REDWOOD LANDFILL, INC.
P.O. Box 793
8950 Redwood Highway
Novato, CA 94948
(415) 892-2851
(415) 898-1354 Fax

November 27, 2020

Director of Compliance and Enforcement
Bay Area Air Quality Management District
375 Beale St, Ste 600
San Francisco, CA 94105
Attn: Title V Reports
compliance@baaqmd.gov

Director of the Air Division
USEPA, Region IX
75 Hawthorne Street
San Francisco, CA 94105
Attn: Air-3
r9.aeo@epa.gov

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

TV Tracking #: 102

1. ☐ RECEIVED IN ENFORCEMENT: 11/27/2020

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 May 1, 2020 to October 31, 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 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

May 1, 2020 to October 31, 2020

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

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

The United States Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105

Prepared by:
Redwood Landfill, Inc.
8950 Redwood Highway
Novato, CA

CONTENTS

List of Tables

List of Appendices

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 May 1, 2020 to October 31, 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 May 1, 2020 to October 31, 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 and 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)
May 2020	744.00	0.00
June 2020	720.00	0.40
July 2020	730.73	19.10
August 2020	744.00	1.80
September 2020	720.00	1.57
October 2020	740.03	4.27
Total Hours:	**4,398.77**	**27.13**

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. A-51 is the backup flare to the A-60 flare.

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)
May 2020	159.08	66.17
June 2020	351.42	140.25
July 2020	307.08	129.58
August 2020	156.82	49.67
September 2020	220.67	469.08
October 2020	11.25	337.50
Total Hours:	**1,206.32**	**1,192.25**

During the period covered in this report, the S-71 treatment system treated all landfill gasses going to the engines. 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, 5 wells (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 2-3.

Table 2-3 GCCS Downtime Summary

January 1, 2020 through April 30, 2020 Total Downtime:	0.50
May 1, 2020 through October 31, 2020 Total Downtime:	10.77
Total 2020 Downtime:	11.27

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 2-4 Applicable Temperature Limits

Device	Test Date	Report Submitted	Average Temperature During Test (°F)	3-hr Minimum Temperature (°F)
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 A	7/22/2020	9/15/2020	1,601	1,551
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 May 1, 2020 to October 31, 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 2020. 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:

- May 27, 2020
- June 29, 2020
- July 30, 2020
- August 27, 2020
- September 25, 2020
- October 15, 2020

No breaches of cover integrity (e.g., cover cracks or exposed garbage) were found during the reporting period.

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 Second Quarter 2020 SEM event was conducted by Roberts Environmental Services (RES) personnel on May 21, 2020. Seven exceedances were identified. Corrective action and re-monitoring are described below:

- 5-day corrective action was completed on May 22, 2020.
- 10-day re-monitoring was completed on May 28, 2020 with all locations cleared.
- 1-month remonitoring was completed on June 18, 2020. All locations cleared.

The Third Quarter 2020 SEM was conducted on July 21, 2020. Eighteen exceedances were identified. Corrective action and re-monitoring are described below:

- Corrective actions were completed within five days and the first 10-day re-monitoring was completed on July 29, 2020. All locations were cleared.
- 1-month remonitoring was completed August 18, 2020. All locations cleared.

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:

Second Quarter 2020 – May 20, 2020
Third Quarter 2020 – July 21, 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 May 1, 2020 to October 31, 2020. The current waste in-place figure includes solid waste placed in the landfill through the end of the reporting period. Table 2-5 summarizes the RLI solid waste placement records for the reporting period.

Table 2-5 Solid Waste Placement

Waste Placement (May 1, 2020 to October 31, 2020)	109,438 tons
Current Waste In-Place as of November 1, 2020	14.53 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 May 1, 2020 to October 31, 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:

- May 4, 5, 6, 7, 8, 11, 13, and 15, 2020
- June 1, 2, 3, 5, 9, 10, 15, and 16, 2020
- July 1, 2, 6, 7, 8, 13, 14, 15, 28, 29, and 31, 2020
- August 4, 12, 13, 14, 17, 18, and 19, 2020
- September 1, 2, 3, 4, 9, 10, 11, 14, 15, and 16, 2020
- October 2, 5, 6, 7, 8, 28, and 30, 2020

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

A total of 7 deviation from the wellhead standards in 8-34-305 occurred during the reporting period. All exceedances were corrected 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 2-6:

Table 2-6 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	17	963	48.8	996,186	12,266,523	463,275
A-60	4,389	1,427	48.2	375,649,823	754,650,263	3,362,577
S-64	3,210	608	49.1	117,065,522	254,452,413	1,030,284
S-65	3,224	598	49.0	115,611,114	254,420,805	940,075
Total	4,405	2,305	48.5	609,322,645	1,275,790,004	--

[1]Methane content was determined from the 7/17/18, 7/10/19, 7/11/19, 7/25/19, 1/22/20, 7/21/20, and 7/22/20 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 or 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.

11 wells were added to and 13 wells were removed from the collection system during the reporting period (May 1, 2020 to October 31, 2020).

As of the end of this reporting period, 113 total collectors (106 vertical wells and 7 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 May 1, 2020 to October 31, 2020. Monthly and 12-month rolling throughputs are summarized in Table 2-7.

Table 2-7 Composting and Screening Operations Throughput

Month	Total Throughput (tons)	Rolling 12-Month Throughput (tons)
May 2020	11,911	134,244
June 2020	12,223	135,788
July 2020	12,087	136,286
August 2020	11,095	136,809
September 2020	11,605	138,008
October 2020	12,299	138,529

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 May 1, 2020 to October 31, 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 2-8:

Table 2-8 Unleaded Gasoline Throughput

Month	Total Throughput (gallons)	Rolling 12-Month Fuel Usage (gallons)
May 2020	100	1,870
June 2020	149	1,870
July 2020	158	1,870
August 2020	218	1,870
September 2020	158	1,810
October 2020	260	1,810

Pursuant to Title V Permit Condition Number 16516, the Static Pressure Performance Test (Leak Test) for S-55 was performed on April 2, 2020. S-55 passed the 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 2-9 summarizes the amount of waste processed at S-41 during the reporting period:

Table 2-9 Waste Processed at S-41

Month	Total Throughput (tons)	Rolling 12-Month Throughput (tons)
May 2020	11,911	134,244
June 2020	12,223	135,788
July 2020	12,087	136,286
August 2020	11,095	136,809
September 2020	11,605	138,008
October 2020	12,299	138,529

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 below 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 below 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. 2020 partial calendar year VMT on gravel roads was 22,371 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. 2020 partial calendar year VMT on dirt roads was 105,277 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. 2020 partial calendar year VMT on paved roads was 65,798 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. 2020 partial calendar year VMT on dirt roads is 13,245 VMT, below the limit of 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 (May 1, 2020 to October 31, 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 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 2-10 (LFG), 2-11 (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 2-10 LFG Characterization Results

Compound	Second Quarter 2020 A60 Result (ppm_v)	Third Quarter 2020 A60 Result (ppm_v)	Fourth Quarter 2020 A60 Result (ppm_v)
Hydrogen Sulfide	560	620	650
Carbonyl Sulfide	0.53	0.55	ND
Methyl Mercaptan	0.73	0.85	1.00
Ethyl Mercaptan	ND	ND	0.18
Dimethyl Sulfide	ND	ND	0.22
Carbon Disulfide	ND	ND	ND
Total Reduced Sulfur	565	625	658

ND = not detected
N/A = not applicable

Table 2-11 Engine Inlet (pre-treatment) Characterization Results

Compound	Second Quarter 2020 Result (ppm_v)	Third Quarter 2020 Result (ppm_v)	Fourth Quarter 2020 Result (ppm_v)
Hydrogen Sulfide	650	1,100	200
Carbonyl Sulfide	0.29	0.47	ND
Methyl Mercaptan	0.40	0.82	0.51
Ethyl Mercaptan	ND	ND	0.10
Dimethyl Sulfide	ND	ND	0.37
Carbon Disulfide	0.09	ND	0.21
Total Reduced Sulfur	656	1,107	203

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 2-12. 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 2-12 Rolling 4-Quarter TRS Concentration

Quarter	Calculated TRS (ppmv)	Rolling Quarterly Average Annual TRS (ppmv)
2019 Q4	778	962.8
2020 Q1	753	913.5
2020 Q2	668	783.8
2020 Q3	762	740.4

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 2-13 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 2-13 Annual LFG Characterization: Toxic Air Contaminants

Compound	Result (ppb_v)	Concentration Limit* (ppb_v)
Acrylonitrile	<16.3	300
Benzene	459	1,500
Benzyl Chloride	<8.2	500
Carbon Tetrachloride	<8.2	200
Chlorobenzene	<8.2	200
Chloroethane	91.6	500
Chloroform	<8.2	200
1,4-Dichlorobenzene	<8.2	1,000
Ethylbenzene	778	4,000
Ethylene Dibromide	<8.2	200
Ethylene Dichloride	89.0	200
Ethylidene Dichloride	10.4	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	32.4	1,000
Methyl tert-Butyl Ether	8.5	500
Perchloroethylene	46.2	1,000
Styrene	29.3	500
1,1,2,2-Tetrachloroethane	<8.2	200
Toluene	3,400	20,000
1,1,1-Trichloroethane	<8.2	200
Trichloroethylene	55.0	500
Vinyl Chloride	90.5	2,000
Vinylidene Chloride	<8.2	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. A sample was collected on April 23, 2020 (2nd Quarter), July 29, 2020 (3rd Quarter), and October 6, 2020 (4th Quarter) at the Flare and the Engine Inlet (pre-treatment). Results are presented below.

Table 2-14 Toxic Air Contaminants Sampling

Species	2nd Quarter 2020		3rd Quarter 2020		4th Quarter 2020		Limit (ppb_v)
	A60 Flare (ppb_v)	Engine (ppb_v)	A60 Flare (ppb_v)	Engine (ppb_v)	A60 Flare (ppb_v)	Engine (ppb_v)	
Ethylbenzene	1,800	1,700	1,900	1,700	1,900	2,000	4,000
1,4-Dichlorobenzene	140	140	150	160	150	190	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:

- May 12, 2020
- June 12, 2020
- July 14, 2020
- August 4, 2020
- September 24, 2020
- October 8, 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 2-15 lists the PM_{10} emissions and total throughput of waste processed at S-56 for the reporting period (note that the permit for S-56 was surrendered to BAAQMD on October 8, 2020 and the equipment is on longer on site):

Table 2-15 Waste Processed at S-56

Month	PM_{10} Emissions (tons)	Estimated Total Throughput (tons)
May 2020	0.00	0
June 2020	0.00	0
July 2020	0.00	0
August 2020	0.00	0
September 2020	0.00	0
October 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 2-16 lists the monthly and rolling 12-month fuel usage for the S-57 Portable Diesel Engine for the reporting period (note that the permit for S-57 was surrendered to BAAQMD on October 8, 2020 and the equipment is on longer on site):

Table 2-16 Fuel Usage at S-57

Month	Diesel Fuel Usage (gallons)	Rolling 12-Month Fuel Usage (gallons)
May 2020	0	0
June 2020	0	0
July 2020	0	0
August 2020	0	0
September 2020	0	0
October 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 2-17 displays the leachate flow information for S-58.

Table 2-17 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)
May 2020	1,234,420	17,017,620
June 2020	1,248,900	17,712,660
July 2020	1,060,660	18,089,140
August 2020	1,002,740	18,284,620
September 2020	850,700	18,519,920
October 2020	810,880	18,338,920

As shown in Table 2-18, 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 2-18 POC Concentrations for S-58

Sample Date	Benzene (ppb)	1,4-Dichlorobenzene (ppb)	Vinyl Chloride (ppb)	Total POC Concentration (ppb)
June 9, 2020	2.6	4.8	ND<0.50	24.6
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 May 1, 2020 to October 31, 2020 reporting period. Table 2-19 displays runtime hours for S-61 and S-62 during the reporting period.

Table 2-19 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)
May 2020	0	0	37
June 2020	0	0	22
July 2020	0	0	5
August 2020	0	0	0
September 2020	0	0	0
October 2020	0	0	0

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 SO2. 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 2-20 Rolling 4-Quarter LFG Input and CO and SO_2 Emissions

Year	Quarter	Rolling 4-Quarter Totals		
		LFG Input (MMscf)	CO Emissions (tons)	SO_2 Emissions (tons)
2019	4	1,499	45.3	72
2020	1	1,499	41.8	69
2020	2	1,428	36.0	58
2020	3	1,325	30.8	51
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 2020 Source Test was performed on the A-60 flare operating in Zone A by Blue Sky Environmental, LLC on July 22, 2020. The Test Report was submitted to BAAQMD on September 15, 2020. 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)	12.8	15	---	In Compliance
CO (ppm_v @ 15% O_2)	40.8	82	---	In Compliance
NMOC Outlet (ppm_v @ 3% O_2)	6.7	---	30	In Compliance
NMOC Inlet (ppm_v)	213	360	---	In Compliance

The 2018 Source Test was performed by Blue Sky Environmental, LLC on July 17, 2018 with the A-60 flare operating in Zone B. The Test Report was submitted to BAAQMD on September 14, 2018 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, averaged from three test runs.

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

3.1.3 ENGINES (S-64 AND S-65) SOURCE TEST RESULTS

The S-64 and S-65 landfill gas (LFG) Engines are operating in accordance with the Bay Area Air Quality Management District (BAAQMD) Permit to Operate (PTO) for Facility 1179, Permit Condition 25635, Part 13. Testing also satisfied initial testing requirements of 40 CFR 60, Subpart JJJ – New Source Performance Standards for Spark Ignition Internal Combustion Engines.

The 2020 Source Test was performed on the S-64 and S-65 LFG Engines by Blue Sky Environmental, LLC on July 21 and 22, 2020. The Test Report was submitted to BAAQMD on September 18, 2020. A summary of the report is presented in Appendix N.

The results for S-64 Engine indicates that the engine is in compliance with PTO Permit Condition 25635, Part 13. Table 3-5 below shows the results of the source test, averaged from three test runs (particulate and formaldehyde have a testing frequency of one engine per year).

Table 3-5 S-64 Engine Source Test Results

Condition	S-64 Engine Average Results	Permit Limit	Compliance Status
NO_x (gm/BHp-hr)	0.06	0.15	In Compliance
CO (gm/BHp-hr)	0.29	1.8	In Compliance
NMOC (gm/BHp-hr as CH_4)	0.01	0.16	In Compliance
Total Particulate (g/BHp)	<0.009	0.10	In Compliance
Formaldehyde (lb/hr)	0.0100	0.51	In Compliance

The results for S-65 Engine indicates that the engine is in compliance with PTO Permit Condition 25635, Part 13. Table 3-6 below shows the results of the source test, averaged from three test runs.

Table 3-6 S-65 Engine Source Test Results

Condition	S-64 Engine Average Results	Permit Limit	Compliance Status
NO_x (gm/BHp-hr)	0.07	0.15	In Compliance
CO (gm/BHp-hr)	0.32	1.8	In Compliance
NMOC (gm/BHp-hr as CH_4)	0.03	0.16	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.

11 wells were added to and 13 wells were removed from the collection system during the reporting period (May 1, 2020 to October 31, 2020).

