 2016 Compliance Agreement

Per Condition 2.1 of the Compliance Agreement, H2S sampling using Draeger/RAE tubes shall be twice per week. Analytical sampling shall remain on quarterly intervals.

REDWOOD LANDFILL, INC.
Novato, CA

Total Reduced Sulfur Content - Quarter 2 - 2020

Date	H_2S Reading (ppm_v)	Calculated TRS (ppm_v)
4/2/2020	973.9	988.5
4/6/2020	918.5	932.3
4/9/2020	936.9	951.0
4/13/2020	976.2	990.8
4/16/2020	943.8	958.0
4/20/2020	899.4	912.9
4/23/2020	941.8	955.9
4/23/20*	603.5	609.1
4/27/2020	921.0	934.9
4/30/2020	905.6	919.2
Quarterly Average:	TBD	TBD

H_2S= hydrogen sulfide

ppm_v= parts per million by volume

TRS= total reduced sulfur

* Quarterly LFG lab analysis

Title V Permit Condition Number 19867 Part 31b

As of March 31, 2005, the Permit Holder shall analyze the landfill gas for H2S concentration on a weekly basis. The landfill gas sample shall be drawn from the main landfill gas header using a Draeger/RAE tube. The TRS content of the landfill gas shall be calculated using the average ratio of TRS/H2S for this site according to the following equation: TRS=1.015*H2S measured by the Draeger/RAE Tube. The Permit Holder shall maintain records of all Draeger/RAE tube test dates and test results and shall summarize the average H2S concentrations and the calculated TRS content of the landfill gas on a quarterly basis. Each Draeger/RAE tube test result (after conversion to TRS content) and the quarterly laboratory analysis in Part 31a shall be compared to the Peak TRS Limit in Part 18c. The concentration of TRS in collected landfill gas shall not exceed a peak of 410 ppmv, and on a rolling quarterly basis, the Permit Holder shall determine the annual average TRS content for comparison to the Annual Average TRS Limit of 350 ppmv.

November 22, 2016 Compliance Agreement

Per Condition 2.1 of the Compliance Agreement, H2S sampling using Draeger/RAE tubes shall be twice per week. Analytical sampling shall remain on quarterly intervals.

REDWOOD LANDFILL, INC.
Novato, CA

Rolling Quarterly Average Total Reduced Sulfur Content

Year	Quarter	Calculated TRS (ppm_v)	Rolling Quarterly Average Annual TRS (ppm_v)	Quarterly SO_2 Emission Factor (lb/MMscf)
2019	2	1,187	898.0	200.53
2019	3	936	946.1	158.10
2019	4	778	962.8	131.38
2020	1	753	913.5	127.25
2020	2*	TBD	TBD	TBD

*Quarterly results will be calculated at the end of the quarter.

H_2S = hydrogen sulfide

ppm_v = parts per million by volume

TRS = total reduced sulfur

TBD = To Be Determined.

Quarterly SO2 Emission Factor based on TRS concentrations to Flares A-51 and A-60 only.

Title V Permit Condition Number 19867 Part 31b

As of March 31, 2005, the Permit Holder shall analyze the landfill gas for H_2S concentration on a weekly basis. The landfill gas sample shall be drawn from the main landfill gas header using a Draeger/RAE tube. The TRS content of the landfill gas shall be calculated using the average ratio of TRS/H_2S for this site according to the following equation: TRS=1.015*H_2S measured by the Draeger/RAE Tube. The Permit Holder shall maintain records of all Draeger/RAE tube test dates and test results and shall summarize the average H_2S concentrations and the calculated TRS content of the landfill gas on a quarterly basis. Each Draeger/RAE tube test result (after conversion to TRS content) and the quarterly laboratory analysis in Part 31a shall be compared to the Peak TRS Limit in Part 18c. On a rolling quarterly basis, the Permit Holder shall determine the annual average TRS content for comparison to the Annual Average TRS Limit of 350 ppm_v.

SO2 EF = Calculated TRS (ppmv) * 0.0283168 m3/scf * 1000 L/m3 * 1 mol/22.4 L * 64.06 g/mol * 1 lb/453.592 g * 273.15 K / 288.7 K

APPENDIX N

PERFORMANCE TEST REPORT

Redwood Landfill, Inc

BAAQMD Facility # 1179

Annual Compliance Emissions Test Report #19180

Source Test for Landfill Gas Flare- Source A-60A and S-71

Located at:
8950 Redwood Highway
Novato, CA 94948

Performed and Reported by:
Blue Sky Environmental, Inc
624 San Gabriel Avenue
Albany, CA 94706

Prepared For:
SCS Engineers
Dave Bearden
3117 Fite Circle Suite 108
Sacramento, CA 95827
DBearden@scsengineers.com
(916) 361-1297

For Submittal To:
Bay Area Air Quality Management District
Attn: Marco Hernandez & Gloria Espena
Source Test Division
375 Beale Street, Suite 600
San Francisco, CA 94105
mhernandez@baaqmd.gov & gespena@baaqmd.gov

Testing Performed On:
Willexa S-71 on July 24th, 2019
Flare A-60-A on July 25th, 2019

Final Report Submitted On:
September 20th, 2019

REVIEW AND CERTIFICATION

Team Leader:

The work performed herein was conducted under my supervision, and I certify that: a) the details and results contained within this report are to the best of my knowledge an authentic and accurate representation of the test program; b) that the sampling and analytical procedures and data presented in the report is authentic and accurate: c) that all testing details and conclusions are accurate and valid, and: d) that the production rate and/or heat input rate during the source test are reported accurately.

If this report is submitted for Compliance purposes it should only be reproduced in its entirety. If there are any questions concerning this report, please contact me at (510) 508 3469.

Guy Worthington
Project Manager

TABLE of CONTENTS

SECTION 1. INTRODUCTION

1.1. Summary

Blue Sky Environmental, Inc was contracted to perform the compliance emissions testing on the A-60A Landfill Gas Flare, located at Redwood Landfill, 8950 Redwood Highway, Novato, California. Table 1.1 summarizes the source test information. Table 1.2 summarizes the results compared to the emission limits.

Table 1.1 Source Test Information

Test Location:	Redwood Landfill, 8950 Redwood Highway, Novato, California 94948 Mailing Address PO Box 793, Novato, CA 94948
Source Contact:	Alisha McCutcheon (415) 892-2851
Source Tested:	Enclosed Landfill Gas Flare (A-60 A) and LFG Treatment System (S-71)
Source Test Dates:	July 25th, 2019
Test Objective:	Determine Compliance with Regulation 8, Rule 34 and Permit to Operate A1179, Condition 19867, 30
Test Performed By:	Blue Sky Environmental, Inc 624 San Gabriel Ave., Albany, CA 94706 Guy Worthington (510) 508 3469 blueskyenvironmental@yahoo.com
Test Parameters:	**Landfill Gas** O_2, N_2, CO_2, BTU, THC, CH_4, NMOC, HHV, F-Factor, Sulfur & VOC Species, Volumetric Flow Rate **Flare Emissions** THC, CH_4, NMOC, NOx, CO, O_2, SO_2, Volumetric Flow Rate, Temperature. **Gas Treatment Waste Gas** Flow, VOC, NMOC, TRS, Fixed Gases

Table 1.2. Compliance Summary

SECTION 2. SOURCE TEST PROGRAM

A60-A @ 1585°F	**Average Test**	**Permit Limit**	**Compliance Status**
NOx, lbs/MMBTU	**0.05**	**0.06**	**In Compliance**
NOx, ppm @ 15% O_2	**11.8**	**15**	**In Compliance**
CO, lbs/MMBTU	**0.10**	**0.20**	**In Compliance**
CO, ppm @ 15% O_2	**40.2**	**82**	**In Compliance**
NMOC, (ppmvd @ 3% O_2 as CH_4)	**11.9**	**30**	**In Compliance**
CH_4 Destruction Efficiency %	**99.97**	**99**	**In Compliance**
SO_2, ppm	**37.7**	**300**	**In Compliance**
SO_2, lbs/MMBTU	**0.19**	**1.69**	**In Compliance**

2.1. Overview

This performance test was conducted to demonstrate that the A-60 (A) landfill gas flare is operating in accordance with the Bay Area Air Quality Management District (BAAQMD) Title V Permit A1179 and Regulation 8 Rule 34. The A-60 flare is divided into two discrete zones A (larger) and B (smaller). Only zone A of Flare A-60 was tested. Also the Willexa System S-71 waste gas to the Flare A60 (B) was tested. Willexa emissions were tested during startup purge of the 1" line, during stages 6/7/8 on the 12' line while the flow is ramping up, and Stage 9 when the flow is stabilized and the temperature of the Willexa desorption beds is increasing.

2.2. Pollutants Tested

The following EPA and ASTM sampling and analytical methods were used while testing the Flare A60-A:

EPA 3A	CO_2 and O_2
EPA 10	CO
Modified EPA 18	NMOC
EPA 7E	NO_X
EPA 6C	SO_2
EPA 19	Flow Rate Calculation, DSCFM
EPA 25C	LFG Gas analysis for NMOC by GC
EPA TO-15	VOC Species
ASTM 1945/3588	LFG Gas analysis for BTU and F-Factor
ASTM D-5504	Sulfur Species, H_2S and TRS

The following EPA and ASTM sampling and analytical methods were used while testing the Willexa S-71:

EPA 25C	LFG Gas analysis for NMOC by GC
EPA TO-15	VOC Species
ASTM 1945/3588	LFG Gas analysis for BTU and F-Factor
ASTM D-5504	Sulfur Species, H_2S and TRS

2.3. Test Date(s)

Testing was conducted on the Willexa S-71 July 24th and the Flare A60-A July 25th, 2019.

2.4. Sampling and Observing Personnel

Guy Worthington and Wesley Alder representing Blue Sky Environmental Inc., performed testing.

Sean Johnson and Michael Chan of Waste Management and Dave Bearden of SCS Engineers were present to operate and oversee the Flare operation and assist in coordinating testing and the collection of process data during testing, and provided the Yokogawa Flare data.

The BAAQMD was notified of the test in a plan submitted by SCS Engineers on July 10th, 2019. A Source Test Protocol acknowledgement was requested and received by SCS Engineers (NST # 5532, provided on July 12th, 2019), but no observers were present to witness the testing. A copy of the source test protocol and documentation can be found in Appendix I.

2.5. Source/Process Description

The enclosed LFG flare A-60 consists of 3,000 standard cubic feet per minute (scfm) multiple nozzle burner manufactured by Perennial Energy. The flare shell is approximately 45 feet high and has an inside diameter of approximately 136 inches. Zone A is a large segment, with 4 ports requiring unique - not perpendicular - traverses of 133 inches in length. The Willexa system is designed to remove non-methane organics and chlorinated compounds from up to 1,875 SCFM of landfill gas. The Willexa waste gas is vented at separate times through 1" and 12" diameter pipes to the Flare A60(B-side). The Willexa has four cycles, Depress Cycle #1, Regen Cycle, Depress Cycle #2 and Stabilization.

2.6. Source Operating Conditions

The flare operating temperature and the landfill gas inlet flow rate are shown contained in Appendix-F. There is no condensate injection. The waste gas flows and characterization is found in Appendix A, Table 3. The Flare A-60 requires annual testing (either side A or side B), with no longer than 5 years between tests on A and B.

The A60–A flare was operated at approximately 1,585 Degrees Fahrenheit (°F). The landfill gas methane content was 47.3 percent (%).

SECTION 3. SAMPLING AND ANALYSIS PROCEDURES

3.1. Port location

The two unequal stack segments in the A-60 (A&B) flare present a unique sampling configuration, as the cross-section is neither round, square, rectangular or oval. The A-60A Flare sampling was conducted via adjacent flange ports both with a 133 inch traverse path length. The port is located approximately 35 feet above grade, accessed by a 40-foot boom-lift. The 4-inch flange port is available ~4 stack diameters downstream from the burners and ~1 stack diameter upstream from the exit.

3.2. Point description/Labeling – ports/stack

Blue Sky Environmental conducted traverses and found Oxygen (O_2) stratification of more than 10%. Subsequent CEM sampling was conducted using the same traverse points.

3.3. Sample train description

Sampling system diagrams are included in the Appendix H. Additional descriptive information is included in the following section.

3.4. Sampling procedure description

Three 50 minute test runs were performed on the Flare A60-A on July 25th, 2019. Waste Gas testing occurred over an approximate 4 hour period on July 24th, 2019.

EPA Method 3A (O_2, CO_2), 10 (CO) and 7E (NO_X) are continuous monitoring techniques using instrumental analyzers. Sampling is performed by extracting exhaust flue gas from the stack, conditioning the sample and analyzing it by continuous monitoring gas analyzers in a CEM test van. The sampling system consists of a stainless steel sample probe, teflon sample line, glass-fiber particulate filter, glass moisture-knockout condensers in ice, followed by thermoelectric coolers (optional), teflon sample transfer tubing, diaphragm pump and a stainless steel/teflon manifold and flow control/delivery system. A constant sample and calibration gas supply pressure of 5 PSI was provided to each analyzer to avoid pressure variable response differences. The entire sampling system was leak checked prior to and at the end of the sampling program.

The sampling and analytical system (for EPA Methods) was checked for linearity with zero, mid (40-60%) and high span (80-100%) calibrations and is checked for system bias at the beginning and end of each run. System bias is determined by introducing calibration gas to the probe and pulling it through the entire sampling system. Individual test run calibrations usually use the calibration gas that most closely matches the stack gas effluent. Along with the Sampling System Bias, the Zero and Calibration Drift values were determined for each test. Methods 3A, 7E and 10 all defer to EPA Method 7E for the calculations of effluent concentration, Span, Calibration Gas, Analyzer Calibration Error (Linearity), Sampling System Bias, Zero Drift, Calibration Drift and Response Time. In addition, the NOx analyzer NO_2 to NO conversion efficiency check defers to EPA Method 20 section 5.6 for the criteria and procedure.

All calibration gases are EPA Protocol #1. The analyzer data recording system consists of a Honeywell DPR3000 or using OMEGA 3-pen flat-bed strip chart recorder supported by a Data Acquisition System (DAS).

EPA Method 18 is used to determine emissions of volatile organics analyzed by gas chromatograph/mass spectroscopy (GC/MS). Gaseous emissions are drawn through a purged, short teflon sample line to a tedlar bag located in a rigid leak proof bag container. Sample is drawn into the bag by evacuating the container to below stack gas pressure to allow sample flow into the bag without using a pump to avoid contamination. Using a rotometer at the probe tip prior to sampling, the negative pressure inside the container is adjusted with an adjustable flow orifice to maintain a constant integrated sample flow for the test duration. The bag samples are taken to a laboratory and analyzed within 72 hours.

EPA TO-15/ASTM 1945/ASTM5504/EPA 25C Sampling consists of collecting gases in pre-evacuated 6-Liter SUMMA canisters with pre-set flow controllers set to integrate over the desired test duration. The SUMMA® passivated canisters allow holding times up to 14 days for the TO-15 Method list of volatile organics. The SILCO canisters have a silanized (glass) lining that permits longer holding times (up to 72 hours) for reactive sulfur compounds. The sample gas is drawn by the canister vacuum through a micro-filter, pre-set orifice flow controller and on/off valve into the canister. The flow controller consisted of capillary orifice tubing designed to sample for a pre-set duration of 0.5 – 1.0 hours depending on the Permit requirements. The canister vacuum is monitored with a vacuum gauge to verify sample collection, and ideally drawn down to ~5"Hg Vacuum to minimize compound condensation inside the canister.

The samples are analyzed for volatile organics by EPA Method TO-15 using GC/MS (gas chromatography/mass spectroscopy and for tentatively identified compounds, not included in the TO-15 list. The samples were also analyzed for 20 sulfur compounds by ASTM Method D-5504 GC/SCD (gas chromatography/sulfur chemiluminescent detector).