As of the end of this reporting period, 113 total collectors (106 vertical wells and 7 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 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 20^{th} 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:

- June 3, 2020
- July 14, 2020
- August 10, 2020
- September 4, 2020
- October 9, 2020
- November 6, 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 (May 1, 2020 to October 31, 2020) are noted in this section and included in Appendix B. The following information is included as required:

- During the reporting period, 4 A-51 Flare SSM events, 24 A-60 Flare Zone A SSM events, and 1 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, 190 S-64 Engine (#1) SSM events, 132 S-65 Engine (#2) 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, 46 wellfield SSM events occurred. The time and duration of these events are included in Appendix D, Wellfield SSM Log.

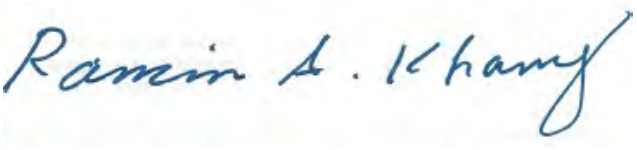
- During the reporting period, 0 monitoring/recorder equipment SSM event occurred.

- In all 397 flare, engine, and wellfield 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.***



November 27, 2020

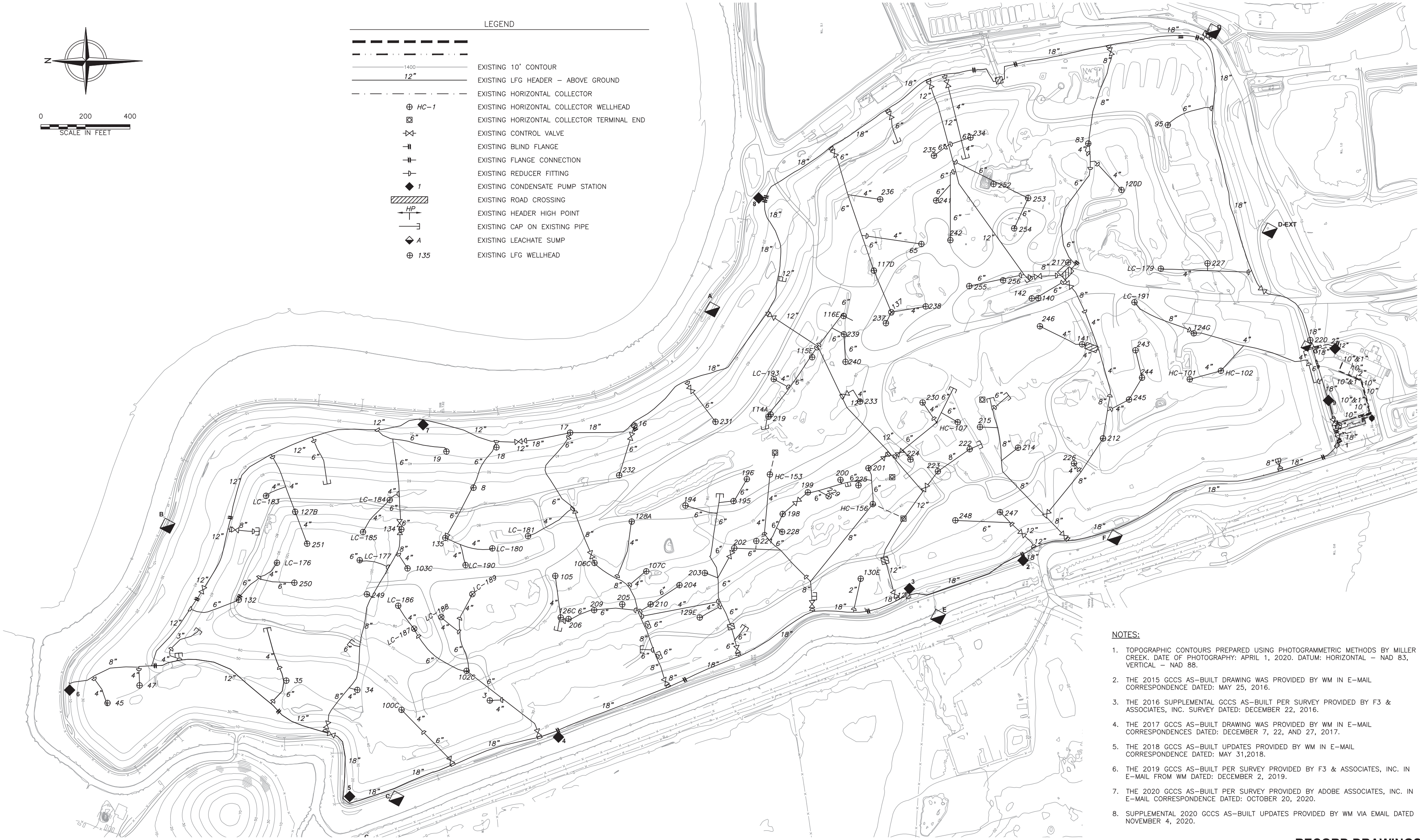
Signature of Responsible Official **Date**

Ramin Khany

Name of Responsible Official

APPENDIX A

SITE MAP



LEGEND

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

0 200 400
SCALE IN FEET

NOTES:

1. TOPOGRAPHIC CONTOURS PREPARED USING PHOTOGRAMMETRIC METHODS BY MILLER CREEK. DATE OF PHOTOGRAPHY: APRIL 1, 2020. 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 E-MAIL 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.
7. THE 2020 GCCS AS-BUILT PER SURVEY PROVIDED BY ADOBE ASSOCIATES, INC. IN E-MAIL CORRESPONDENCE DATED: OCTOBER 20, 2020.
8. SUPPLEMENTAL 2020 GCCS AS-BUILT UPDATES PROVIDED BY WM VIA EMAIL DATED NOVEMBER 4, 2020.

RECORD DRAWINGS

WASTE MANAGEMENT

This drawing represents intellectual property of Cornerstone Environmental Group, LLC. Any modification to the original by other than Cornerstone Environmental Group, LLC personnel violates its original purpose and as such is rendered void. Cornerstone Environmental Group, LLC will not be held liable for any changes made to this document without express written consent of the originator.

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 11/20/20
DRAWN BY GVP
DESIGNED BY DHK
CHECKED BY AMN
APPROVED BY HLV

TETRA TECH

ALL PROFESSIONAL ENGINEERING WORK IS PERFORMED BY DULY LICENSED PROFESSIONAL ENGINEERS UNDER THE APPROPRIATE STATE REGISTERED PROFESSIONAL ENTITY.

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

GCCS RECORD LAYOUT

AS-BUILT SITE PLAN

SHEET NO. 1

PROJECT NO. 200129

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	x Shutdown x Startup Malfunction	A-51 Flare	4/30/20 9:42 7/8/20 20:18	4/30/20 9:44 7/8/20 20:20	0.03 0.03	1666.60	After Yokogawa maintenance, operate system with A60 only.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	7/8/2020
2	x Shutdown x Startup Malfunction	A-51 Flare	7/9/20 8:48 7/9/20 9:08	7/9/20 8:50 7/9/20 9:10	0.03 0.03	0.33	Restarting A60 flare.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	7/9/2020
3	x Shutdown x Startup Malfunction	A-51 Flare	7/9/20 9:50 10/1/20 7:50	7/9/20 9:52 10/1/20 7:52	0.03 0.03	2014.00	After A60 maintenance, operate system with A60 only.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	10/1/2020
4	x Shutdown Startup Malfunction	A-51 Flare	10/1/20 11:48 A-51 shut down as of November 1, 2020	10/1/20 11:50	0.03	732.20	After A60 maintenance, operate system with A60 only.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x 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) x No Yes (Go to 9) No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	11/1/2020

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 May 2020															
1	x Shutdown x Startup Malfunction	A-60 Zone A	6/8/20 14:02 6/8/20 14:08	6/8/20 14:04 6/8/20 14:10	0.03 0.03	0.10	Low flow shutdown. WMRE engines starting up.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) Manual (Go to 7) x 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) x No Yes (Go to 10) x No		Mike Chan	6/8/2020
2	x Shutdown x Startup Malfunction	A-60 Zone A	6/17/20 9:44 6/17/20 10:02	6/17/20 9:46 6/17/20 10:04	0.03 0.03	0.30	Manual Shutdown for PLC maintenance	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	6/17/2020
3	x Shutdown x Startup Malfunction	A-60 Zone A	7/2/20 5:20 7/2/20 5:26	7/2/20 5:22 7/2/20 5:28	0.03 0.03	0.10	All control devices were shutdown due to a site-wide power surge. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) Manual (Go to 7) x 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) x No Yes (Go to 10) x No		Mike Chan	7/2/2020
4	x Shutdown x Startup Malfunction	A-60 Zone A	7/7/20 14:10 7/7/20 17:48	7/7/20 14:12 7/7/20 17:50	0.03 0.03	3.63	Manual Shutdown to isolate GCCS from Brush Fire	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	7/7/2020
5	x Shutdown x Startup Malfunction	A-60 Zone A	7/8/20 16:34 7/8/20 17:54	7/8/20 16:36 7/8/20 17:56	0.03 0.03	1.33	Temperature alarm shutdown. System inspected and restarted.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		Mike Chan	7/8/2020
6	x Shutdown x Startup Malfunction	A-60 Zone A	7/8/20 19:52 7/9/20 9:54	7/8/20 19:54 7/9/20 9:56	0.03 0.03	14.03	Temperature alarm shutdown. System inspected, repaired, and restarted.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		Mike Chan	7/9/2020
7	x Shutdown x Startup Malfunction	A-60 Zone A	7/17/20 12:58 7/17/20 13:04	7/17/20 13:00 7/17/20 13:06	0.03 0.03	0.10	Low flow alarm shutdown. WMRE engines starting up.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		Mike Chan	7/17/2020
8	x Shutdown x Startup Malfunction	A-60 Zone A	8/2/20 5:30 8/2/20 5:38	8/2/20 5:32 8/2/20 5:40	0.03 0.03	0.13	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 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) Manual (Go to 7) x 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) x No Yes (Go to 10) x No		Mike Chan	8/2/2020
9	x Shutdown x Startup Malfunction	A-60 Zone A	8/25/20 9:20 8/25/20 10:42	8/25/20 9:22 8/25/20 10:44	0.03 0.03	1.37	Manual shutdown for well field maintenance.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	8/25/2020
10	x Shutdown x Startup Malfunction	A-60 Zone A	8/25/20 22:54 8/25/20 22:58	8/25/20 22:56 8/25/20 23:00	0.03 0.03	0.07	All control devices were shutdown due to a site-wide power surge. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) Manual (Go to 7) x 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) x No Yes (Go to 10) x No		Mike Chan	8/25/2020

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
11	x Shutdown x Startup Malfunction	A-60 Zone A	8/28/20 8:22 8/28/20 8:28	8/28/20 8:24 8/28/20 8:30	0.03 0.03	0.10	Low flow alarm shutdown. System inspected and restarted.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		Mike Chan	8/28/2020
12	x Shutdown x Startup Malfunction	A-60 Zone A	8/28/20 8:46 8/28/20 8:50	8/28/20 8:48 8/28/20 8:52	0.03 0.03	0.07	Flame alarm shutdown. System inspected and restarted.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		Mike Chan	8/28/2020
13	x Shutdown x Startup Malfunction	A-60 Zone A	8/28/20 10:44 8/28/20 10:48	8/28/20 10:46 8/28/20 10:50	0.03 0.03	0.07	Flame alarm shutdown. System inspected and restarted.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		Mike Chan	8/28/2020
14	x Shutdown x Startup Malfunction	A-60 Zone A	9/5/20 23:12 9/5/20 23:18	9/5/20 23:14 9/5/20 23:20	0.03 0.03	0.10	Low flow shutdown. System inspected after restart.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) Manual (Go to 7) x 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) x No Yes (Go to 10) x No		Mike Chan	9/5/2020
15	x Shutdown x Startup Malfunction	A-60 Zone A	9/8/20 10:42 9/8/20 10:48	9/8/20 10:44 9/8/20 10:50	0.03 0.03	0.10	Flame alarm shutdown. WMRE engines starting up.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) Manual (Go to 7) x 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) x No Yes (Go to 10) x No		Mike Chan	9/8/2020
16	x Shutdown x Startup Malfunction	A-60 Zone A	9/9/20 22:06 9/9/20 22:54	9/9/20 22:08 9/9/20 22:56	0.03 0.03	0.80	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 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		Mike Chan	9/9/2020
17	x Shutdown x Startup Malfunction	A-60 Zone A	9/10/20 21:22 9/10/20 21:28	9/10/20 21:24 9/10/20 21:30	0.03 0.03	0.10	Flame alarm shutdown. WMRE engines starting up.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) Manual (Go to 7) x 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) x No Yes (Go to 10) x No		Mike Chan	9/10/2020
18	x Shutdown x Startup Malfunction	A-60 Zone A	9/10/20 21:54 9/10/20 22:00	9/10/20 21:56 9/10/20 22:02	0.03 0.03	0.10	Flame alarm shutdown. WMRE engines starting up.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) Manual (Go to 7) x 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) x No Yes (Go to 10) x No		Mike Chan	9/10/2020
19	x Shutdown x Startup Malfunction	A-60 Zone A	9/10/20 22:26 9/10/20 22:34	9/10/20 22:28 9/10/20 22:36	0.03 0.03	0.13	Flame alarm shutdown. WMRE engines starting up.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) Manual (Go to 7) x 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) x No Yes (Go to 10) x No		Mike Chan	9/10/2020
20	x Shutdown x Startup Malfunction	A-60 Zone A	9/11/20 2:36 9/11/20 2:42	9/11/20 2:38 9/11/20 2:44	0.03 0.03	0.10	Flame alarm shutdown. WMRE engines starting up.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) Manual (Go to 7) x 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) x No Yes (Go to 10) x No		Mike Chan	9/11/2020
21	x Shutdown x Startup Malfunction	A-60 Zone A	9/11/20 3:16 9/11/20 3:20	9/11/20 3:18 9/11/20 3:22	0.03 0.03	0.07	Flame alarm shutdown. WMRE engines starting up.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) Manual (Go to 7) x 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) x No Yes (Go to 10) x No		Mike Chan	9/11/2020

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
22	x Shutdown x Startup Malfunction	A-60 Zone A	9/20/20 21:18 9/20/20 21:22	9/20/20 21:20 9/20/20 21:24	0.03 0.03	0.07	All control devices were shutdown due to a site-wide power surge. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) Manual (Go to 7) x Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) x No		Mike Chan	9/20/2020
23	x Shutdown x Startup Malfunction	A-60 Zone A	10/1/20 7:44 10/1/20 11:54	10/1/20 7:46 10/1/20 11:56	0.03 0.03	4.17	Manual shutdown for new flame arrestor installation.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	10/1/2020
24	x Shutdown x Startup Malfunction	A-60 Zone A	10/23/20 10:16 10/23/20 10:22	10/23/20 10:18 10/23/20 10:24	0.03 0.03	0.10	All control devices were shutdown due to a site-wide power surge. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) Manual (Go to 7) x 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) x No Yes (Go to 10) x No		Mike Chan	10/23/2020