System Performance Criteria

Instrument Linearity	≤2% Full Scale (checked routinely)
Instrument Bias	≤5% Full Scale (checked routinely)
System Response Time	≤± 2 minutes (checked routinely)
NOx Converter Efficiency (EPA 7E)	≥ 90% (monthly checks)
Instrument Zero Drift	≤± 3% Full Scale (complied)
Instrument Span Drift	≤± 3% Full Scale (complied)

Concurrent with the exhaust sampling, Blue Sky collected a total of three integrated 6-liter summa canister samples of the LFG for analysis. The samples were collected using Teflon tubing connections, and the tubing was purged prior to sampling. The gas sample was controlled with a orifice to collect a 60-minute integrated sample. All the samples were analyzed for NMOC, HHV, F-Factor, Fixed Gases and Sulfur Species (incl. H_2S and TRS) and VOC Compounds

The inlet volumetric Flow Rate and Flare Temperature was continuously measured and recorded by the facility Yokogawa monitors.

Willexa S-71 Description: The Landfill Gas (LFG) that is supplied to the engines is pre-treated in an alternating twin-bed system to remove particulates and liquid aerosols in a pre-filter, then sulfurs are removed by twin-bed expendable media, then siloxanes and NMOCs are removed in a twin-bed regenerative media, and finally the gas is polished in expendable twin carbon vessels where final siloxanes, sulfurs and non-methane organics are removed. The Willexa siloxane scrubber system is regenerated using a Temperature Swing Adsorption (TSA) process. The Willexa system is designed to remove non-methane organics and chlorinated compounds from up to 1875 SCFM of landfill gas. The concentration of contaminants being removed from the Landfill Gas and the Landfill Gas flowrate will determine the length of time before a Vessel is purged and put back into service. Currently each vessel (bed) is on-line for approximately 19 hours before regeneration. The volume of gas absorbed by the Willexa prior to a purge is dependent upon the volume of gas burned in engines 1 and 2 during that period. SCF = Rate (SCFM) x duration (Hours).

The Willexa has main four stages (cycles) consisting of multiple steps, that are generally described below:

3.1 Depress Cycle #1 – 1" line, ~100 SCFM initially for a few minutes. This cycle removes the landfill gas from the vessel sends it to the Flare and introduces O2 before the regen cycle starts.
3.2. Regen Cycle – 12" line from Willexa to the Flare.
  a. Starts at 300 SCFM and ramps up to ~2000 SCFM ~25 minutes.
  b. Once at 2000 SCFM system then starts the heating cycle.
  c. Heats media for an extended time ~ 10-12 hours.
  d. Heat Off, while blower continues to cool down media to 170 degrees or for approximately 6 hours.
  e. Blower ramps down from ~2000 SCFM to 0 SCFM in a few minutes.
  f. Shuts down blower.
3.3. Depress Cycle #2 – O2 Purge – 1" line, for ~ 30-45 minutes at ~60 SCFM.
3.4. Stabilization Cycle – Shuts off valve to flare to stabilize methane.

The sampling of the Willexa Waste Gas (Step 4/5) (Regen Cycle 12-inch line) was performed by collecting two consecutive 1-hr integrated samples during the Regen desorption cycle. The Waste Gas from the 1" Depress Cycle (3.1) was sampled at Step 4/5 for approximately 10-15 minutes, for organics and sulfur compounds. The sampling port will be shared by the Valprobe used for the flow measurement. Rather than sample directly into the SILCO SUMMA, a bag sample was collected under pressure from the source, and this sample was transferred into the SILCO SUMMA immediately following the collection. The 1" line was sampled during the purge Process Step 4/5, and the 12" line was sampled for 1-hour during Process Steps 6/7/8 and 1-hour during Step 9.

The facility does not have flow meters for the Willexa purge system, on either the 1" or 12" lines. Blue Sky measured the flows using a Shortridge ADM 880C high accuracy digital manometer with a Velprobe. The 1" purge line is used in a short burst of a few minutes at the beginning and end of the Willexa Purge cycle. The Willexa purge essentially all occurs through the 12" line. A standard pitot cannot fit into the 1" or 12" line, whereas the Velprobe can, so the Velprobe was used for the 1" location. The transducer in the ADM was calibrated against an incline manometer for the range encountered in the 1" and 12" lines.

During the initial ramp up in part 3.2(a) above, to track the flow a Velprobe was used at the center of the 12" line. The center point has highest velocity and was exaggerate the flow slightly. The amount of bias was determined when the system is at full flow by traversing 8 points on each of two axis and the mid-point.

Instrumentation and Analytical procedures

The following continuous emissions analyzers were used:

Instrumentation	Parameter	Principle
TECO 42i	NO_x	Chemiluminescence
TECO 48C	CO	GFC/IR
TECO 48C	SO_2	GFC/IR
Servomex 1440	CO_2	IR
Servomex 1440	O_2	Paramagnetic

All calibration gases are EPA Protocol #1. The analyzer data recording system consists of Omega 3 channel strip chart recorders, which can be supported by a Data Acquisition System (DAS).

The instrument response was recorded on strip charts and DAS and some data is manually reduced. The averages were corrected for drift using BAAQMD & EPA Method 7E equations.

Comments: Limitation and Data Qualifications:

Blue Sky Environmental has reviewed this report for accuracy, and concluded that the test procedures were followed and accurately described and documented. The review included the following items:

Review of the general text
Review of calculations
Review of CEMS data
Review of supporting documentation

The services described in this report were performed in a manner consistent with the generally accepted professional testing principles and practices. No other warranty, expressed or implied, is made. These services were performed in a manner consistent with our agreement with our client. The report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions contained in this report pertain to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and operating parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations, subsequent to this, and do not warranty the accuracy of information supplied by others.