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	x Shutdown Startup Malfunction	A-60 Zone B	12/18/19 13:28	12/18/19 13:30	0.03	7642.53	Manual shutdown. Running on A60A only.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x 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) x No Yes (Go to 9) No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	11/1/2020
			Zone B shut down as of November 1, 2020												

(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/deterioratior -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 necessar 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 equipmen 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 equipmen 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	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/1/20 2:35 5/1/20 10:35	5/1/20 2:37 5/1/20 10:37	0.03 0.03	8.00	Reverse Power	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/1/2020
2	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/1/20 18:20 5/1/20 21:20	5/1/20 18:22 5/1/20 21:22	0.03 0.03	3.00	Remote Emergency stop fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/1/2020
3	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/2/20 19:20 5/2/20 20:55	5/2/20 19:22 5/2/20 20:57	0.03 0.03	1.58	Engine Overspeed	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/2/2020
4	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/5/20 9:25 5/5/20 9:40	5/5/20 9:27 5/5/20 9:42	0.03 0.03	0.25	Engine Overspeed	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/5/2020
5	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/5/20 15:15 5/5/20 15:50	5/5/20 15:17 5/5/20 15:52	0.03 0.03	0.58	Engine Overspeed	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/5/2020
6	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/5/20 16:50 5/5/20 17:10	5/5/20 16:52 5/5/20 17:12	0.03 0.03	0.33	Clyinder 2,4 & 5 exhaust temp high	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/5/2020
7	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/5/20 20:45 5/5/20 22:10	5/5/20 20:47 5/5/20 22:12	0.03 0.03	1.42	Clyinder 2,4 & 5 exhaust temp high	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/5/2020
8	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/6/20 9:35 5/6/20 9:45	5/6/20 9:37 5/6/20 9:47	0.03 0.03	0.17	Clyinder 2,4 & 5 exhaust temp high	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/6/2020
9	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/6/20 10:20 5/6/20 10:40	5/6/20 10:22 5/6/20 10:42	0.03 0.03	0.33	Clyinder 2,4 & 5 exhaust temp high	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/6/2020
10	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/6/20 12:50 5/6/20 13:00	5/6/20 12:52 5/6/20 13:02	0.03 0.03	0.17	Cylinder 2,4 & 5 exhaust temp high	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/6/2020
11	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/6/20 19:25 5/6/20 20:25	5/6/20 19:27 5/6/20 20:27	0.03 0.03	1.00	Cylinders 2,4 & 5 exhaust temp high	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/6/2020
12	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/6/20 21:25 5/6/20 21:35	5/6/20 21:27 5/6/20 21:37	0.03 0.03	0.17	Number 5 cylinder exhaust temperature deviating low	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/6/2020

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	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/6/20 22:15 5/6/20 22:50	5/6/20 22:17 5/6/20 22:52	0.03 0.03	0.58	Johnson Matthey high regent pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/6/2020
14	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/8/20 6:30 5/8/20 8:45	5/8/20 6:32 5/8/20 8:47	0.03 0.03	2.25	Compression Test	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	5/8/2020
15	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/12/20 13:35 5/12/20 13:45	5/12/20 13:37 5/12/20 13:47	0.03 0.03	0.17	WM Network Equipment Change	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/12/2020
16	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/12/20 14:00 5/12/20 14:10	5/12/20 14:02 5/12/20 14:12	0.03 0.03	0.17	WM Network Equipment Change	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/12/2020
17	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/12/20 14:55 5/12/20 18:30	5/12/20 14:57 5/12/20 18:32	0.03 0.03	3.58	WM Network Equipment Change	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/12/2020
18	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/13/20 14:30 5/13/20 14:50	5/13/20 14:32 5/13/20 14:52	0.03 0.03	0.33	Remote Emergency stop fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/13/2020
19	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/14/20 11:25 5/14/20 11:35	5/14/20 11:27 5/14/20 11:37	0.03 0.03	0.17	Remote Emergency stop fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/14/2020
20	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/14/20 12:25 5/14/20 12:40	5/14/20 12:27 5/14/20 12:42	0.03 0.03	0.25	Remote Emergency stop fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/14/2020
21	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/14/20 13:20 5/14/20 13:35	5/14/20 13:22 5/14/20 13:37	0.03 0.03	0.25	High exhaust temp	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/14/2020
22	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/14/20 14:20 5/14/20 14:30	5/14/20 14:22 5/14/20 14:32	0.03 0.03	0.17	High exhaust temp	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/14/2020
23	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/14/20 14:45 5/14/20 15:00	5/14/20 14:47 5/14/20 15:02	0.03 0.03	0.25	High exhaust temp	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/14/2020
24	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/14/20 15:10 5/14/20 15:40	5/14/20 15:12 5/14/20 15:42	0.03 0.03	0.50	High exhaust temp	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/14/2020

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	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/14/20 15:45 5/14/20 16:05	5/14/20 15:47 5/14/20 16:07	0.03 0.03	0.33	Engine Overspeed	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/14/2020
26	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/15/20 19:55 5/15/20 20:05	5/15/20 19:57 5/15/20 20:07	0.03 0.03	0.17	Engine Overspeed	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/15/2020
27	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/16/20 19:55 5/16/20 20:05	5/16/20 19:57 5/16/20 20:07	0.03 0.03	0.17	Remote Emergency stop fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/16/2020
28	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/16/20 20:35 5/16/20 21:25	5/16/20 20:37 5/16/20 21:27	0.03 0.03	0.83	Remote Emergency stop fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/16/2020
29	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/17/20 16:35 5/17/20 16:55	5/17/20 16:37 5/17/20 16:57	0.03 0.03	0.33	Remote Emergency stop fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/17/2020
30	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/17/20 21:15 5/17/20 21:50	5/17/20 21:17 5/17/20 21:52	0.03 0.03	0.58	Remote Emergency stop fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/17/2020
31	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/18/20 15:45 5/18/20 16:10	5/18/20 15:47 5/18/20 16:12	0.03 0.03	0.42	Engine Overspeed	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/18/2020
32	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/19/20 6:35 5/19/20 7:15	5/19/20 6:37 5/19/20 7:17	0.03 0.03	0.67	High Exhaust temp	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/19/2020
33	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/19/20 15:35 5/19/20 16:30	5/19/20 15:37 5/19/20 16:32	0.03 0.03	0.92	Willexa fault - Valve not fully open	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/19/2020
34	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/19/20 20:10 5/19/20 22:50	5/19/20 20:12 5/19/20 22:52	0.03 0.03	2.67	Detonation cylinder 17	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/19/2020
35	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/19/20 23:50 5/20/20 0:00	5/19/20 23:52 5/20/20 0:02	0.03 0.03	0.17	Engine control switch Erratic, Intermittent or incorrect	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/20/2020
36	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/20/20 1:50 5/20/20 2:00	5/20/20 1:52 5/20/20 2:02	0.03 0.03	0.17	Johnson-Matthey high pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/20/2020

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	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/20/20 5:50 5/20/20 6:00	5/20/20 5:52 5/20/20 6:02	0.03 0.03	0.17	High Exhaust temp cylinder #5	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/20/2020
38	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/20/20 8:50 5/20/20 19:35	5/20/20 8:52 5/20/20 19:37	0.03 0.03	10.75	High Exhaust temp cylinder #5	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/20/2020
39	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/20/20 20:10 5/20/20 20:20	5/20/20 20:12 5/20/20 20:22	0.03 0.03	0.17	High Exhaust temp cylinder #5	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/20/2020
40	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/20/20 20:45 5/20/20 20:55	5/20/20 20:47 5/20/20 20:57	0.03 0.03	0.17	High Exhaust temp cylinder #5	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/20/2020
41	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/21/20 13:10 5/21/20 13:20	5/21/20 13:12 5/21/20 13:22	0.03 0.03	0.17	Remote Emergency stop fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/21/2020
42	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/21/20 13:30 5/21/20 13:50	5/21/20 13:32 5/21/20 13:52	0.03 0.03	0.33	Remote Emergency stop fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/21/2020
43	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/21/20 14:10 5/21/20 14:20	5/21/20 14:12 5/21/20 14:22	0.03 0.03	0.17	Shutdown for Diagnosis	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	5/21/2020
44	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/21/20 14:40 5/22/20 15:20	5/21/20 14:42 5/22/20 15:22	0.03 0.03	24.67	Replace Cylinder Pack	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	5/22/2020
45	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/23/20 12:30 5/23/20 13:35	5/23/20 12:32 5/23/20 13:37	0.03 0.03	1.08	High Exhaust temp cylinder #5	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/23/2020
46	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/25/20 12:50 5/26/20 7:00	5/25/20 12:52 5/26/20 7:02	0.03 0.03	18.17	Remote Emergency stop fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/26/2020
47	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/26/20 13:00 5/26/20 13:25	5/26/20 13:02 5/26/20 13:27	0.03 0.03	0.42	Remote Emergency stop fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/26/2020
48	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/26/20 13:50 5/26/20 15:15	5/26/20 13:52 5/26/20 15:17	0.03 0.03	1.42	Remote Emergency stop fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/26/2020

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	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/26/20 15:55 5/26/20 16:35	5/26/20 15:57 5/26/20 16:37	0.03 0.03	0.67	Johnson-Matthey High Pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/26/2020
50	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/26/20 17:05 5/26/20 17:45	5/26/20 17:07 5/26/20 17:47	0.03 0.03	0.67	Johnson-Matthey High Pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/26/2020
51	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/26/20 18:50 5/26/20 19:35	5/26/20 18:52 5/26/20 19:37	0.03 0.03	0.75	Johnson-Matthey High Pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/26/2020
52	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/26/20 20:20 5/26/20 20:30	5/26/20 20:22 5/26/20 20:32	0.03 0.03	0.17	Johnson-Matthey High Pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/26/2020
53	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/26/20 21:40 5/27/20 6:05	5/26/20 21:42 5/27/20 6:07	0.03 0.03	8.42	Johnson-Matthey High Pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/27/2020
54	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/27/20 7:20 5/27/20 9:45	5/27/20 7:22 5/27/20 9:47	0.03 0.03	2.42	Johnson-Matthey High Pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/27/2020
55	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/27/20 10:10 5/27/20 10:25	5/27/20 10:12 5/27/20 10:27	0.03 0.03	0.25	Remote Emergency stop fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/27/2020
56	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/27/20 12:15 5/27/20 14:30	5/27/20 12:17 5/27/20 14:32	0.03 0.03	2.25	Remote Emergency stop fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/27/2020
57	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/28/20 15:05 5/30/20 12:25	5/28/20 15:07 5/30/20 12:27	0.03 0.03	45.33	Willexa Repairs	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/30/2020
58	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/30/20 21:45 5/30/20 23:45	5/30/20 21:47 5/30/20 23:47	0.03 0.03	2.00	Remote Emergency stop fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/30/2020
59	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/31/20 4:45 5/31/20 10:00	5/31/20 4:47 5/31/20 10:02	0.03 0.03	5.25	Remote Emergency stop fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/31/2020
60	x Shutdown x Startup Malfunction	Engine #1 (S-64)	5/31/20 12:40 5/31/20 12:50	5/31/20 12:42 5/31/20 12:52	0.03 0.03	0.17	Replace #4 spark plug	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	5/31/2020

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	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/1/20 11:20 6/1/20 12:55	6/1/20 11:22 6/1/20 12:57	0.03 0.03	1.58	Engine Auxillary Shutdown Switch:Special Instruction	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/1/2020
62	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/1/20 13:45 6/2/20 8:55	6/1/20 13:47 6/2/20 8:57	0.03 0.03	19.17	Engine Auxillary Shutdown Switch:Special Instruction	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/2/2020
63	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/2/20 10:10 6/2/20 12:15	6/2/20 10:12 6/2/20 12:17	0.03 0.03	2.08	Engine Auxillary Shutdown Switch:Special Instruction	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/2/2020
64	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/2/20 13:35 6/3/20 8:10	6/2/20 13:37 6/3/20 8:12	0.03 0.03	18.58	Engine Auxillary Shutdown Switch:Special Instruction	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/3/2020
65	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/3/20 10:30 6/4/20 6:45	6/3/20 10:32 6/4/20 6:47	0.03 0.03	20.25	Engine Auxillary Shutdown Switch:Special Instruction	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/4/2020
66	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/4/20 7:40 6/4/20 8:00	6/4/20 7:42 6/4/20 8:02	0.03 0.03	0.33	Engine Auxillary Shutdown Switch:Special Instruction	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/4/2020
67	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/4/20 9:00 6/4/20 9:25	6/4/20 9:02 6/4/20 9:27	0.03 0.03	0.42	Detonation Cylinder 17	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/4/2020
68	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/4/20 11:10 6/4/20 11:40	6/4/20 11:12 6/4/20 11:42	0.03 0.03	0.50	Engine Auxillary Shutdown Switch:Special Instruction	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/4/2020
69	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/4/20 13:25 6/5/20 9:30	6/4/20 13:27 6/5/20 9:32	0.03 0.03	20.08	Engine Auxillary Shutdown Switch:Special Instruction	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/5/2020
70	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/5/20 10:55 6/5/20 11:10	6/5/20 10:57 6/5/20 11:12	0.03 0.03	0.25	Johnson-Matthey High Pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/5/2020
71	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/6/20 14:00 6/8/20 14:40	6/6/20 14:02 6/8/20 14:42	0.03 0.03	48.67	Willexa Heater Fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/8/2020
72	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/8/20 20:45 6/8/20 21:00	6/8/20 20:47 6/8/20 21:02	0.03 0.03	0.25	Flow computer setting	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/8/2020

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	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/8/20 21:30 6/8/20 23:10	6/8/20 21:32 6/8/20 23:12	0.03 0.03	1.67	Turbo Inlet duct repair	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	6/8/2020
74	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/9/20 1:15 6/9/20 7:15	6/9/20 1:17 6/9/20 7:17	0.03 0.03	6.00	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/9/2020
75	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/9/20 7:50 6/9/20 8:10	6/9/20 7:52 6/9/20 8:12	0.03 0.03	0.33	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/9/2020
76	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/9/20 15:35 6/9/20 15:45	6/9/20 15:37 6/9/20 15:47	0.03 0.03	0.17	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/9/2020
77	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/9/20 18:35 6/9/20 20:35	6/9/20 18:37 6/9/20 20:37	0.03 0.03	2.00	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/9/2020
78	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/9/20 22:20 6/9/20 22:30	6/9/20 22:22 6/9/20 22:32	0.03 0.03	0.17	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/9/2020
79	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/10/20 5:35 6/10/20 6:10	6/10/20 5:37 6/10/20 6:12	0.03 0.03	0.58	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/10/2020
80	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/10/20 13:55 6/10/20 14:45	6/10/20 13:57 6/10/20 14:47	0.03 0.03	0.83	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/10/2020
81	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/10/20 15:05 6/10/20 15:20	6/10/20 15:07 6/10/20 15:22	0.03 0.03	0.25	Detonation Cylinder 19	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/10/2020
82	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/10/20 16:25 6/10/20 19:15	6/10/20 16:27 6/10/20 19:17	0.03 0.03	2.83	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/10/2020
83	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/10/20 22:30 6/11/20 8:40	6/10/20 22:32 6/11/20 8:42	0.03 0.03	10.17	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/11/2020
84	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/11/20 22:05 6/11/20 22:45	6/11/20 22:07 6/11/20 22:47	0.03 0.03	0.67	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/11/2020

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
85	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/12/20 3:35 6/12/20 23:55	6/12/20 3:37 6/12/20 23:57	0.03 0.03	20.33	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/12/2020
86	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/13/20 3:05 6/13/20 5:20	6/13/20 3:07 6/13/20 5:22	0.03 0.03	2.25	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/13/2020
87	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/13/20 7:15 6/13/20 11:25	6/13/20 7:17 6/13/20 11:27	0.03 0.03	4.17	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/13/2020
88	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/13/20 11:45 6/13/20 16:00	6/13/20 11:47 6/13/20 16:02	0.03 0.03	4.25	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/13/2020
89	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/13/20 16:25 6/13/20 20:00	6/13/20 16:27 6/13/20 20:02	0.03 0.03	3.58	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/13/2020
90	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/13/20 20:15 6/14/20 20:10	6/13/20 20:17 6/14/20 20:12	0.03 0.03	23.92	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/14/2020
91	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/14/20 20:40 6/15/20 15:30	6/14/20 20:42 6/15/20 15:32	0.03 0.03	18.83	Detonation Cylinder 19	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/15/2020
92	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/15/20 16:10 6/15/20 16:30	6/15/20 16:12 6/15/20 16:32	0.03 0.03	0.33	Detonation Cylinder 19	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/15/2020
93	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/15/20 17:05 6/16/20 8:35	6/15/20 17:07 6/16/20 8:37	0.03 0.03	15.50	Detonation Cylinder 19	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/16/2020
94	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/16/20 18:35 6/16/20 18:45	6/16/20 18:37 6/16/20 18:47	0.03 0.03	0.17	Detonation Cylinder 19	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/16/2020
95	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/17/20 10:40 6/17/20 13:50	6/17/20 10:42 6/17/20 13:52	0.03 0.03	3.17	Detonation Cylinder 19	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/17/2020
96	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/17/20 22:25 6/17/20 23:15	6/17/20 22:27 6/17/20 23:17	0.03 0.03	0.83	Detonation Cylinder 19	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/17/2020

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
97	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/18/20 10:15 6/18/20 10:25	6/18/20 10:17 6/18/20 10:27	0.03 0.03	0.17	Detonation Cylinder 19	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/18/2020
98	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/18/20 14:05 6/18/20 14:15	6/18/20 14:07 6/18/20 14:17	0.03 0.03	0.17	Detonation Cylinder 19	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) X Automatic (Go to 9) X 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/18/2020
99	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/18/20 20:40 6/18/20 21:20	6/18/20 20:42 6/18/20 21:22	0.03 0.03	0.67	Detonation Cylinder 19	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/18/2020
100	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/19/20 1:25 6/19/20 2:15	6/19/20 1:27 6/19/20 2:17	0.03 0.03	0.83	Detonation Cylinder 19	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/19/2020
101	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/19/20 12:35 6/19/20 12:45	6/19/20 12:37 6/19/20 12:47	0.03 0.03	0.17	Detonation Cylinder 19	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/19/2020
102	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/25/20 7:20 6/28/20 15:10	6/25/20 7:22 6/28/20 15:12	0.03 0.03	79.83	Engine Overhaul	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/28/2020
103	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/28/20 15:40 6/28/20 15:55	6/28/20 15:42 6/28/20 15:57	0.03 0.03	0.25	Oil filter pressure differential	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/28/2020
104	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/28/20 16:15 6/28/20 16:25	6/28/20 16:17 6/28/20 16:27	0.03 0.03	0.17	Oil filter pressure differential	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/28/2020
105	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/29/20 10:55 6/29/20 11:10	6/29/20 10:57 6/29/20 11:12	0.03 0.03	0.25	Low Load	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/29/2020
106	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/29/20 19:40 6/29/20 20:20	6/29/20 19:42 6/29/20 20:22	0.03 0.03	0.67	over speed	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/29/2020
107	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/30/20 3:15 6/30/20 13:40	6/30/20 3:17 6/30/20 13:42	0.03 0.03	10.42	High Exhaust temp	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/30/2020
108	x Shutdown x Startup Malfunction	Engine #1 (S-64)	6/30/20 14:05 6/30/20 16:45	6/30/20 14:07 6/30/20 16:47	0.03 0.03	2.67	Valve Adjustment	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	6/30/2020

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
109	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/1/20 11:45 7/1/20 11:55	7/1/20 11:47 7/1/20 11:57	0.03 0.03	0.17	Overspeed	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/1/2020
110	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/2/20 5:25 7/2/20 7:25	7/2/20 5:27 7/2/20 7:27	0.03 0.03	2.00	Utility outage	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/2/2020
111	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/4/20 12:10 7/4/20 13:35	7/4/20 12:12 7/4/20 13:37	0.03 0.03	1.42	Low load shutdown	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/4/2020
112	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/4/20 14:25 7/4/20 14:35	7/4/20 14:27 7/4/20 14:37	0.03 0.03	0.17	Low load shutdown	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/4/2020
113	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/4/20 15:25 7/4/20 15:35	7/4/20 15:27 7/4/20 15:37	0.03 0.03	0.17	Low load shutdown	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/4/2020
114	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/4/20 18:00 7/5/20 9:10	7/4/20 18:02 7/5/20 9:12	0.03 0.03	15.17	Customer requested shutdown: Special Instruction	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/5/2020
115	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/5/20 14:45 7/5/20 15:45	7/5/20 14:47 7/5/20 15:47	0.03 0.03	1.00	Customer requested shutdown: Special Instruction	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/5/2020
116	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/5/20 21:30 7/5/20 21:55	7/5/20 21:32 7/5/20 21:57	0.03 0.03	0.42	Customer requested shutdown: Special Instruction	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/5/2020
117	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/6/20 15:20 7/6/20 16:05	7/6/20 15:22 7/6/20 16:07	0.03 0.03	0.75	Customer requested shutdown: Special Instruction	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/6/2020
118	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/7/20 12:00 7/8/20 14:55	7/7/20 12:02 7/8/20 14:57	0.03 0.03	26.92	Gas field maintenance	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	7/8/2020
119	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/9/20 10:25 7/9/20 12:55	7/9/20 10:27 7/9/20 12:57	0.03 0.03	2.50	Customer requested shutdown: Special Instruction	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/9/2020
120	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/9/20 18:35 7/9/20 18:50	7/9/20 18:37 7/9/20 18:52	0.03 0.03	0.25	Low load fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/9/2020

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
121	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/10/20 15:40 7/10/20 17:20	7/10/20 15:42 7/10/20 17:22	0.03 0.03	1.67	Replace ECMP4	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/10/2020
122	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/10/20 22:15 7/10/20 23:25	7/10/20 22:17 7/10/20 23:27	0.03 0.03	1.17	Low Load fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/10/2020
123	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/10/20 23:40 7/11/20 8:10	7/10/20 23:42 7/11/20 8:12	0.03 0.03	8.50	Low Methane	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/11/2020
124	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/14/20 6:15 7/14/20 8:15	7/14/20 6:17 7/14/20 8:17	0.03 0.03	2.00	Battery Charger Fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/14/2020
125	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/15/20 11:25 7/15/20 11:40	7/15/20 11:27 7/15/20 11:42	0.03 0.03	0.25	Remote Estop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/15/2020
126	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/15/20 12:10 7/22/20 9:35	7/15/20 12:12 7/22/20 9:37	0.03 0.03	165.42	Engine inspection	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	7/22/2020
127	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/22/20 18:10 7/22/20 18:40	7/22/20 18:12 7/22/20 18:42	0.03 0.03	0.50	Replace PLC on gas skid	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/22/2020
128	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/25/20 18:25 7/25/20 20:05	7/25/20 18:27 7/25/20 20:07	0.03 0.03	1.67	oil leveler fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/25/2020
129	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/25/20 20:15 7/25/20 20:25	7/25/20 20:17 7/25/20 20:27	0.03 0.03	0.17	Remote Estop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/25/2020
130	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/25/20 20:35 7/25/20 21:00	7/25/20 20:37 7/25/20 21:02	0.03 0.03	0.42	Remote Estop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/25/2020
131	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/25/20 21:30 7/26/20 20:30	7/25/20 21:32 7/26/20 20:32	0.03 0.03	23.00	Remote Estop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/26/2020
132	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/26/20 20:55 7/26/20 21:05	7/26/20 20:57 7/26/20 21:07	0.03 0.03	0.17	Remote Estop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/26/2020

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
133	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/26/20 21:15 7/26/20 22:00	7/26/20 21:17 7/26/20 22:02	0.03 0.03	0.75	Remote Estop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/26/2020
134	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/26/20 22:15 7/27/20 9:10	7/26/20 22:17 7/27/20 9:12	0.03 0.03	10.92	Low oil level	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/27/2020
135	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/27/20 9:20 7/27/20 13:25	7/27/20 9:22 7/27/20 13:27	0.03 0.03	4.08	Low oil level	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/27/2020
136	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/27/20 13:35 7/27/20 13:45	7/27/20 13:37 7/27/20 13:47	0.03 0.03	0.17	Cylinder 16 deviating low exhaust temp	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/27/2020
137	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/27/20 13:50 7/27/20 14:15	7/27/20 13:52 7/27/20 14:17	0.03 0.03	0.42	Cylinder 16 deviating low exhaust temp	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/27/2020
138	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/27/20 14:40 7/28/20 12:25	7/27/20 14:42 7/28/20 12:27	0.03 0.03	21.75	Cylinder 16 deviating low exhaust temp	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/28/2020
139	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/28/20 13:20 7/28/20 14:05	7/28/20 13:22 7/28/20 14:07	0.03 0.03	0.75	Oil level sensor wire	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/28/2020
140	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/30/20 7:35 7/30/20 12:15	7/30/20 7:37 7/30/20 12:17	0.03 0.03	4.67	Cylinder 2 detonation	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/30/2020
141	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/30/20 17:55 7/30/20 19:45	7/30/20 17:57 7/30/20 19:47	0.03 0.03	1.83	Cylinder 9 High exhaust temp	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/30/2020
142	x Shutdown x Startup Malfunction	Engine #1 (S-64)	7/30/20 23:00 7/31/20 4:55	7/30/20 23:02 7/31/20 4:57	0.03 0.03	5.92	Cylinder 9 High exhaust temp	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/31/2020
143	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/1/20 10:50 8/1/20 13:10	8/1/20 10:52 8/1/20 13:12	0.03 0.03	2.33	Cylinder 9 High exhaust temp	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/1/2020
144	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/2/20 5:30 8/2/20 8:45	8/2/20 5:32 8/2/20 8:47	0.03 0.03	3.25	Loss of Utility	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/2/2020

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
145	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/2/20 11:00 8/2/20 11:20	8/2/20 11:02 8/2/20 11:22	0.03 0.03	0.33	Johnson-Matthey High Pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/2/2020
146	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/5/20 11:00 8/5/20 11:10	8/5/20 11:02 8/5/20 11:12	0.03 0.03	0.17	Detonation cylinder 6	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/5/2020
147	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/5/20 14:00 8/5/20 15:00	8/5/20 14:02 8/5/20 15:02	0.03 0.03	1.00	Detonation cylinder 6	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/5/2020
148	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/5/20 18:45 8/5/20 21:35	8/5/20 18:47 8/5/20 21:37	0.03 0.03	2.83	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/5/2020
149	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/6/20 1:30 8/6/20 5:30	8/6/20 1:32 8/6/20 5:32	0.03 0.03	4.00	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/6/2020
150	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/8/20 3:40 8/8/20 9:40	8/8/20 3:42 8/8/20 9:42	0.03 0.03	6.00	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/8/2020
151	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/10/20 21:05 8/10/20 22:15	8/10/20 21:07 8/10/20 22:17	0.03 0.03	1.17	Detonation cyl. 6	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/10/2020
152	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/12/20 15:40 8/12/20 16:10	8/12/20 15:42 8/12/20 16:12	0.03 0.03	0.50	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/12/2020
153	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/12/20 16:20 8/12/20 16:35	8/12/20 16:22 8/12/20 16:37	0.03 0.03	0.25	Reverse power	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/12/2020
154	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/12/20 18:25 8/12/20 19:50	8/12/20 18:27 8/12/20 19:52	0.03 0.03	1.42	Remote E-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/12/2020
155	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/14/20 14:25 8/14/20 15:35	8/14/20 14:27 8/14/20 15:37	0.03 0.03	1.17	Engine Overspeed	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/14/2020
156	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/14/20 15:45 8/14/20 15:55	8/14/20 15:47 8/14/20 15:57	0.03 0.03	0.17	Engine overspeed	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/14/2020

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
157	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/14/20 16:15 8/14/20 17:10	8/14/20 16:17 8/14/20 17:12	0.03 0.03	0.92	Detonation Cyl. 8	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/14/2020
158	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/15/20 19:25 8/15/20 20:40	8/15/20 19:27 8/15/20 20:42	0.03 0.03	1.25	Detonation Cyl.6	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/15/2020
159	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/16/20 9:05 8/16/20 11:45	8/16/20 9:07 8/16/20 11:47	0.03 0.03	2.67	Detonation Cyl.6	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/16/2020
160	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/16/20 18:25 8/16/20 19:40	8/16/20 18:27 8/16/20 19:42	0.03 0.03	1.25	Detonation Cyl.6	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/16/2020
161	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/17/20 2:25 8/17/20 5:25	8/17/20 2:27 8/17/20 5:27	0.03 0.03	3.00	Detonation Cyl.6	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/17/2020
162	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/17/20 5:35 8/17/20 6:05	8/17/20 5:37 8/17/20 6:07	0.03 0.03	0.50	Detonation Cyl.10	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/17/2020
163	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/17/20 6:10 8/17/20 6:20	8/17/20 6:12 8/17/20 6:22	0.03 0.03	0.17	Detonation Cyl.12	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/17/2020
164	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/17/20 10:35 8/17/20 13:00	8/17/20 10:37 8/17/20 13:02	0.03 0.03	2.42	Detonation Cyl.12	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/17/2020
165	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/18/20 8:25 8/18/20 16:40	8/18/20 8:27 8/18/20 16:42	0.03 0.03	8.25	Replace electrical harness	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	8/18/2020
166	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/18/20 16:55 8/18/20 17:35	8/18/20 16:57 8/18/20 17:37	0.03 0.03	0.67	High oil temp	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/18/2020
167	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/25/20 8:05 8/25/20 12:25	8/25/20 8:07 8/25/20 12:27	0.03 0.03	4.33	Wellfield work	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	8/25/2020
168	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/25/20 22:55 8/26/20 0:10	8/25/20 22:57 8/26/20 0:12	0.03 0.03	1.25	Loss of utility	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/26/2020