SECTION 4. APPENDICES

A. **Tabulated Results**

B. **Calculations**

C. **Laboratory Reports**

D. **Field Data Sheets**

E. **Strip Charts**

F. **Process Information**

G. **Calibration Certifications and Quality Assurance Records**

H. **Sample Train Configuration and Stack Diagrams**

I. **Related Correspondence (Source Test Plan)**

J. **BAAQMD Permit**

A
Tabulated Results

TABLE #1

Redwood Landfill
Flare A-60A
1,585°F

RUN	RUN 1	RUN 2	RUN 3	AVERAGE	LIMITS
Test Date	7/25/19	7/25/19	7/25/19		
Test Time	0909-0949	1023-1059	1128-1207		
Test Minutes	30	30	30		
Standard Temp., °F	70	70	70		
Flare Temperature, °F	1,585	1,585	1,585	1,585	
LFG Fuel Flow Rate, SCFM	1,423	1,430	1,432	1,428	
Total Fuel Heat Input, MMBTU/Hr	41.1	41.0	41.1	41.1	
Exhaust Flow Rate, DSCFM (Method 19)	21,486	22,018	20,370	21,291	
Oxygen, O_2, %	14.5	14.7	14.1	14.4	
Carbon Dioxide, CO_2, %	5.5	5.4	5.8	5.6	
NOx, ppm	12.8	12.6	13.4	12.9	
NOx, ppm @ 15% O_2	**11.8**	**11.9**	**11.7**	**11.8**	**15**
NOx, lbs/hr	1.96	1.97	1.95	1.96	
NOx, lbs/MMBTU	**0.05**	**0.05**	**0.05**	**0.05**	**0.06**
CO, ppm	46.4	44.3	41.0	43.9	
CO, ppm @ 15% O_2	**42.8**	**41.9**	**35.8**	**40.2**	**82**
CO, lbs/hr	4.33	4.23	3.63	4.06	
CO, lbs/MMBTU	**0.11**	**0.10**	**0.09**	**0.10**	**0.20**
Total Reduced Sulfur as H_2S in fuel, ppm	**935**	**781**	**897**	**871**	**410**
SO_2, ppm	**29.3**	**41.0**	**43.0**	**37.7**	**300**
SO_2, lbs/hr	6.25	8.97	8.70	7.98	
SO_2, lbs/MMBTU	**0.15**	**0.22**	**0.21**	**0.19**	**1.69**
THC, ppm (M18)	23.8	12.7	9.1	15.2	
THC, lbs/hr as CH_4	1.3	0.7	0.5	0.8	
CH_4, ppm (M18)	20.6	8.1	3.9	10.9	
CH_4, lbs/hr	1.10	0.44	0.20	0.58	
NMHC, ppm as CH_4 (M18)	3.1	4.6	5.2	4.3	
NMHC, lbs/hr as CH_4	0.17	0.25	0.26	0.23	
NMHC, ppm @ 3% O_2 as CH_4	**8.7**	**13.2**	**13.8**	**11.9**	**30**
LFG INLET NMOC ppm as CH_4 (25C)	1,115	1,180	1,146	1,147.0	**OR**
LFG INLET NMOC lbs/hr as CH_4	3.9	4.2	4.1	4.1	
Total NMOC Removal Efficiency	**95.8%**	**94.0%**	**93.5%**	**>94.4%**	**98**
LFG INLET CH_4 ppm	475,000	471,000	472,000	472,667	
LFG INLET CH_4 lbs/hr	1,678	1,672	1,678	1,676	
CH_4 Removal Efficiency	**99.9%**	**100.0%**	**100.0%**	**99.97%**	**99**
INLET THC (TOC) lbs/hr as CH_4	1,681.9	1,676.2	1,681.9	1,680	
THC (TOC) Removal Efficiency	**99.92%**	**99.96%**	**99.97%**	**99.952%**	**98**

WHERE,

ppm = Parts Per Million Concentration
Lbs/hr = Pound Per Hour Emission Rate
Tstd. = Standard Temp. (°R = °F+460)
MW = Molecular Weight
DSCFM = Dry Standard Cubic Feet Per Minute
NOx = Oxides of Nitrogen as NO_2 (MW = 46)
CO = Carbon Monoxide (MW = 28)
TOC = THC = Total Organic Carbon as Methane including CH_4 (MW = 16)
THC = Total Hydrocarbons as Methane (MW = 16)
NMHC = Total Non-Methane Hydrocarbons as Methane (MW = 16)
SO_2 = Sulfur Dioxide as SO_2 (MW = 64.1)

CALCULATIONS,

PPM @ 15% O_2 = ppm * 5.9 / (20.9 - %O_2)
PPM @ 3% O_2 = ppm * 17.9 / (20.9 - %O_2)
Lbs/hr = ppm x 8.223 E-05 x DSCFM x MW / Tstd. °R
Lbs/MMBtu = (Lbs/hr)/(MMBtu/hr)
Lbs/day = Lbs/hr * 24
Removal Efficiency = (inlet lbs/hr- outlet lbs/hr) / inlet lbs/hr
<Value = 2% of Analyzer Range

TABLE #2

Redwood Landfill

Landfill Gas Characterization

RUN			A60(A) R1-LFG	A60(A) R2-LFG	A60(A) R3-LFG	LIMITS
Test Date			7/25/19	7/25/19	7/25/19	
Average TNMHC as Hexane		ppm	186	197	191	
Acrylonitrile		ppb	<172	<191	<172	300
Benzene		ppb	464	493	451	1,500
Benzyl Chloride	Chloromethylbenzene	ppb	<86	<96	<86	500
Carbon Tetrachloride		ppb	<86	<96	<86	200
Chlorobenzene		ppb	<86	<96	<86	200
Chloroethane		ppb	118	109	111	500
Chloroform		ppb	<86	<96	<86	200
1,1 Dichloroethane	Ethylidene Dichloride	ppb	<86	<96	<86	500
1,1 Dichloroethene	Vinylidene Chloride	ppb	<86	<96	<86	500
1,2 Dichloroethane	Ethylene Dichloride	ppb	91	<96	88	200
1,4 Dichlorobenzene		ppb	215	185	188	1,000
Ethylbenzene		ppb	2,340	2,240	2,190	4,000
Ethlyene Dibromide	1,2 Dibromoethane	ppb	<86	<96	<86	200
Hexane		ppb	301	303	308	2,000
Isopropyl Alcohol	IPA	ppb	2,510	2,720	2,640	10,000
Methyl Alcohol	Methanol	ppb	8,890	10,400	10,600	300,000
Methyl Ethyl Ketone	MEK	ppb	4,500	4,630	4,710	15,000
Methylene Chloride		ppb	<172	<191	<172	1,000
Methyl tert Butyl Ether	MTBE	ppb	<86	<96	<86	500
Perchloroethylene	Tetrachloroethylene	ppb	<86	<96	<86	1,000
Styrene		ppb	155	135	167	500
Toluene		ppb	4,330	4,320	4,210	20,000
1,1,1 Trichlororethane		ppb	<86	<96	<86	200
1,1,2,2 Tetrachloroethane		ppb	<86	<96	<86	200
Trichloroethylene	Trichloroethene	ppb	<86	<96	<86	500
Vinyl Chloride		ppb	106	108	100	2,000
Xylenes		ppb	4,900	4,720	4,610	20,000
Carbon Disulfide		ppm	<0.086	<0.096	<0.086	
Carbonyl Sulfide		ppm	<0.086	<0.096	<0.086	
Dimethyl Sulfide		ppm	0.138	0.187	0.176	
Ethyl Mercaptan		ppm	0.141	0.166	0.170	
Methyl Mercaptan		ppm	1.04	0.908	0.895	
Hydrogen Sulfide		ppm	927	773	889	
TRS as H2S		ppm	935	781	897	410

TABLE # 3

Redwood Landfill

7/24/19

S-71 Willexa Waste Gas Characterization (Permit Condition 30)

RUN			Willexa 1" Run 1	Willexa 12" Run 1	Willexa 12" Run 2
SOURCE			**1"**	**12"**	**12"**
PROCESS STEP			**4/5**	**6/7/8**	**9**
Test Date			7/24/19	7/24/19	7/24/19
Test Time			1218-1229	1234-1355	1527-1627
GAS FLOW VELOCITY, FPM			2,564.3	1,192.5	2,050.3
GAS FLOW RATE, SCFM			14	937	1,611
O_2		%	1.6	19.8	21.2
N_2		%	12.9	73.9	78.7
CO_2		%	38.2	5.1	<0.2
CH_4		%	47.3%	1.1%	3.4%
TRS as H2S		ppm	0.241	<0.084	<0.086
NMOC (as Carbon)		ppm	321	319	604
NMOC (as Hexane)		ppm	54	53	101
Acrylonitrile		ppb	<162	<16.8	<17.2
Benzene		ppb	165	114	<8.6
Benzyl Chloride	Chloromethylbenzene	ppb	<81	<8.4	<8.6
Carbon Tetrachloride		ppb	<81	<8.4	<8.6
Chlorobenzene		ppb	<81	<8.4	<8.6
Chloroethane		ppb	101	26.4	<8.6
Chloroform		ppb	<81	<8.4	<8.6
1,1 Dichloroethane	Ethylidene Dichloride	ppb	<81	<8.4	<8.6
1,1 Dichloroethene	Vinylidene Chloride	ppb	<81	<8.4	<8.6
1,2 Dichloroethane	Ethylene Dichloride	ppb	<81	<8.4	<8.6
1,4 Dichlorobenzene		ppb	<81	<8.4	<8.6
Ethylbenzene		ppb	<81	<8.4	<8.6
Ethlyene Dibromide	1,2 Dibromoethane	ppb	<81	<8.4	<8.6
Hexane		ppb	239	101	<8.6
Isopropyl Alcohol	IPA	ppb	1,090	862	3,480
Methyl Alcohol	Methanol	ppb	2,150	1,610	8,770
Methyl Ethyl Ketone	MEK	ppb	1,860	1,450	7,150
Methylene Chloride		ppb	<162	<16.8	<17.2
Methyl tert Butyl Ether	MTBE	ppb	<81	<8.4	53.5
Perchloroethylene	Tetrachloroethylene	ppb	<81	<8.4	<8.6
Styrene		ppb	<81	<8.4	<8.6
Toluene		ppb	<81	<8.4	<8.6
1,1,1 Trichlororethane		ppb	<81	<8.4	<8.6
1,1,2,2 Tetrachloroethane		ppb	<81	<8.4	<8.6
Trichloroethylene	Trichloroethene	ppb	<81	12.7	<8.6
Vinyl Chloride		ppb	89.4	16.9	<8.6
Xylenes		ppb	<243	<25.2	<25.8
Carbon Disulfide		ppm	0.159	<0.084	<0.086
Carbonyl Sulfide		ppm	<0.081	<0.084	<0.086
Dimethyl Sulfide		ppm	0.082	<0.084	<0.086
Ethyl Mercaptan		ppm	<0.081	<0.084	<0.086
Methyl Mercaptan		ppm	<0.081	<0.084	<0.086
Hydrogen Sulfide		ppm	<0.081	<0.084	<0.086
TRS as H2S		ppm	0.241	<0.084	<0.086

TNMOC= (Ethane (C2) *2) + Propane (C3)*3) + (Isobutane (C4)*4) + Isopentane (C5)*5) + (Hexanes (C6)*6) + (C6*8)

Redwood Landfill, Inc.

BAAQMD Facility # A1179

Annual Compliance Emissions Test Report #20025

Source Test for Landfill Gas Flare- Source A-51

Located at:
8950 Redwood Highway
Novato, CA 94948

Prepared For:
SCS Engineers
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For Submittal To:
BAAQMD
Marco Hernandez & Gloria Espena
Compliance & Enforcement Division
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San Francisco, CA 94105
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Testing Performed On:
January 22nd, 2020

Final Report Submitted On:
March 16th, 2020

Performed and Reported by:
Blue Sky Environmental, Inc.
624 San Gabriel Avenue
Albany, CA 94706
blueskyenvironmental@yahoo.com
(510) 525 1261 office
(510) 508 3469 cell

REVIEW AND CERTIFICATION

Team Leader:

The work performed herein was conducted under my supervision, and I certify that: a) the details and results contained within this report are to the best of my knowledge an authentic and accurate representation of the test program; b) that the sampling and analytical procedures and data presented in the report is authentic and accurate: c) that all testing details and conclusions are accurate and valid, and: d) that the production rate and/or heat input rate during the source test are reported accurately.

If this report is submitted for Compliance purposes it should only be reproduced in its entirety. If there are any questions concerning this report, please contact me at (925) 338-4875.

Chuck Arrivas, QSTI
Project Manager

TABLE of CONTENTS

SECTION 1. INTRODUCTION

1.1. Summary

Blue Sky Environmental, Inc was contracted to perform the annual compliance emissions testing on the A-51 Landfill Gas Flare at Redwood Landfill, 8950 Redwood Highway, Novato, California. Table 1.1 summarizes the source test information. Table 1.2 summarizes the results compared to the emission limits.

Table 1.1 Source Test Information

Test Location:	Redwood Landfill, 8950 Redwood Highway, Novato, California 94948 Mailing Address PO Box 793, Novato, CA 94948
Source Contact:	Alisha McCutcheon (415) 892-2851
Source Tested:	Enclosed Landfill Gas Flare (A-51)
Source Test Dates:	January 22nd, 2020
Test Objective:	Determine Compliance with Regulation 8, Rule 34 and Title V Permit A1179, Condition 19867
Test Performed By:	Blue Sky Environmental, Inc. 624 San Gabriel Ave., Albany, CA 94706 Guy Worthington (510) 508 3469
Test Parameters:	**Landfill Gas** O_2, N_2, CO_2, BTU, THC, CH_4, NMOC, HHV, F-Factor, Sulfur & VOC Species, Volumetric Flow Rate **Flare Emissions** THC, CH_4, NMOC, NOx, CO, O_2, SO_2, Volumetric Flow Rate, Temperature.

Table 1.2. Compliance Summary

A51 @ 1,419°F	**Average Test**	**Permit Limit**	**Compliance Status**
NOx, lbs/MMBTU	**0.057**	**0.06**	**In Compliance**
NOx, ppm @15% O_2	**14.2**	**15**	**In Compliance**
CO, lbs/MMBTU	**0.020**	**0.20**	**In Compliance**
CO, ppm @15% O_2	**8.2**	**82**	**In Compliance**
NMOC, (ppmvd @ 3% O_2 as CH_4)	**3.3**	**30**	**In Compliance**
CH_4 Destruction Efficiency, %	**99.993**	**99**	**In Compliance**
Total Reduced Sulfur as H_2S in fuel, ppm	**934**	**410**	**Exceeds Limits[1]**
SO_2, ppm	**58.57**	**300**	**In Compliance**
SO_2, lbs/MMBTU	**0.07**	**1.69**	**In Compliance**

[1] On October 6th, 2016 Redwood Landfill proposed a permit modification to increase the peak limit. This modification is still under review by BAAQMD. Per the November 2016 Compliance Agreement between Redwood Landfill and BAAQMD enforcement actions are not expected if the Agreement is complied with.

SECTION 2. SOURCE TEST PROGRAM

2.1. Overview

This annual performance test was conducted to demonstrate that the A-51 landfill gas flare is operating in accordance with the Bay Area Air Quality Management District (BAAQMD) Title V Permit A1179 and Regulation 8 Rule 34.

2.2. Pollutants Tested

The following CARB, EPA and ASTM sampling and analytical methods were used:

EPA Method 1	Sample and Traverse Point Determination
EPA Method 3A	O2 and CO2, Stack Gas Molecular Weight
EPA 4 part 4.16	Moisture Calculated
EPA 7E	NOX Emissions & NO2 Converter Efficiency
EPA 10	CO Emissions
EPA Method 18	CH4 Emissions
EPA Method 19	Calculation of Stack Gas Flow Rate
EPA 19	Flow Rate Calculation, DSCFM
EPA 25C	LFG Gas analysis for NMOC by GC
EPA TO-15	VOC Species
ASTM 1945	LFG Gas analysis for BTU and F-Factor
ASTM D-5504	Sulfur Species, H_2S and TRS

2.3. Test Date(s)

Testing was conducted on January 22nd, 2020

2.4. Sampling and Observing Personnel

Chuck Arrivas and Kurt Mussatti representing Blue Sky Environmental, Inc, performed testing.

Sean Johnson and Mike Chan of Waste Management and Dave Bearden of SCS Engineers were present to operate and oversee the Flare operation and assist in coordinating testing and the collection of process data during testing, and provided the Yokogawa Flare data.

The BAAQMD was notified of the test in a plan submitted by SCS Engineers on January 6th, 2020. A Source Test Protocol acknowledgement was requested and received by SCS Engineers (NST # 5782), No representatives from the BAAQMD were present to witness testing. A copy of the source test protocol and confirmation email from BAAQMD can be found in Appendix I.

2.5. Source/Process Description

The enclosed landfill gas flare A-51 consists of a 90 million British Thermal Units per hour (MMBtu/hr) multiple nozzle burner manufactured by Perennial Energy. The flare shell is approximately 45 feet high and has an approximately 136 inch inside diameter.

2.6. Source Operating Conditions

The flare operating temperature and the landfill gas flow rate records are contained in Appendix-F. There is no condensate injection.

The A–51 flare was operated at approximately 1,419 Degrees Fahrenheit (°F). The average landfill gas flow rate was 1,496 Standard Cubic Feet Per Minute (SCFM).

The landfill gas methane content ranged between 47.8 and 49.3 percent (%).

SECTION 3. SAMPLING AND ANALYSIS PROCEDURES

3.1. Port location

The A-51 Flare sampling was conducted in the 136 inch diameter Inside Diameter (ID) stack, via ports approximately 35 feet above grade, accessed by a 40 foot boom-lift. Two of the four, 4-inch flange ports are available ~4 stack diameters downstream from the burners and ~1 stack diameter upstream from the exit.