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
169	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/26/20 0:20 8/27/20 8:05	8/26/20 0:22 8/27/20 8:07	0.03 0.03	31.75	Throttle acuator fialure	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/27/2020
170	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/28/20 20:55 8/28/20 22:20	8/28/20 20:57 8/28/20 22:22	0.03 0.03	1.42	Cylinder 5 high exhaust temp	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/28/2020
171	x Shutdown x Startup Malfunction	Engine #1 (S-64)	8/28/20 23:35 8/31/20 23:59	8/28/20 23:37 9/1/20 0:01	0.03 0.03	72.40	Engine couldn't build up load, turbo damaged currently off	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	8/31/2020
172	x Shutdown x Startup Malfunction	Engine #1 (S-64)	9/1/20 0:00 9/4/20 18:00	9/1/20 0:02 9/4/20 18:02	0.03 0.03	90.00	Turbo and inlet duct repairs	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	9/4/2020
173	x Shutdown x Startup Malfunction	Engine #1 (S-64)	9/5/20 3:50 9/5/20 7:55	9/5/20 3:52 9/5/20 7:57	0.03 0.03	4.08	Fuel gas compressor	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/5/2020
174	x Shutdown x Startup Malfunction	Engine #1 (S-64)	9/5/20 23:15 9/6/20 12:30	9/5/20 23:17 9/6/20 12:32	0.03 0.03	13.25	Fuel gas compressor	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) X Automatic (Go to 9) X 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/6/2020
175	x Shutdown x Startup Malfunction	Engine #1 (S-64)	9/6/20 13:30 9/6/20 14:10	9/6/20 13:32 9/6/20 14:12	0.03 0.03	0.67	Customer Requested Shutdown	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/6/2020
176	x Shutdown x Startup Malfunction	Engine #1 (S-64)	9/6/20 14:25 9/6/20 14:35	9/6/20 14:27 9/6/20 14:37	0.03 0.03	0.17	Customer Requested Shutdown	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/6/2020
177	x Shutdown x Startup Malfunction	Engine #1 (S-64)	9/6/20 14:50 9/6/20 15:05	9/6/20 14:52 9/6/20 15:07	0.03 0.03	0.25	Customer Requested Shutdown	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/6/2020
178	x Shutdown x Startup Malfunction	Engine #1 (S-64)	9/6/20 16:35 9/6/20 16:50	9/6/20 16:37 9/6/20 16:52	0.03 0.03	0.25	Johnson-Matthey High Pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/6/2020
179	x Shutdown x Startup Malfunction	Engine #1 (S-64)	9/8/20 13:10 9/8/20 15:40	9/8/20 13:12 9/8/20 15:42	0.03 0.03	2.50	Johnson-Matthey safety precaution-VFD for Unit 2 troubleshooting	x 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		P Madison	9/8/2020
180	x Shutdown x Startup Malfunction	Engine #1 (S-64)	9/9/20 22:10 9/9/20 23:20	9/9/20 22:12 9/9/20 23:22	0.03 0.03	1.17	Power Outage	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) X Automatic (Go to 9) X 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/9/2020

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
181	x Shutdown x Startup Malfunction	Engine #1 (S-64)	9/10/20 22:35 9/11/20 2:50	9/10/20 22:37 9/11/20 2:52	0.03 0.03	4.25	Cylinder 9 high exhaist temp	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/11/2020
182	x Shutdown x Startup Malfunction	Engine #1 (S-64)	9/11/20 3:20 9/15/20 11:10	9/11/20 3:22 9/15/20 11:12	0.03 0.03	103.83	Broken intake air ducting	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	9/15/2020
183	x Shutdown x Startup Malfunction	Engine #1 (S-64)	9/20/20 21:20 9/20/20 21:35	9/20/20 21:22 9/20/20 21:37	0.03 0.03	0.25	Power Outage	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/20/2020
184	x Shutdown x Startup Malfunction	Engine #1 (S-64)	10/15/20 7:15 10/15/20 7:45	10/15/20 7:17 10/15/20 7:47	0.03 0.03	0.50	Oil Change	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	10/15/2020
185	x Shutdown x Startup Malfunction	Engine #1 (S-64)	10/16/20 19:55 10/16/20 20:10	10/16/20 19:57 10/16/20 20:12	0.03 0.03	0.25	Remote e-stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/16/2020
186	x Shutdown x Startup Malfunction	Engine #1 (S-64)	10/16/20 20:20 10/16/20 20:45	10/16/20 20:22 10/16/20 20:47	0.03 0.03	0.42	Remote E-Stop - Detonation sensor	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/16/2020
187	x Shutdown x Startup Malfunction	Engine #1 (S-64)	10/16/20 20:55 10/16/20 21:10	10/16/20 20:57 10/16/20 21:12	0.03 0.03	0.25	Remote E-Stop - Detonation sensor	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/16/2020
188	x Shutdown x Startup Malfunction	Engine #1 (S-64)	10/16/20 21:45 10/17/20 3:05	10/16/20 21:47 10/17/20 3:07	0.03 0.03	5.33	Turbocharger coolant leak	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	10/17/2020
189	x Shutdown x Startup Malfunction	Engine #1 (S-64)	10/23/20 10:20 10/23/20 10:55	10/23/20 10:22 10/23/20 10:57	0.03 0.03	0.58	Power outage	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/23/2020
190	x Shutdown x Startup Malfunction	Engine #1 (S-64)	10/23/20 10:55 10/23/20 14:50	10/23/20 10:57 10/23/20 14:52	0.03 0.03	3.92	Wellfield pipe work	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/23/2020

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	x Shutdown x Startup Malfunction	Engine #2 (S-65)	5/8/20 11:15 5/8/20 12:40	5/8/20 11:17 5/8/20 12:42	0.03 0.03	1.42	Detonation Cylinder 13	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/8/2020
2	x Shutdown x Startup Malfunction	Engine #2 (S-65)	5/12/20 13:35 5/12/20 13:45	5/12/20 13:37 5/12/20 13:47	0.03 0.03	0.17	Johnson-Matthey high pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/12/2020
3	x Shutdown x Startup Malfunction	Engine #2 (S-65)	5/12/20 14:00 5/12/20 14:10	5/12/20 14:02 5/12/20 14:12	0.03 0.03	0.17	Engine information console malfunction	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	5/12/2020
4	x Shutdown x Startup Malfunction	Engine #2 (S-65)	5/12/20 14:55 5/12/20 18:35	5/12/20 14:57 5/12/20 18:37	0.03 0.03	3.67	WM Network Equipment Change	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/12/2020
5	x Shutdown x Startup Malfunction	Engine #2 (S-65)	5/15/20 19:20 5/15/20 20:20	5/15/20 19:22 5/15/20 20:22	0.03 0.03	1.00	Cylinder 14 Detonation	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/15/2020
6	x Shutdown x Startup Malfunction	Engine #2 (S-65)	5/15/20 20:30 5/15/20 20:45	5/15/20 20:32 5/15/20 20:47	0.03 0.03	0.25	Cylinder 14 Detonation	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/15/2020
7	x Shutdown x Startup Malfunction	Engine #2 (S-65)	5/18/20 5:30 5/18/20 10:05	5/18/20 5:32 5/18/20 10:07	0.03 0.03	4.58	Engine service, oil change and valve lash	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	5/18/2020
8	x Shutdown x Startup Malfunction	Engine #2 (S-65)	5/18/20 10:50 5/18/20 11:10	5/18/20 10:52 5/18/20 11:12	0.03 0.03	0.33	Ignition harness replaced on odd bank	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/18/2020
9	x Shutdown x Startup Malfunction	Engine #2 (S-65)	5/18/20 11:50 5/18/20 12:00	5/18/20 11:52 5/18/20 12:02	0.03 0.03	0.17	Ignition harness replaced on odd bank	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/18/2020
10	x Shutdown x Startup Malfunction	Engine #2 (S-65)	5/18/20 12:15 5/18/20 13:20	5/18/20 12:17 5/18/20 13:22	0.03 0.03	1.08	Ignition harness replaced on odd bank	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/18/2020
11	x Shutdown x Startup Malfunction	Engine #2 (S-65)	5/19/20 15:35 5/19/20 16:30	5/19/20 15:37 5/19/20 16:32	0.03 0.03	0.92	Willexa fault loss of fuel	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/19/2020
12	x Shutdown x Startup Malfunction	Engine #2 (S-65)	5/20/20 0:55 5/20/20 1:05	5/20/20 0:57 5/20/20 1:07	0.03 0.03	0.17	Johnson Mathey high pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/20/2020

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	x Shutdown x Startup Malfunction	Engine #2 (S-65)	5/20/20 1:30 5/20/20 1:50	5/20/20 1:32 5/20/20 1:52	0.03 0.03	0.33	Johnson Mathey dampener and blower fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/20/2020
14	x Shutdown x Startup Malfunction	Engine #2 (S-65)	5/22/20 16:20 5/22/20 16:30	5/22/20 16:22 5/22/20 16:32	0.03 0.03	0.17	Replace 2,8 & 12 spark plug under temp	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	5/22/2020
15	x Shutdown x Startup Malfunction	Engine #2 (S-65)	5/28/20 15:05 5/30/20 12:30	5/28/20 15:07 5/30/20 12:32	0.03 0.03	45.42	Willexa Repairs	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/30/2020
16	x Shutdown x Startup Malfunction	Engine #2 (S-65)	5/30/20 13:25 5/30/20 14:30	5/30/20 13:27 5/30/20 14:32	0.03 0.03	1.08	Johnson Mathey high pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/30/2020
17	x Shutdown x Startup Malfunction	Engine #2 (S-65)	5/31/20 6:55 5/31/20 12:10	5/31/20 6:57 5/31/20 12:12	0.03 0.03	5.25	Engine Overspeed	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/31/2020
18	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/3/20 12:30 6/4/20 6:50	6/3/20 12:32 6/4/20 6:52	0.03 0.03	18.33	Failed Fan Vibration switch	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/4/2020
19	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/4/20 7:30 6/4/20 8:00	6/4/20 7:32 6/4/20 8:02	0.03 0.03	0.50	Johnson-Matthey high pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/4/2020
20	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/4/20 9:15 6/4/20 9:25	6/4/20 9:17 6/4/20 9:27	0.03 0.03	0.17	Johnson-Matthey high pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/4/2020
21	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/4/20 10:00 6/4/20 10:15	6/4/20 10:02 6/4/20 10:17	0.03 0.03	0.25	Auxiliary engine shutdown switch activated	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/4/2020
22	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/6/20 14:00 6/8/20 14:50	6/6/20 14:02 6/8/20 14:52	0.03 0.03	48.83	Willexa heater fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/8/2020
23	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/8/20 21:05 6/8/20 21:20	6/8/20 21:07 6/8/20 21:22	0.03 0.03	0.25	Flow computer reset	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/8/2020
24	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/9/20 19:05 6/9/20 20:50	6/9/20 19:07 6/9/20 20:52	0.03 0.03	1.75	High load level	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/9/2020

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	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/10/20 0:00 6/10/20 3:20	6/10/20 0:02 6/10/20 3:22	0.03 0.03	3.33	Gen. over current	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/10/2020
26	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/10/20 9:10 6/10/20 9:25	6/10/20 9:12 6/10/20 9:27	0.03 0.03	0.25	Remote E Stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/10/2020
27	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/10/20 9:45 6/10/20 10:10	6/10/20 9:47 6/10/20 10:12	0.03 0.03	0.42	Remote E Stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/10/2020
28	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/10/20 10:40 6/10/20 10:50	6/10/20 10:42 6/10/20 10:52	0.03 0.03	0.17	Over speed	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/10/2020
29	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/10/20 10:55 6/10/20 11:50	6/10/20 10:57 6/10/20 11:52	0.03 0.03	0.92	Remote E Stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/10/2020
30	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/10/20 11:55 6/10/20 12:25	6/10/20 11:57 6/10/20 12:27	0.03 0.03	0.50	Remote E Stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/10/2020
31	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/10/20 12:30 6/10/20 12:55	6/10/20 12:32 6/10/20 12:57	0.03 0.03	0.42	Remote E Stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/10/2020
32	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/10/20 13:15 6/11/20 10:05	6/10/20 13:17 6/11/20 10:07	0.03 0.03	20.83	Remote E Stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/11/2020
33	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/11/20 23:55 6/12/20 0:30	6/11/20 23:57 6/12/20 0:32	0.03 0.03	0.58	Remote E Stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/12/2020
34	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/12/20 18:15 6/12/20 18:30	6/12/20 18:17 6/12/20 18:32	0.03 0.03	0.25	Remote E Stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/12/2020
35	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/13/20 16:25 6/13/20 16:35	6/13/20 16:27 6/13/20 16:37	0.03 0.03	0.17	Remote E Stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/13/2020
36	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/13/20 16:40 6/13/20 16:50	6/13/20 16:42 6/13/20 16:52	0.03 0.03	0.17	Remote E Stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/13/2020

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	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/13/20 17:10 6/13/20 18:50	6/13/20 17:12 6/13/20 18:52	0.03 0.03	1.67	Remote E Stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/13/2020
38	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/14/20 8:30 6/14/20 10:25	6/14/20 8:32 6/14/20 10:27	0.03 0.03	1.92	Remote E Stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/14/2020
39	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/15/20 19:30 6/15/20 20:55	6/15/20 19:32 6/15/20 20:57	0.03 0.03	1.42	Remote E Stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/15/2020
40	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/15/20 21:00 6/15/20 21:15	6/15/20 21:02 6/15/20 21:17	0.03 0.03	0.25	Remote E Stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/15/2020
41	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/16/20 8:55 6/16/20 9:50	6/16/20 8:57 6/16/20 9:52	0.03 0.03	0.92	Detonation cyl.#3	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/16/2020
42	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/16/20 14:25 6/16/20 14:40	6/16/20 14:27 6/16/20 14:42	0.03 0.03	0.25	Remote E Stop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/16/2020
43	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/18/20 1:20 6/19/20 11:05	6/18/20 1:22 6/19/20 11:07	0.03 0.03	33.75	Replace cylinder #9	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/19/2020
44	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/19/20 12:40 6/19/20 14:20	6/19/20 12:42 6/19/20 14:22	0.03 0.03	1.67	Replace #9 thermocoupler	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/19/2020
45	x Shutdown x Startup Malfunction	Engine #2 (S-65)	6/30/20 18:10 6/30/20 18:30	6/30/20 18:12 6/30/20 18:32	0.03 0.03	0.33	Oil & filters change	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	6/30/2020
46	x Shutdown x Startup Malfunction	Engine #2 (S-65)	7/2/20 5:25 7/2/20 8:10	7/2/20 5:27 7/2/20 8:12	0.03 0.03	2.75	Loss of Utility	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/2/2020
47	x Shutdown x Startup Malfunction	Engine #2 (S-65)	7/7/20 14:05 7/8/20 15:00	7/7/20 14:07 7/8/20 15:02	0.03 0.03	24.92	Gas field maintenance	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/8/2020
48	x Shutdown x Startup Malfunction	Engine #2 (S-65)	7/9/20 12:25 7/9/20 12:50	7/9/20 12:27 7/9/20 12:52	0.03 0.03	0.42	Exchange ECMP4	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	7/9/2020