3.2. Point description/Labeling – ports/stack

Blue Sky Environmental conducted 16 point traverses and found Oxygen (O_2) and other gases were stratified at 10 percent (%) or more, therefore subsequent CEM sampling runs were traversing all 16 points.

The traverse points for the 136 inch diameter exhaust stack with 4 inch ports were 4.35, 14.28, 26.38, 43.9, 92.07, 109.6, 121.7 and 131.6 inches

3.3. Sample train description

Sampling system diagrams are included in the Appendix H. Additional descriptive information is included in the following section.

3.4. Sampling procedure description

Three, runs of at least 32-minutes were performed, completely traversing the stack on two diameters during each test run of the flare.

3.5. Instrumentation and Analytical Procedures

Sampling & Traverse Points Selection by EPA Method 1. This method is used to determine the duct or stack area and appropriate traverse points that represent equal areas of the duct for sampling and velocity measurements.

Stack Gas Molecular Weight by EPA Method 3/3A. This method is used to determine the molecular weight of the stack gas. Measurements of gas constituents %O_2 and %CO_2 were obtained from the CEMS system.

EPA Method 19 (gas) was used to determine stack gas volumetric flow rates using oxygen based F-factors. F-factors are ratios of combustion gas volumes generated from heat input. The heating value of the fuel in Btu per cubic foot is determined from analysis of the fuel gas samples using ASTM D1946/3588 gas chromatography analytical procedures. Total fuel consumption was measured by CARB Method 1, 2, 3 and 4. The total cubic feet per hour of fuel multiplied times the Btu/cf provides million Btu per hour (MMBtu) heat input. The heat input in MMBtu/hr is multiplied by the F-factor (DSCF/MMBtu) and adjusted for the measured oxygen content of the source to determine volumetric flow rate. The flow rates were used to determine emission rates.

Stack Gas Moisture by EPA Method 4-16.4 is an acceptable alternative to EPA Method 4 for the determination of moisture using F-factors. In this case the mole fraction of the moisture in the ambient air is calculated using equations in EPA Method 4-16.4 from 1) the measured ambient relative humidity, ambient temperature and barometric pressure, 2) the mole fraction from free water in the fuel, calculated from the moisture % in the fuel which is determined by the analytical lab to be the balance after all the major gaseous components have been summed, and 3) the mole fraction from the hydrogen in the fuel. To determine the moisture in the fuel, the raw fuel analysis before normalization to 100% is referenced.

EPA Method 3A (O_2, CO_2), 10 (CO) and 7E (NO_X) are continuous monitoring techniques using instrumental analyzers. Sampling is performed by extracting exhaust flue gas from the stack, conditioning the sample and analyzing it by continuous monitoring gas analyzers in a CEM test van. The sampling system consists of a stainless steel sample probe, Teflon sample line, glass-fiber particulate filter, glass moisture-knockout condensers in ice, followed by thermoelectric coolers (optional), Teflon sample transfer tubing, diaphragm pump and a stainless steel/Teflon manifold and flow control/delivery system. A constant sample and calibration gas supply pressure of 5 PSI was provided to each analyzer to avoid pressure variable response differences. The entire sampling system was leak checked prior to and at the end of the sampling program.

The sampling and analytical system (for EPA Methods) was checked for linearity with zero, mid (40-60%) and high span (80-100%) calibrations, and is checked for system bias at the beginning and end of each run. System bias is determined by introducing calibration gas to the probe and pulling it through the entire sampling system. Individual test run calibrations usually use the calibration gas that most closely matches the stack gas effluent. Along with the Sampling System Bias, the Zero and Calibration Drift values were determined for each test. Methods 3A, 7E and 10 all defer to EPA Method 7E for the calculations of effluent concentration, Span, Calibration Gas, Analyzer Calibration Error (Linearity), Sampling System Bias, Zero Drift, Calibration Drift and Response Time. In addition, the NOx analyzer NO_2 to NO conversion efficiency check defers to EPA Method 20 section 5.6 for the criteria and procedure.

All calibration gases are EPA Protocol #1. The analyzer data recording system consists of a Honeywell DPR3000 strip chart recorder supported by a Data Acquisition System (DAS).

EPA Method 25C/18: Sampling for Total Hydrocarbons, Methane and Non-Methane Hydrocarbons. EPA Method 25A/18 (FID/GC Method) employs a heated TECO 55C FID with GC column, heated Teflon sample gas transfer lines to provide a continuous sample to the heated FID/GC Hydrocarbon Analyzer. Heated lines were used if necessary to avoid moisture or hydrocarbon condensation. Methane is determined by the calibrated GC method in the TECO 55C NMHC/CH_4/THC Analyzer. Calibration gases are selected to fall within 25-35%, 45-55% and 80-90% of Range for Methane, Total Hydrocarbon and Non-Methane Hydrocarbons.

Calibrations are performed through the probe and entire sample system. The system linearity check was performed prior to testing and during testing and calibration drift checks were performed after every run. All data was corrected according to EPA Method 25A. In some cases where the drift exceeded 3%, the system was re-calibrated and the average was calculated with and without the recalibration values. Both sets of values are reported in the calculation section of the appendices, but only the highest values of the two methods were used in the Tabulated results.

ASTM D1945/3588 gas chromotography analytical procedures. Total fuel consumption for each source is monitored by a dedicated fuel gas meter. The total cubic feet per hour of fuel multiplied times the Btu/cf provides million Btu per hour (MMBtu) heat input. The heat input in MMBtu/hr is multiplied by the F-factor (DSCF/MMBtu) and adjusted for the measured oxygen content of the source to determine volumetric flow rate. The flow rates were used to determine emission rates.

ASTM Method 5504: Sampling for H_2S and Sulfur species in fuels. Sampling consisted of pre-evacuated 6-Liter SILCO SUMMA canisters with pre-set flow controllers set to integrate over the desired test duration. The SILCO canisters have a silanized (glass) lining that permits longer holding times (up to 72 hours) for reactive sulfur compounds. The flow controller, valve and canister are designed so that no sample contacts stainless steel components that can remove hydrogen sulfide. The flow controllers consisted of capillary orifice tubing designed to sample for pre-set durations such as 1-hr, 2-hrs and 4-hrs. The samples were analyzed for 20 sulfur compounds by ASTM Method D-5504 GC/SCD (gas chromatography/sulfur chemiluminescent detector).

TO-15 is the analytical strategy for Compendium Method TO-15 involves using a high resolution gas chromatograph (GC) coupled to a mass spectrometer. Mass spectra for individual peaks in the total ion chromatogram are examined with respect to the fragmentation pattern of ions corresponding to various VOCs including the intensity of primary and secondary ions. The fragmentation pattern is compared with stored spectra taken under similar conditions, in order to identify the compound. For any given compound, the intensity of the primary fragment is compared with the system response to the primary fragment for known amounts of the compound. This establishes the compound concentration that exists in the sample.

System Performance Criteria

Instrument Linearity	≤2% Full Scale (complied)
Instrument Bias	≤5% Full Scale (complied)
System Response Time	≤± 2 minutes (complied)
NO_X Converter Efficiency (EPA 7E)	≥ 90% (complied)
Instrument Zero Drift	≤± 3% Full Scale (complied)
Instrument Span Drift	≤± 3% Full Scale (complied)

Concurrent with the exhaust sampling, Blue Sky collected four 6-liter Summa canister samples of the LFG for analysis. The samples were collected using Teflon tubing connections, and the tubing and the summa canisters were filled and purged prior to sampling. The gas sample was controlled with a rotameter to collect a 30-minute integrated sample. All the samples were analyzed for NMOC, HHV, F-Factor, Fixed Gases. One sample A51 Header was analyzed for Sulfur Species (incl. H_2S and TRS) and VOC Compounds. Three additional samples were collected and analyzed for EPA Method 18.