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	x Shutdown x Startup Malfunction	Engine #2 (S-65)	7/9/20 13:05 7/9/20 13:15	7/9/20 13:07 7/9/20 13:17	0.03 0.03	0.17	Johnson_Matthey high pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/9/2020
50	x Shutdown x Startup Malfunction	Engine #2 (S-65)	7/10/20 15:20 7/10/20 16:05	7/10/20 15:22 7/10/20 16:07	0.03 0.03	0.75	Trouble shoot ECMP4	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	7/10/2020
51	x Shutdown x Startup Malfunction	Engine #2 (S-65)	7/10/20 17:40 7/10/20 17:50	7/10/20 17:42 7/10/20 17:52	0.03 0.03	0.17	Trouble shoot ECMP4	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) X Automatic (Go to 9) X 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/10/2020
52	x Shutdown x Startup Malfunction	Engine #2 (S-65)	7/10/20 22:15 7/10/20 23:25	7/10/20 22:17 7/10/20 23:27	0.03 0.03	1.17	Low load fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/10/2020
53	x Shutdown x Startup Malfunction	Engine #2 (S-65)	7/10/20 23:40 7/11/20 8:10	7/10/20 23:42 7/11/20 8:12	0.03 0.03	8.50	Low methane	x 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		P Madison	7/11/2020
54	x Shutdown x Startup Malfunction	Engine #2 (S-65)	7/11/20 9:40 7/11/20 9:50	7/11/20 9:42 7/11/20 9:52	0.03 0.03	0.17	Johnson-Matthey high pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/11/2020
55	x Shutdown x Startup Malfunction	Engine #2 (S-65)	7/14/20 8:20 7/17/20 13:55	7/14/20 8:22 7/17/20 13:57	0.03 0.03	77.58	Inframe Overhaul	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	7/17/2020
56	x Shutdown x Startup Malfunction	Engine #2 (S-65)	7/17/20 14:10 7/17/20 14:40	7/17/20 14:12 7/17/20 14:42	0.03 0.03	0.50	Oil change service	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	7/17/2020
57	x Shutdown x Startup Malfunction	Engine #2 (S-65)	7/18/20 7:40 7/18/20 10:25	7/18/20 7:42 7/18/20 10:27	0.03 0.03	2.75	Valve lash adjustment	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	7/18/2020
58	x Shutdown x Startup Malfunction	Engine #2 (S-65)	7/18/20 10:40 7/18/20 10:50	7/18/20 10:42 7/18/20 10:52	0.03 0.03	0.17	Engine estop	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/18/2020
59	x Shutdown x Startup Malfunction	Engine #2 (S-65)	7/18/20 11:00 7/18/20 11:15	7/18/20 11:02 7/18/20 11:17	0.03 0.03	0.25	Johnson-Matthey high pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/18/2020
60	x Shutdown x Startup Malfunction	Engine #2 (S-65)	7/19/20 10:00 7/19/20 11:30	7/19/20 10:02 7/19/20 11:32	0.03 0.03	1.50	Auxillary switch shutdown	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/19/2020
			7/21/20 22:05	7/21/20 22:07	0.03			x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			

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	x Shutdown x Startup Malfunction	Engine #2 (S-65)	7/21/20 22:55	7/21/20 22:57	0.03	1.17	Low load fault	x 116: Well Raising 117: Gas Collection 118: Construction Activities	x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	1 to 3 Procedures 1 to 4	No Yes (Go to 9) x No	x No Yes (Go to 10) No		P Madison	7/21/2020
62	x Shutdown x Startup Malfunction	Engine #2 (S-65)	7/22/20 12:05 7/22/20 18:35	7/22/20 12:07 7/22/20 18:37	0.03 0.03	6.50	Engine overspeed, offline for emissions testing unit 1	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/22/2020
63	x Shutdown x Startup Malfunction	Engine #2 (S-65)	7/22/20 19:10 7/22/20 19:20	7/22/20 19:12 7/22/20 19:22	0.03 0.03	0.17	Johnson-Matthey high pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/22/2020
64	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/2/20 5:30 8/2/20 8:20	8/2/20 5:32 8/2/20 8:22	0.03 0.03	2.83	Power outage	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/2/2020
65	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/2/20 8:40 8/2/20 9:00	8/2/20 8:42 8/2/20 9:02	0.03 0.03	0.33	Console readings not registering	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	8/2/2020
66	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/4/20 14:00 8/4/20 14:10	8/4/20 14:02 8/4/20 14:12	0.03 0.03	0.17	Generator Low Load Shutdown	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/4/2020
67	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/13/20 16:10 8/13/20 16:20	8/13/20 16:12 8/13/20 16:22	0.03 0.03	0.17	Generator Low Load Shutdown	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/13/2020
68	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/25/20 7:15 8/25/20 7:45	8/25/20 7:17 8/25/20 7:47	0.03 0.03	0.50	Oil & Filters service	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	8/25/2020
69	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/25/20 7:45 8/25/20 12:35	8/25/20 7:47 8/25/20 12:37	0.03 0.03	4.83	Repaired Air intake	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	8/25/2020
70	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/25/20 12:45 8/25/20 13:25	8/25/20 12:47 8/25/20 13:27	0.03 0.03	0.67	Johnson-Matthey high pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/25/2020
71	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/25/20 22:55 8/26/20 0:00	8/25/20 22:57 8/26/20 0:02	0.03 0.03	1.08	Power outage	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/26/2020
72	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/28/20 22:55 8/28/20 23:10	8/28/20 22:57 8/28/20 23:12	0.03 0.03	0.25	Low Load fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/28/2020
			8/28/20 23:30	8/28/20 23:32	0.03			x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			

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
73	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/28/20 23:40	8/28/20 23:42	0.03	0.17	Low load fault	116: Well Raising 117: Gas Collection 118: Construction Activities	x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	1 to 3 Procedures 1 to 4	No Yes (Go to 9) x No	x No Yes (Go to 10) No		P Madison	8/28/2020
74	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/29/20 5:40 8/29/20 10:25	8/29/20 5:42 8/29/20 10:27	0.03 0.03	4.75	Johnson-Matthey high pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/29/2020
75	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/29/20 12:40 8/29/20 13:00	8/29/20 12:42 8/29/20 13:02	0.03 0.03	0.33	Cyl.12 exhaust temp deviating low	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/29/2020
76	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/29/20 15:10 8/29/20 15:20	8/29/20 15:12 8/29/20 15:22	0.03 0.03	0.17	Low load fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/29/2020
77	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/29/20 15:45 8/29/20 16:00	8/29/20 15:47 8/29/20 16:02	0.03 0.03	0.25	Low load fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/29/2020
78	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/29/20 18:35 8/29/20 18:45	8/29/20 18:37 8/29/20 18:47	0.03 0.03	0.17	Low load fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/29/2020
79	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/29/20 19:45 8/30/20 11:10	8/29/20 19:47 8/30/20 11:12	0.03 0.03	15.42	Low load fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	8/30/2020
80	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/30/20 11:55 8/30/20 12:30	8/30/20 11:57 8/30/20 12:32	0.03 0.03	0.58	SCR inlet temp high	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/30/2020
81	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/30/20 16:00 8/30/20 21:05	8/30/20 16:02 8/30/20 21:07	0.03 0.03	5.08	Cooling blower VFD has faulted	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/30/2020
82	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/31/20 0:00 8/31/20 9:15	8/31/20 0:02 8/31/20 9:17	0.03 0.03	9.25	Johnson-Matthey SCR inlet temp high	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/31/2020
83	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/31/20 12:25 8/31/20 12:45	8/31/20 12:27 8/31/20 12:47	0.03 0.03	0.33	Johnson-Matthey cooling dampner faulted	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/31/2020
84	x Shutdown x Startup Malfunction	Engine #2 (S-65)	8/31/20 12:45 8/31/20 15:05	8/31/20 12:47 8/31/20 15:07	0.03 0.03	2.33	Johnson-Matthey blower failure Currently off	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	8/31/2020
			9/1/20 0:00	9/1/20 0:02	0.03			x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			

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
85	x Shutdown x Startup Malfunction	Engine #2 (S-65)	9/1/20 13:00	9/1/20 13:02	0.03	13.00	Johnson-Matthey blower failure	116: Well Raising 117: Gas Collection 118: Construction Activities	x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	1 to 3 Procedures 1 to 4	No Yes (Go to 9) x No	x No Yes (Go to 10) No		P Madison	9/1/2020
86	x Shutdown x Startup Malfunction	Engine #2 (S-65)	9/1/20 18:45 9/1/20 18:55	9/1/20 18:47 9/1/20 18:57	0.03 0.03	0.17	J/M blower motor fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/1/2020
87	x Shutdown x Startup Malfunction	Engine #2 (S-65)	9/1/20 19:50 9/4/20 18:00	9/1/20 19:52 9/4/20 18:02	0.03 0.03	70.17	J/M blower motor fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/4/2020
88	x Shutdown x Startup Malfunction	Engine #2 (S-65)	9/4/20 20:35 9/5/20 8:20	9/4/20 20:37 9/5/20 8:22	0.03 0.03	11.75	J/M blower motor fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/5/2020
89	x Shutdown x Startup Malfunction	Engine #2 (S-65)	9/5/20 9:15 9/6/20 12:25	9/5/20 9:17 9/6/20 12:27	0.03 0.03	27.17	J/M blower motor fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/6/2020
90	x Shutdown x Startup Malfunction	Engine #2 (S-65)	9/6/20 14:25 9/6/20 14:40	9/6/20 14:27 9/6/20 14:42	0.03 0.03	0.25	J/M blower motor fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/6/2020
91	x Shutdown x Startup Malfunction	Engine #2 (S-65)	9/6/20 15:55 9/6/20 18:00	9/6/20 15:57 9/6/20 18:02	0.03 0.03	2.08	J/M blower motor fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/6/2020
92	x Shutdown x Startup Malfunction	Engine #2 (S-65)	9/6/20 19:20 9/6/20 22:35	9/6/20 19:22 9/6/20 22:37	0.03 0.03	3.25	J/M blower motor fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/6/2020
93	x Shutdown x Startup Malfunction	Engine #2 (S-65)	9/7/20 0:30 9/11/20 11:10	9/7/20 0:32 9/11/20 11:12	0.03 0.03	106.67	J/M blower motor fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/11/2020
94	x Shutdown x Startup Malfunction	Engine #2 (S-65)	9/13/20 11:35 9/13/20 14:00	9/13/20 11:37 9/13/20 14:02	0.03 0.03	2.42	High load Shutdown	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/13/2020
95	x Shutdown x Startup Malfunction	Engine #2 (S-65)	9/14/20 11:15 9/14/20 11:30	9/14/20 11:17 9/14/20 11:32	0.03 0.03	0.25	High load Shutdown	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/14/2020
96	x Shutdown x Startup Malfunction	Engine #2 (S-65)	9/15/20 1:45 9/15/20 5:45	9/15/20 1:47 9/15/20 5:47	0.03 0.03	4.00	Fuel gas compressor	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/15/2020
			9/17/20 9:30	9/17/20 9:32	0.03			x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			

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
97	x Shutdown x Startup Malfunction	Engine #2 (S-65)	9/17/20 9:30	9/17/20 9:32	0.03	0.92	Low load fault	116: Well Raising 117: Gas Collection 118: Construction Activities	x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	1 to 3 Procedures 1 to 4	No Yes (Go to 9) x No	x No Yes (Go to 10) No		P Madison	9/17/2020
			9/17/20 10:25	9/17/20 10:27	0.03										
98	x Shutdown x Startup Malfunction	Engine #2 (S-65)	9/17/20 19:20	9/17/20 19:22	0.03	0.42	High load shutdown	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/17/2020
			9/17/20 19:45	9/17/20 19:47	0.03										
99	x Shutdown x Startup Malfunction	Engine #2 (S-65)	9/17/20 20:20	9/17/20 20:22	0.03	0.50	Johnson_Matthey high pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/17/2020
			9/17/20 20:50	9/17/20 20:52	0.03										
100	x Shutdown x Startup Malfunction	Engine #2 (S-65)	9/20/20 21:20	9/20/20 21:22	0.03	0.42	Power outage	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/20/2020
			9/20/20 21:45	9/20/20 21:47	0.03										
101	x Shutdown x Startup Malfunction	Engine #2 (S-65)	9/21/20 13:30	9/21/20 13:32	0.03	0.42	Low load level shutdown	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/21/2020
			9/21/20 13:55	9/21/20 13:57	0.03										
102	x Shutdown x Startup Malfunction	Engine #2 (S-65)	9/21/20 14:35	9/21/20 14:37	0.03	0.42	Low load level shutdown	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/21/2020
			9/21/20 15:00	9/21/20 15:02	0.03										
103	x Shutdown x Startup Malfunction	Engine #2 (S-65)	9/21/20 15:10	9/21/20 15:12	0.03	224.83	Main engine harness malfunction-Currently off	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/1/2020
			10/1/20 0:00	10/1/20 0:02	0.03										
104	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/1/20 0:00	10/1/20 0:02	0.03	133.00	Main engine harnes malfunction/repair	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/6/2020
			10/6/20 13:00	10/6/20 13:02	0.03										
105	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/6/20 13:40	10/6/20 13:42	0.03	0.67	Cyl. 14-16 det. Sensor high voltage	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/6/2020
			10/6/20 14:20	10/6/20 14:22	0.03										
106	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/14/20 15:35	10/14/20 15:37	0.03	19.25	Radiator fan VFD failed	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/15/2020
			10/15/20 10:50	10/15/20 10:52	0.03										
107	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/16/20 14:05	10/16/20 14:07	0.03	2.17	Cylinder 14 exhaust temp deviating low	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/16/2020
			10/16/20 16:15	10/16/20 16:17	0.03										
108	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/16/20 19:10	10/16/20 19:12	0.03	0.50	Engine overspeed	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/16/2020
			10/16/20 19:40	10/16/20 19:42	0.03										
			10/17/20 0:55	10/17/20 0:57	0.03			x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			

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
109	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/17/20 2:40	10/17/20 2:42	0.03	1.75	Cylinder 16 exhaust temp deviating low	116: Well Raising 117: Gas Collection 118: Construction Activities	x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	1 to 3 Procedures 1 to 4	No Yes (Go to 9) x No	x No Yes (Go to 10) No		P Madison	10/17/2020
110	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/17/20 5:05 10/17/20 8:40	10/17/20 5:07 10/17/20 8:42	0.03 0.03	3.58	Cylinder 20 exhaust temp deviating low	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/17/2020
111	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/17/20 17:30 10/17/20 18:05	10/17/20 17:32 10/17/20 18:07	0.03 0.03	0.58	Burnt wiring harness causing engine under temp.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/17/2020
112	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/17/20 18:20 10/18/20 4:10	10/17/20 18:22 10/18/20 4:12	0.03 0.03	9.83	Burnt wiring harness causing engine under temp.	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/18/2020
113	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/19/20 16:30 10/19/20 16:45	10/19/20 16:32 10/19/20 16:47	0.03 0.03	0.25	Cylinder 16 exhaust temp deviating low	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/19/2020
114	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/19/20 18:20 10/20/20 1:50	10/19/20 18:22 10/20/20 1:52	0.03 0.03	7.50	Bad ignition harness	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/20/2020
115	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/20/20 3:45 10/20/20 9:10	10/20/20 3:47 10/20/20 9:12	0.03 0.03	5.42	Bad ignition harness	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/20/2020
116	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/20/20 15:25 10/20/20 15:35	10/20/20 15:27 10/20/20 15:37	0.03 0.03	0.17	Johnson-Mathey high pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/20/2020
117	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/20/20 15:50 10/20/20 16:00	10/20/20 15:52 10/20/20 16:02	0.03 0.03	0.17	Johnson-Mathey high pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/20/2020
118	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/21/20 2:20 10/21/20 4:25	10/21/20 2:22 10/21/20 4:27	0.03 0.03	2.08	Cylinder 16 exhaust temp deviating low	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/21/2020
119	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/21/20 4:35 10/21/20 4:50	10/21/20 4:37 10/21/20 4:52	0.03 0.03	0.25	Clylinder 14-16 detonation sensor	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/21/2020
120	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/21/20 5:10 10/21/20 5:20	10/21/20 5:12 10/21/20 5:22	0.03 0.03	0.17	Johnson-Mathey high pressure fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/21/2020
			10/21/20 6:10	10/21/20 6:12	0.03			x 113: Inspection/Maintenance	Manual (Go to 7)	Procedures	Yes (Go to 9)	Yes (Go to 10)			

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
121	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/21/20 6:20	10/21/20 6:22	0.03	0.17	Cylinder 16 exhaust temp deviating low	116: Well Raising 117: Gas Collection 118: Construction Activities	x Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	1 to 3 Procedures 1 to 4	No Yes (Go to 9) x No	x No Yes (Go to 10) No		P Madison	10/21/2020
122	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/21/20 8:55 10/21/20 9:10	10/21/20 8:57 10/21/20 9:12	0.03 0.03	0.25	Cylinder 16 exhaust temp deviating low	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/21/2020
123	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/21/20 9:40 10/21/20 10:10	10/21/20 9:42 10/21/20 10:12	0.03 0.03	0.50	Cylinder 16 exhaust temp deviating low	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/21/2020
124	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/22/20 9:15 10/22/20 10:05	10/22/20 9:17 10/22/20 10:07	0.03 0.03	0.83	High load fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/22/2020
125	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/23/20 10:20 10/23/20 10:55	10/23/20 10:22 10/23/20 10:57	0.03 0.03	0.58	Power outage	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/23/2020
126	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/23/20 10:55 10/23/20 14:40	10/23/20 10:57 10/23/20 14:42	0.03 0.03	3.75	Wellfield pipe work	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/23/2020
127	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/25/20 7:50 10/26/20 10:30	10/25/20 7:52 10/26/20 10:32	0.03 0.03	26.67	High load fault/Engine no start dignosis/replace odd side ignition harness	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/26/2020
128	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/26/20 16:15 10/27/20 11:45	10/26/20 16:17 10/27/20 11:47	0.03 0.03	19.50	Johnson-Matthey high SCR inlet temp	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/27/2020
129	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/27/20 16:50 10/31/20 18:00	10/27/20 16:52 10/31/20 18:02	0.03 0.03	97.17	Remote e-stop/ throttle acuator	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/31/2020
130	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/31/20 21:55 10/31/20 22:10	10/31/20 21:57 10/31/20 22:12	0.03 0.03	0.25	Low load fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/31/2020
131	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/31/20 22:45 10/31/20 23:00	10/31/20 22:47 10/31/20 23:02	0.03 0.03	0.25	Low load fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/31/2020
132	x Shutdown x Startup Malfunction	Engine #2 (S-65)	10/31/20 23:40 10/31/20 23:55	10/31/20 23:42 10/31/20 23:57	0.03 0.03	0.25	Low load fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/31/2020

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
1	x Shutdown x Startup Malfunction	Treatment System (S-71)	5/28/20 15:05 5/31/20 12:05	5/28/20 15:07 5/31/20 12:07	0.03 0.03	69.00	Willexa failure/repairs	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	5/31/2020
2	x Shutdown x Startup Malfunction	Treatment System (S-71)	6/3/20 12:30 6/4/20 6:50	6/3/20 12:32 6/4/20 6:52	0.03 0.03	18.33	Fan vibration switch	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	6/4/2020
3	x Shutdown x Startup Malfunction	Treatment System (S-71)	6/6/20 14:00 6/8/20 14:50	6/6/20 14:02 6/8/20 14:52	0.03 0.03	48.83	Willexa heater fault	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	6/8/2020
No S-71 SSM events in July 2020															
4	x Shutdown x Startup Malfunction	Treatment System (S-71)	8/2/20 5:30 8/2/20 8:30	8/2/20 5:32 8/2/20 8:32	0.03 0.03	3.00	Power outage	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/1/2020
5	x Shutdown x Startup Malfunction	Treatment System (S-71)	8/25/20 8:05 8/25/20 12:25	8/25/20 8:07 8/25/20 12:27	0.03 0.03	4.33	Wellfield work	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		P Madison	7/2/2020
6	x Shutdown x Startup Malfunction	Treatment System (S-71)	8/25/20 22:55 8/26/20 0:00	8/25/20 22:57 8/26/20 0:02	0.03 0.03	1.08	Power outage	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	7/4/2020
7	x Shutdown x Startup Malfunction	Treatment System (S-71)	9/5/20 3:50 9/5/20 7:55	9/5/20 3:52 9/5/20 7:57	0.03 0.03	4.08	Gas compressor shutdown	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/5/2020
8	x Shutdown x Startup Malfunction	Treatment System (S-71)	9/5/20 23:15 9/6/20 12:30	9/5/20 23:17 9/6/20 12:32	0.03 0.03	13.25	Gas compressor shutdown	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	9/6/2020
9	x Shutdown x Startup Malfunction	Treatment System (S-71)	10/23/20 10:20 10/23/20 10:55	10/23/20 10:22 10/23/20 10:57	0.03 0.03	0.58	Utility outage	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/23/2020
10	x Shutdown x Startup Malfunction	Treatment System (S-71)	10/23/20 10:55 10/23/20 14:40	10/23/20 10:57 10/23/20 14:42	0.03 0.03	3.75	Wellfield pipe work	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	Manual (Go to 7) x Automatic (Go to 9) x 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) x No	Yes (Go to 10) x No Yes (Go to 10) No		P Madison	10/23/2020

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

Redwood Landfill, Novato, CA GCCS DOWNTIME REPORT Period:		May 1, 2020 to October 31, 2020	
SHUTDOWN DATE/TIME	**START-UP DATE/TIME**	**TOTAL DOWNTIME (hours)**	**COMMENTS/ACTION TAKEN**
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
		0.00	No GCCS Downtime in May 2020
06/08/20 14:02	06/08/20 14:08	0.10	Low flow shutdown. WMRE engines starting up.
06/17/20 09:44	06/17/20 10:02	0.30	Manual Shutdown for PLC maintenance
07/02/20 05:20	07/02/20 05:26	0.10	All control devices were shutdown due to a site-wide power surge. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.
07/07/20 14:10	07/07/20 17:48	3.63	Manual Shutdown to isolate GCCS from Brush Fire
07/08/20 16:34	07/08/20 17:54	1.33	Temperature alarm shutdown. System inspected and restarted.
07/08/20 19:52	07/08/20 20:18	0.43	Temperature alarm shutdown. System inspected, repaired, and restarted.
07/09/20 08:48	07/09/20 09:54	1.10	After A60 maintenance, operate system with A60 only.
07/17/20 12:58	07/17/20 13:04	0.10	Low flow alarm shutdown. WMRE engines starting up.
08/02/20 05:30	08/02/20 05:38	0.13	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.

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

Redwood Landfill, Novato, CA GCCS DOWNTIME REPORT Period:		May 1, 2020 to October 31, 2020	
SHUTDOWN DATE/TIME	**START-UP DATE/TIME**	**TOTAL DOWNTIME (hours)**	**COMMENTS/ACTION TAKEN**
08/25/20 09:20	08/25/20 10:42	1.37	Manual shutdown for well field maintenance.
08/25/20 22:54	08/25/20 22:58	0.07	All control devices were shutdown due to a site-wide power surge. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.
08/28/20 08:22	08/28/20 08:28	0.10	Low flow alarm shutdown. System inspected and restarted.
08/28/20 08:46	08/28/20 08:50	0.07	Flame alarm shutdown. System inspected and restarted.
08/28/20 10:44	08/28/20 10:48	0.07	Flame alarm shutdown. System inspected and restarted.
09/05/20 23:12	09/05/20 23:18	0.10	Low flow shutdown. System inspected after restart.
09/08/20 10:42	09/08/20 10:48	0.10	Flame alarm shutdown. WMRE engines starting up.
09/09/20 22:06	09/09/20 22:54	0.80	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.
09/10/20 21:22	09/10/20 21:28	0.10	Flame alarm shutdown. WMRE engines starting up.
09/10/20 21:54	09/10/20 22:00	0.10	Flame alarm shutdown. WMRE engines starting up.
09/10/20 22:26	09/10/20 22:34	0.13	Flame alarm shutdown. WMRE engines starting up.
09/11/20 02:36	09/11/20 02:42	0.10	Flame alarm shutdown. WMRE engines starting up.
09/11/20 03:16	09/11/20 03:20	0.07	Flame alarm shutdown. WMRE engines starting up.
09/20/20 21:18	09/20/20 21:22	0.07	All control devices were shutdown due to a site-wide power surge. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.
10/01/20 07:44	10/01/20 07:50	0.10	Manual shutdown for new flame arrestor installation.
10/01/20 11:48	10/01/20 11:54	0.10	Manual shutdown for new flame arrestor installation.
10/23/20 10:16	10/23/20 10:22	0.10	All control devices were shutdown due to a site-wide power surge. Inspected upon restart of the control devices. Visual inspections and PLC checks were conducted.

Combined Emission Control Devices	
January 1, 2020 through April 30, 2020 Total Downtime:	**0.50**
May 1, 2020 through October 31, 2020 Total Downtime:	**10.77**
Total 2020 Downtime:	**11.27**

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

APPENDIX C

BAAQMD CORRESPONDENCE

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

May 15, 2020

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

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 RLLC0207 was decommissioned on 5/14/2020.
- Vertical well RLLC0208 was decommissioned on 5/14/2020.

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 March 24, 2020 Well Actions Letter, prior to the completion of these well actions, RLI had 115 total collectors (106 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	9	0	0	-
Actions Remaining Under AN 30065	88	41	50	15	Unlimited
Active Collector Count after Actions in this Letter	113 Total Collectors: 104 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
Environmental Protection Specialist

Chan, Michael

From: Chan, Michael
Sent: Friday, May 15, 2020 4:30 PM
To: 'Simrun Dhoot'
Cc: McCutcheon, Alisha
Subject: Redwood Landfill Well Actions Notification
Attachments: 2020.05.15 - RLI Well Actions Letter DC RLLC0207 RLLC0208.pdf

Hi Simrun,

Attached is the Well Actions Notification for Redwood Landfill decommissioning two wells yesterday.

Thanks,

Mike

MICHAEL CHAN
EP Air Quality Specialist
mchan2@wm.com

T: 510.613.2852
C: 510.205.0410
172 98th Avenue
Oakland, CA 94603

WASTE MANAGEMENT

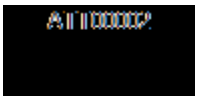
Chan, Michael

From: Microsoft Outlook <MicrosoftExchange329e71ec88ae4615bbc36ab6ce41109e@wm.com>
To: 'Simrun Dhoot'
Sent: Friday, May 15, 2020 4:30 PM
Subject: Relayed: Redwood Landfill Well Actions Notification

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

'Simrun Dhoot' (sdhoot@baaqmd.gov)

Subject: Redwood Landfill Well Actions Notification



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

June 23, 2020

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

Re: Redwood Landfill, Inc.
Facility Number A1179
Request for Limited Exemption (for construction activities) from Regulation 8, Rule 34 (Solid Waste Disposal Sites), Section 303 (Landfill Surface Requirements)

Dear Ms. Dhoot:

This letter requests a limited exemption from the requirements of Bay Area Air Quality Management District (BAAQMD) Regulation 8, Rule 34, Section 303 (Landfill Surface Requirements) during wellfield and gas collection and control system (GCCS) construction activities to be conducted from July 20, 2020 through September 30, 2020, at the Redwood Landfill, Inc. (RLI). This notification is submitted pursuant to the BAAQMD Regulation 8, Rule 34, Section 118, "Limited Exemptions for Construction Activities." The work consists of installation of new landfill gas (LFG) wells to maintain compliance with the BAAQMD Regulation 8, Rule 34.

The construction work is for the installation of new vertical and horizontal LFG collectors, repair of existing horizontal collectors and additional piping that will connect to the existing GCCS. This letter also transmits the BAAQMD-required construction plan (work plan) for the proposed work. The work plan contains information required pursuant to Regulation 8, Rule 34, Section 118.1 and AB-32 §95470(a)(1)(I) and (J) and includes:

- Description of actions being taken;
- Description of landfill areas affected;
- Description of LFG components affected;
- Map showing the above areas and components;
- Reason requiring the action;
- Construction schedule;
- Description of air quality mitigation measures planned; and
- Recordkeeping requirements.

No significant interruption of the current site LFG extraction and control operations is anticipated due to the work. The construction will begin on or after July 20, 2020. Construction activities will conclude by September 30, 2020.

Unless notified otherwise, RLI will proceed in accordance with the attached work plan. We deem submittal of this plan as approval by the BAAQMD to take necessary action to ensure compliance with regulations, which may include taking additional wells offline for an extended period of time pursuant to Regulation 8, Rule 34, Section 118.

If you have any questions, contact me at (510) 613-2852. Thank you for your consideration.

Sincerely,
Redwood Landfill, Inc.

Michael Chan
Environmental Protection Air Specialist

Attachment: BAAQMD Regulation 8, Rule 34 Construction Plan

cc: Ramin Khany, RLI
Glen Roycroft, RLI
Alisha McCutcheon, RLI
Bill Louis, WM

BAAQMD REGULATION 8, RULE 34 CONSTRUCTION PLAN

REDWOOD LANDFILL, INC.

2020 GCCS EXPANSION PROJECT

INTRODUCTION

This Construction Work Plan is submitted pursuant to Bay Area Air Quality Management District (BAAQMD) Regulation 8, Rule 34, Section 118: Limited Exemptions for Construction Activities. To obtain an exemption from BAAQMD Regulation 8, Rule 34, Section 303: Landfill Surface Requirements, the operator shall submit a construction plan in writing to the Air Pollution Control Officer (APCO) prior to beginning any construction activities. In addition, this plan also includes information required by the AB-32 Sections §95470(a)(1)(I) and (J).

BAAQMD Section 303 requires maintaining the concentration of organic compounds and methane below 500 parts per million by volume (ppm_v) at all points on the landfill surface. Section 118 provides an exemption from the surface emission standard for *"….areas of the landfill surface where the landfill cover material has been removed and refuse has been exposed for the express purpose of installing, expanding, replacing, or repairing components of the landfill gas, leachate, or gas condensate collection and removal systems."*

Pursuant to Regulation 8, Rule 34, Section 118 and AB-32 Sections §95470(a)(1)(I) and (J), this work plan includes:

- Description of actions being taken;
- Description of landfill areas affected;
- Description of landfill gas (LFG) components affected;
- Map showing the affected areas and components;
- Reason requiring the action;
- Construction schedule;
- Description of air quality mitigation measures planned; and
- Recordkeeping requirements.