The inlet volumetric Flow Rate and Flare Temperature was continuously measured and recorded by the facility Yokogawa monitors.

Instrumentation and Analytical procedures

The following continuous emissions analyzers were used:

Instrumentation	Parameter	Principle
TECO 42C	NO_X	Chemiluminescence
TECO 48C	CO	GFC/IR
Ratfisch RS-55	THC	FID
Fuji ZRH	CO_2	IR
Servomex 1440	O_2	Paramagnetic

All calibration gases are EPA Protocol #1. The analyzer data recording system consists of DPR or Omega 3 channel strip chart recorders, which can be supported by a Data Acquisition System (DAS).

The instrument response was recorded on strip charts and DAS and some data is manually reduced. The averages were corrected for drift using EPA Method 7E equations.

3.6. Comments: Limitations and Data Qualifications

The measured emissions meet the Permit required limits. There is a large variation in the TNMOC Runs #2 & #3 compared to Run #1. Seems to be from the C6+ fraction..

Blue Sky Environmental has reviewed this report for accuracy, and concluded that the test procedures were followed and accurately described and documented. The review included the following items:

Review of the general text
Review of calculations
Review of CEMS data
Review of supporting documentation

The services described in this report were performed in a manner consistent with the generally accepted professional testing principles and practices. No other warranty, expressed or implied, is made. These services were performed in a manner consistent with our agreement with our client. The report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions contained in this report pertain to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and operating parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations, subsequent to this, and do not warranty the accuracy of information supplied by others.

SECTION 4. APPENDICES

A

Tabulated Results

TABLE #1

Redwood Landfill
Flare A-51
1,419°F

RUN	**1**	**2**	**3**	**AVERAGE**	**LIMITS**
Test Date	1/22/20	1/22/20	1/22/20		
Test Time	0853-0928	0950-1025	1049-1125		
Standard Temp., °F	70	70	70		
Flare Temperature, °F Average	1,420	1,417	1,419	1,419	
Fuel Flow Rate, SCFM	1,496	1,495	1,496	1,496	
Fuel Heat Input, MMBTU/Hr	43.5	44.7	44.8	44.3	
Exhaust Flow Rate, DSCFM (Method 19)	23,289	23,345	24,917	23,851	
Oxygen, O_2, %	14.71	14.56	14.93	14.73	
Carbon Dioxide, CO_2, %	4.89	5.15	4.85	4.96	
Water Vapor, H_2O, % M4.16	4.06	4.23	4.14	4.14	
NOx, ppm	14.7	15.5	14.4	14.9	
NOx, ppm @ 15% O_2	**14.0**	**14.5**	**14.2**	**14.2**	**15**
NOx, lbs/hr	2.44	2.59	2.56	2.53	
NOx, lbs/MMBTU	**0.056**	**0.058**	**0.057**	**0.057**	**0.06**
CO, ppm	9.1	7.4	9.2	8.6	
CO, ppm @ 15% O_2	**8.7**	**6.9**	**9.1**	**8.2**	**82**
CO, lbs/hr	0.92	0.75	1.00	0.89	
CO, lbs/MMBTU	**0.021**	**0.017**	**0.022**	**0.020**	**0.20**
TRS as H_2S, ppm in Fuel				**934**	**410**
SO_2, ppm	**16.81**	**16.68**	**7.37**	**58.57**	**300**
SO2, ppm @ 15% O_2	16.0	15.5	7.3	12.9	
SO2, ppm @ 3% O_2	48.6	47.1	22.1	39.3	
SO2, lbs/hr	3.89	3.87	1.83	3.20	
SO2, lbs/MMBTU	**0.09**	**0.09**	**0.04**	**0.07**	**1.69**
THC, ppm (25A) wet	<2.0	2.73	5.45	3.39	
THC, ppm dry	<2.08	2.85	5.69	3.54	
THC, lbs/hr as CH_4	<0.121	0.165	0.352	0.212	
CH_4, ppm	1.3	1.9	3.6	2.3	
CH_4, lbs/hr	0.075	0.110	0.223	0.136	
TNMHC, ppm as CH_4	0.7	0.8	1.9	1.13	
TNMHC, lbs/hr as CH_4	0.040	0.048	0.114	0.068	
TNMHC, ppm as Hexane (C_6H_{14}) @ 3% O_2	**0.34**	**0.39**	**0.93**	**0.55**	**360**
TNMHC, ppm @ 3% O_2 as CH_4	**2.0**	**2.3**	**5.6**	**3.3**	**30**
INLET TNMOC (Method 25C), ppmC	757	1,213	2,400	1,457	**or**
INLET NMOC, lbs/hr as CH_4	2.8	4.5	8.9	5.4	
NMOC Removal Efficiency	**98.56%**	**98.93%**	**98.72%**	**98.74%**	**98**
INLET CH_4, ppm	478,000	492,000	493,000	487,667	
INLET CH_4, lbs/hr	1,775.1	1,825.9	1,830.9	1,811	
CH_4 Removal Efficiency	**>99.996%**	**>99.994%**	**>99.988%**	**>99.993%**	**99**
INLET THC (TOC), ppm as CH_4	478,757	493,213	495,400	489,123	
INLET THC (TOC), lbs/hr as CH_4	1,778	1,830	1,840	1,816	
THC (TOC) Removal Efficiency	**99.993%**	**99.991%**	**99.981%**	**99.988%**	**98**

< Value = 2% of Analyzer Range

WHERE,

ppm = Parts Per Million Concentration
Lbs/hr = Pound Per Hour Emission Rate
Tstd. = Standard Temp. (°R = °F+460)
MW = Molecular Weight
DSCFM = Dry Standard Cubic Feet Per Minute
NOx = Oxides of Nitrogen as NO_2 (MW = 46)
CO = Carbon Monoxide (MW = 28)
TOC = THC = Total Organic Carbon as Methane including CH_4 (MW = 16)
THC = Total Hydrocarbons as Methane (MW = 16)
NMOC = Total Non-Methane Organic Carbon as Methane (MW = 16)
SO_2 = Sulfur Dioxide as SO_2 (MW = 64.1)

CALCULATIONS,

PPM @ 15% O_2 = ppm * 5.9 / (20.9 - %O_2)
PPM @ 3% O_2 = ppm * 17.9 / (20.9 - %O_2)
Lbs/hr = ppm x 8.223 E-05 x DSCFM x MW / Tstd. °R
Lbs/day = Lbs/hr * 24
Removal Efficiency = (inlet lbs/hr- outlet lbs/hr) / inlet lbs/hr

TABLE # 2

Redwood Landfill

Landfill Gas Characterization

RUN				RLI	LIMITS
Test Date				1/22/20	
Acrylonitrile		17	ppb	<16.3	300
Benzene		35	ppb	459	1,500
Benzyl Chloride	Chloromethylbenzene	35	ppb	<8.2	500
Carbon Tetrachloride		36	ppb	<8.2	200
Chlorobenzene		53	ppb	<8.2	200
Chloroethane		10	ppb	91.6	500
Chloroform		30	ppb	<8.2	200
1,1 Dichloroethane	Ethylidene Dichloride	24	ppb	10.4	500
1,1 Dichloroethene	Vinylidene Chloride	18	ppb	<8.2	500
1,2 Dichloroethane	Ethylene Dichloride	18	ppb	89.0	200
1,4 Dichlorobenzene		65	ppb	<8.2	1,000
Ethylbenzene		54	ppb	778	4,000
Ethlyene Dibromide	1,2 Dibromoethane	51	ppb	<8.2	200
Hexane		29	ppb	339	2,000
Isopropyl Alcohol	IPA	16	ppb	3,840	10,000
Methyl Alcohol	Methanol	16	ppb	8,380	300,000
Methyl Ethyl Ketone (MEK)	2-Butanone	27	ppb	5,250	15,000
Methylene Chloride		19	ppb	32.4	1,000
Methyl tert Butyl Ether	MTBE		ppb	8.53	500
Perchloroethylene	Tetrachloroethylene	52	ppb	46.2	1,000
Styrene			ppb	29.3	500
Toluene		48	ppb	3,400	20,000
1,1,1 Trichlororethane		34	ppb	<8.2	200
1,1,2,2 Tetrachloroethane		58	ppb	<8.2	200
Trichloroethylene	Trichloroethene	41	ppb	55.0	500
Vinyl Chloride		6	ppb	90.5	2,000
Xylenes		5+9	ppb	1,416	20,000
Carbon Disulfide			ppm	<0.082	
Carbonyl Sulfide			ppm	<0.082	
Dimethyl Sulfide			ppm	0.326	
Ethyl Mercaptan			ppm	0.165	
Methyl Mercaptan			ppm	1.12	
Hydrogen Sulfide			ppm	928	
TRS as H2S			ppm	934	410

APPENDIX O

S-55 STATIC PRESSURE PERFORMANCE TEST
(LEAK TEST)

EPIC Environmental Compliance Systems, Inc.
39120 Argonaut Way # 643, Fremont, CA 94538
www.epiccompliance.com ▪ contact@epiccompliance.com
▪ 888-700-EPIC ▪ Fax 415-296-6110 ▪

Letter of Transmittal

Date: 4/3/2020

To: Bay Area AQMD

gdfresults@baaqmd.gov

Attn: Hiroshi Doi

Re: Testing Results
Redwood Landfill
8950 Redwood Hwy
Novato, CA 94945

Inspector Doi,

Enclosed is a copy of the test results from testing performed at subject site on April 2nd, 2020.

Test	Passed	Failed	Notes
TP-206.3	✓	—	

If you have any questions or need any further information please feel free to contact us at 1-888-700-EPIC.

Thank you,

EPIC Environmental Compliance Systems, Inc.

Form 1

Summary of Source Test Data TP206.3

Static Pressure Performance Test

GDF Name and Address:

Redwood Landfill
8950 Redwood Hwy
Novato, CA 94945

GDF Representative and Title: Alisha McCutcheon

GDF Phone # 415-408-9055

GDF # 8573

Manifolded? No

PHASE II SYSTEM TYPE (Check One)

Balance ✓

Vac Assist

Other

Manufacturer:

Permit Conditions:

TANK # :	1	2	3	4
1. Product Grade	87			
2. Actual Tank Capacity, gallons	1000			
3. Gasoline Volume	720			
4. Ullage, gallons (ullage = capacity-volume)	280			
5. Initial Pressure (inches water column)	2.00			
6. Pressure After 1 Minute	1.99			
7. Pressure After 2 Minutes	1.97			
8. Pressure After 3 Minutes	1.96			
9. Pressure After 4 Minutes	1.94			
10. Final Pressure After 5 Minutes	1.92			
11. Allowable Final Pressure	0.94			
Pass/Fail	Pass			

Test Conducted by:

Brian Dunahay

Date of Test: 4/2/2020

Test Company:

EPIC Environmental Compliance Systems, Inc.
39120 Argonaut Way # 643
Fremont, CA 94538

APPENDIX P

ROLLING QUARTERLY LFG INPUT AND CO AND SO2 EMISSIONS

QUARTERLY LFG Input to all LFG-Fired Combustion Equipment

WM - REDWOOD LANDFILL, Novato, CA

Quarter	Month	Total LFG Throughput (MMscf)				Monthly Total (MMscf)	Quarterly Total (MMscf)	Rolling 4-Qtr Total (MMscf)
		A-51	A-60	S-64	S-65			
2019 Q2	April	0.76	75.06	29.29	29.03	134.13	396.54	1,449.30
	May	0.35	72.81	30.97	30.56	134.69		
	June	1.88	74.47	24.11	27.26	127.71		
2019 Q3	July	0.00	75.12	30.16	29.21	134.50	399.26	1,498.08
	August	12.26	81.35	19.16	23.82	136.60		
	September	4.36	71.95	25.14	26.71	128.16		
2019 Q4	October	3.31	62.92	22.23	23.22	111.68	339.62	1,498.94
	November	0.09	64.70	24.89	26.46	116.14		
	December	9.20	72.08	16.95	13.56	111.80		
2020 Q1	January	1.37	70.96	26.50	26.06	124.89	363.30	1,498.72
	February	0.00	69.14	25.07	25.31	119.51		
	March	0.00	64.00	27.34	27.56	118.90		
2020 Q2	April	0.21	64.45	20.94	26.19	111.79	111.79	1,213.97
	May					0.00		
	June					0.00		

Pursuant to Title V Permit Condition Number 25634 Part 1, the total landfill gas throughput to the landfill gas combustion equipment at Plant #1179 shall not exceed 2,625 million scf of landfill gas during any consecutive rolling 4-quarter period.

S-66, and S-67 have not been installed.

QUARTERLY CO EMISSIONS From All LFG-Fired Combustion Equipment

WM - REDWOOD LANDFILL, Novato, CA

Quarter	Month	Total CO Emissions (tons)				Monthly Total (tons)	Quarterly Total (tons)	Rolling 4-Qtr Total (tons)
		A-51	A-60	S-64	S-65			
2019 Q2	April	0.01	3.57	0.65	0.31	4.54	13.41	42.65
	May	0.00	3.46	0.69	0.33	4.48		
	June	0.01	3.54	0.54	0.30	4.39		
2019 Q3	July	0.00	3.57	0.67	0.32	4.56	12.20	48.26
	August	0.10	3.87	0.43	0.26	4.65		
	September	0.03	1.77	0.58	0.61	2.99		
2019 Q4	October	0.03	1.51	0.50	0.52	2.56	7.75	45.30
	November	0.00	1.55	0.56	0.59	2.71		
	December	0.07	1.73	0.38	0.30	2.48		
2020 Q1	January	0.01	1.70	0.60	0.59	2.89	8.45	41.80
	February	0.00	1.66	0.57	0.57	2.79		
	March	0.00	1.53	0.62	0.62	2.77		
2020 Q2	April	0.00	1.54	0.47	0.59	2.60	2.60	31.00
	May					0.00		
	June					0.00		

Pursuant to Title V Permit Condition Number 25634 Part 2, the total CO emissions from all landfill gas combustion equipment at Plant #1179 shall not exceed 237.5 tons during any consecutive rolling 4-quarter period.

S-66, and S-67 have not been installed.

QUARTERLY SO_2 EMISSIONS From All LFG-Fired Combustion Equipment

WM - REDWOOD LANDFILL, Novato, CA

Quarter	Month	Total SO_2 Emissions (tons)				Monthly Total (tons)	Quarterly Total (tons)	Rolling 4-Qtr Total (tons)
		A-51	A-60	S-64	S-65			
2019 Q2	April	0.08	7.53	0.02	0.03	7.65	22.73	60.44
	May	0.03	7.30	0.02	0.03	7.39		
	June	0.19	7.47	0.02	0.02	7.70		
2019 Q3	July	0.00	5.94	0.02	0.03	5.99	19.49	68.39
	August	0.97	6.43	0.01	0.02	7.44		
	September	0.34	5.69	0.02	0.02	6.07		
2019 Q4	October	0.22	4.13	0.02	0.02	4.39	14.04	71.96
	November	0.01	4.25	0.02	0.02	4.30		
	December	0.60	4.73	0.01	0.01	5.36		
2020 Q1	January	0.09	4.51	0.02	0.02	4.64	13.20	69.47
	February	0.00	4.40	0.02	0.02	4.44		
	March	0.00	4.07	0.02	0.02	4.11		
2020 Q2	April	TBD	TBD	0.02	0.02	TBD	TBD	TBD
	May					0.00		
	June					0.00		

Pursuant to Title V Permit Condition Number 25634 Part 3, the total SO2 emissions from all landfill gas combustion equipment at Plant #1179 shall not exceed 99 tons during any consecutive rolling 4-quarter period.

TBD=To Be Determined.

SO2 emissions from flares are updated at the end of each quarter when the quarterly average emission factor is calculated.