ACTIONS BEING TAKEN

The work consists of the following:

- Installation of up to fifteen (15) vertical wells (currently plan to install 10);
- Header and lateral piping installation/upgrading.

AFFECTED LANDFILL AREAS

The construction activities will occur in the areas shown in the attached figure.

AFFECTED LFG COMPONENTS

It is anticipated that construction will have no significant impact on the routine operation of the existing GCCS. Installation of new wells is independent of the ongoing operations of the GCCS. When connecting the collector, isolation valves installed within the existing GCCS piping network will be used to minimize the number of existing wells offline at any given time while the newly installed wells are connected to the GCCS. Regulation 8-34-117 will be used to manage offline wells.

REASONS FOR ACTIONS

The proposed construction work is intended to:

- Install new LFG collectors;
- Install new header and later system piping; and
- Increase LFG collection efficiency to further reduce the potential for surface emissions.

CONSTRUCTION SCHEDULE

Construction activities will commence on or after July 20, 2020 and will be completed no later than September 30, 2020.

AIR QUALITY MITIGATION MEASURES

Emission of raw LFG will be minimized during construction. We anticipate minimal interruption of the overall site LFG extraction and control operations during the work. Installation of new wells is independent of ongoing operations of the existing GCCS. Air quality mitigation will be provided during the installation and connection of collectors to existing GCCS piping network. These mitigation measures are presented below and are designed to meet both the requirements of 8-34 Section 118 and §95470(a)(1)(I).

Due to the minimal amount of excavation planned for this work, air quality impacts are also anticipated to be minimal. Air quality mitigation will be provided during the following work tasks:

- Drilling of wells
- Excavation and backfill of pipe trenches;
- Installation of new header and lateral piping and
- Connection of the new collectors to new and existing piping

During excavation through waste and soil cover, air emission will be controlled by implementing the following measures:

- Minimizing the installation time for each component;

- Minimizing the quantity of open borings or trench excavations at any one time;

- Relocating excavated refuse to the designated waste disposal area immediately and covering the relocated waste daily by no later than the end of each day; and

- Well borings and/or trenches will not be left open overnight or for periods greater than 8 hours

During connection of the collector the existing LFG piping, and installation of header pipe, air emissions will be controlled by implementing the following measures:

- Capping or blind flanging of all pipes and collector openings, which will remain sealed until time of connection to a vacuum source;

- Using isolation valves;

- Minimizing installation time for making each connection; and

- Minimizing the amount of open pipe during each installation, by using flange joints and flexible couplings.

RECORDKEEPING

The following records will be retained during the project:

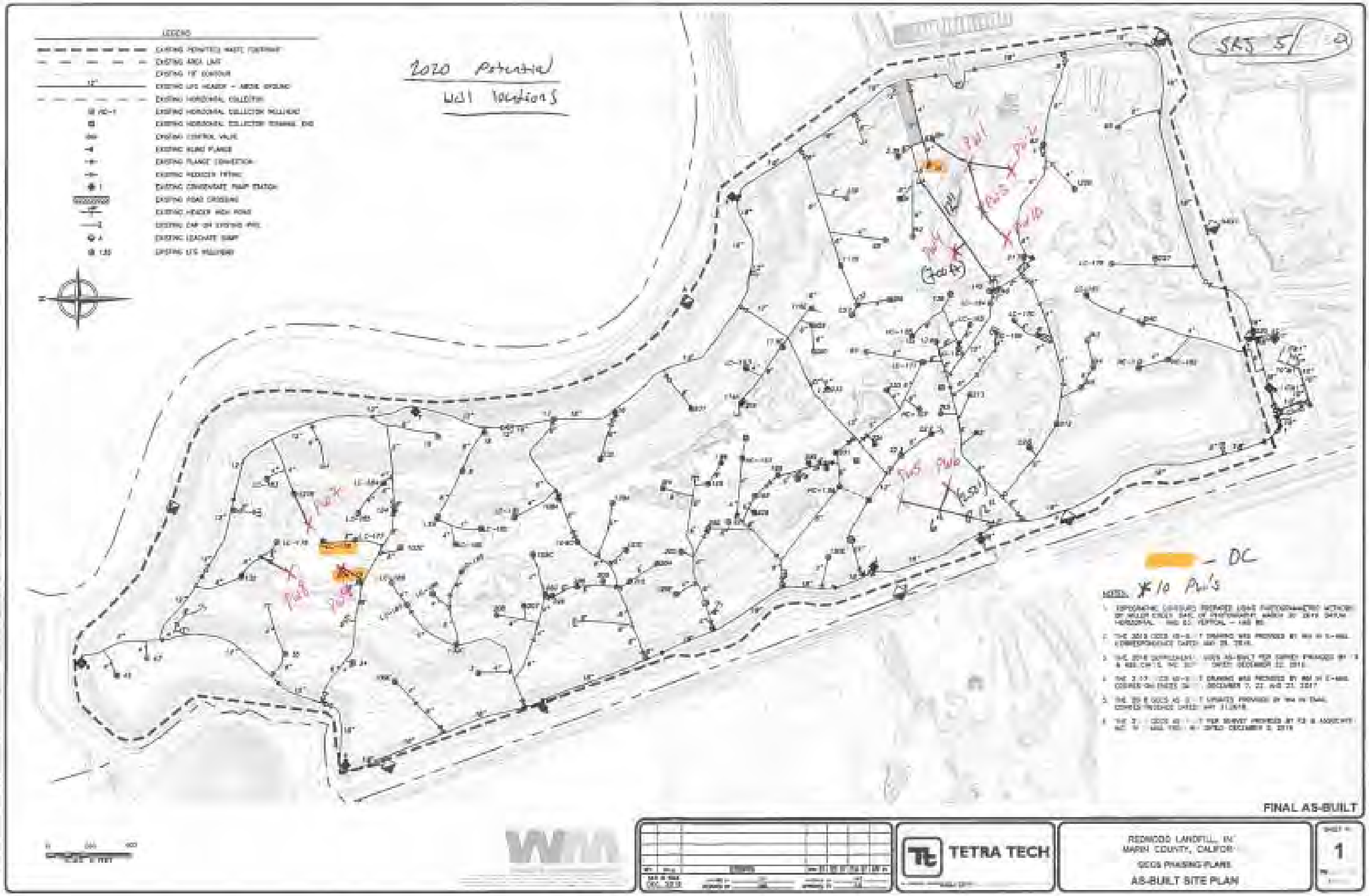
- Construction start and end dates, projected and actual equipment installation dates, and projected shut down times for individual gas collection system components.

- GCCS downtime and individual well shutdown times will be documented in accordance with the RLI's Startup, Shutdown, and Malfunction (SSM) Plan.

- Mitigation measures taken to minimize methane emissions and other potential air quality impacts will be documented.

- The construction and initial operating dates and times for each LFG extraction well shall be recorded, pursuant to requirements for documenting individual LFG well shutdown times in Regulation 8, Rule 34, Section 501. A start-up letter shall be provided to the BAAQMD to provide notification once vacuum is applied to the new LFG extraction wells.

Attachment: Figure 1 - Gas Collection and Control System Layout


LEGEND
2020 Potential
WSI locations
SRJ 5/
DC
*10 PW's
NOTES:
FINAL AS-BUILT
TETRA TECH
REDWOOD LANDFILL, IN
MARIN COUNTY, CALIFOR
GCCS PHASING PLANS
AS-BUILT SITE PLAN
1

Chan, Michael

From: Chan, Michael
Sent: Tuesday, June 23, 2020 1:07 PM
To: 'Simrun Dhoot'
Subject: Redwood Landfill construction notification of new wells
Attachments: 2020.06.23 - RLI 118 Letter GCCS Expansion.pdf

Hi Simrun,

Attached is the construction notification of Redwood Landfill's plan to install new wells. The new wells will increase the vacuum/volume of treated gases from the landfill which will help reduce surface emissions.

Hope you are safe and healthy,

Mike

MICHAEL CHAN
EP Air Quality Specialist
mchan2@wm.com

T: 510.613.2852
C: 510.205.0410
172 98th Avenue
Oakland, CA 94603

WASTE MANAGEMENT

Chan, Michael

From: Microsoft Outlook <MicrosoftExchange329e71ec88ae4615bbc36ab6ce41109e@wm.com>
To: 'Simrun Dhoot'
Sent: Tuesday, June 23, 2020 1:07 PM
Subject: Relayed: Redwood Landfill construction notification of new wells

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

'Simrun Dhoot' (sdhoot@baaqmd.gov)

Subject: Redwood Landfill construction notification of new wells

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

July 9, 2020

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

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 RLLC0165 was decommissioned on 7/7/2020.
- Vertical well RLLC0166 was decommissioned on 7/7/2020.
- Horizontal collector RLI00089 was decommissioned on 7/8/2020.
- Horizontal collector RLIHC105 was decommissioned on 7/8/2020.
- Vertical well RLLC0169 was decommissioned on 7/8/2020.
- Vertical well RLLC0170 was decommissioned on 7/8/2020.
- Vertical well RLLC0171 was decommissioned on 7/8/2020.
- Vertical well RLLC0213 was decommissioned on 7/8/2020.

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 May 15, 2020 Well Actions Letter, prior to the completion of these well actions, RLI had 113 total collectors (104 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	15	0	2	-
Actions Remaining Under AN 30065	88	35	50	13	Unlimited
Active Collector Count after Actions in this Letter	105 Total Collectors: 98 Vertical LFG Wells and 7 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
Environmental Protection Specialist

Chan, Michael

From: Chan, Michael
Sent: Thursday, July 9, 2020 2:36 PM
To: 'Simrun Dhoot'
Cc: McCutcheon, Alisha
Subject: Redwood Landfill Well Actions Notification July 2020
Attachments: 2020.07.09 - RLI Well Actions Letter.pdf

Tracking:

Recipient	Delivery
'Simrun Dhoot'	
McCutcheon, Alisha	Delivered: 7/9/2020 2:36 PM

Hi Simrun,

Attached is the Well Actions Notification for Redwood Landfill decommissioning eight wells this week.

Thanks,

Mike

MICHAEL CHAN
EP Air Quality Specialist
mchan2@wm.com

T: 510.613.2852
C: 510.205.0410
172 98th Avenue
Oakland, CA 94603

WASTE MANAGEMENT

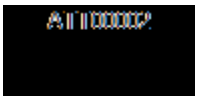
Chan, Michael

From: Microsoft Outlook <MicrosoftExchange329e71ec88ae4615bbc36ab6ce41109e@wm.com>
To: 'Simrun Dhoot'
Sent: Thursday, July 9, 2020 2:36 PM
Subject: Relayed: Redwood Landfill Well Actions Notification July 2020

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

'Simrun Dhoot' (sdhoot@baaqmd.gov)

Subject: Redwood Landfill Well Actions Notification July 2020



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

August 28, 2020

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

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 RLI00029 was decommissioned on 8/19/2020.
- Vertical well RLLC0175 was decommissioned on 8/19/2020.
- Vertical well RLLC0178 was decommissioned on 8/19/2020.

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 July 9, 2020 Well Actions Letter, prior to the completion of these well actions, RLI had 105 total collectors (98 vertical wells and 7 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	18	0	2	-
Actions Remaining Under AN 30065	88	32	50	13	Unlimited
Active Collector Count after Actions in this Letter	102 Total Collectors: 95 Vertical LFG Wells and 7 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
Environmental Protection Specialist

Chan, Michael

From: Chan, Michael
Sent: Friday, August 28, 2020 11:52 AM
To: 'Simrun Dhoot'
Cc: McCutcheon, Alisha
Subject: Redwood Landfill Well Actions Notification August 2020
Attachments: 2020.08.28 - RLI Well Actions Letter DC 029 175 178.pdf

Hi Simrun,

Attached is the Well Actions Notification for Redwood Landfill decommissioning three wells this month. We are installing new wells and expect to have them coming online in September.

Thanks,

Mike

MICHAEL CHAN
EP Air Quality Specialist
mchan2@wm.com

T: 510.613.2852
C: 510.205.0410
172 98th Avenue
Oakland, CA 94603

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

September 10, 2020

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

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 RLLC0246 added to the collection system on 9/1/2020.
- Vertical well RLLC0247 added to the collection system on 9/1/2020.
- Vertical well RLLC0248 added to the collection system on 9/1/2020.
- Vertical well RLLC0249 added to the collection system on 9/1/2020.
- Vertical well RLLC0250 added to the collection system on 9/1/2020.
- Vertical well RLLC0251 added to the collection system on 9/1/2020.
- Vertical well RLLC0255 added to the collection system on 9/1/2020.
- Vertical well RLLC0256 added to the collection system on 9/1/2020.
- Vertical well RLLC0252 added to the collection system on 9/10/2020.
- Vertical well RLLC0253 added to the collection system on 9/10/2020.
- Vertical well RLLC0254 added to the collection system on 9/10/2020.

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 August 28, 2020 Well Actions Letter, prior to the completion of these well actions, RLI had 102 total collectors (95 vertical wells and 7 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	23	18	0	2	-
Actions Remaining Under AN 30065	77	32	50	13	Unlimited
Active Collector Count after Actions in this Letter	113 Total Collectors: 106 Vertical LFG Wells and 7 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
Environmental Protection Specialist

Chan, Michael

From: Chan, Michael
Sent: Thursday, September 10, 2020 1:28 PM
To: 'Simrun Dhoot'
Cc: McCutcheon, Alisha
Subject: Redwood Landfill Well Actions Notification September 2020
Attachments: 2020.09.10 - RLI Well Actions Letter New Wells 246 247 248 249 250 251 252 253 254 255 256.pdf

Hi Simrun,

Attached is the Well Actions Notification letter that Redwood Landfill has installed 11 new wells.

Thanks,

Mike

MICHAEL CHAN
EP Air Quality Specialist
mchan2@wm.com

T: 510.613.2852
C: 510.205.0410
172 98th Avenue
Oakland, CA 94603

WASTE MANAGEMENT

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

October 8, 2020

Ms. Simrun Dhoot
Senior Air Quality Engineer
Bay Area Air Quality
Management District
375 Beale Street, Ste 600
San Francisco, California 94105
sdhoot@baaqmd.gov

Re: S-56/S-57 Equipment Surrender Letter
Redwood Landfill, Inc.
Facility Number A1179

Dear Ms. Dhoot:

Redwood Landfill, Inc. (RLI) hereby submits this request to the Bay Area Air Quality Management District (BAAQMD) to surrender and cancel the Permit to Operate (PTO) for S-56/S-57 Portable Horizontal Diesel Grinder/Engine formerly operated at the RLI in Novato, California. S-56/S-57 was permanently shut down and sold on November 22, 2019.

RLI looks forward to receiving confirmation that S-56/S-57 Portable Horizontal Diesel Grinder/Engine permit has been cancelled and requests this revision be included in RLI's next Title V update.

If you have any questions, contact me at (415) 408-9055. Thank you for your consideration.

Sincerely,
Redwood Landfill, Inc.

Alisha McCutcheon
Technical Manager

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.

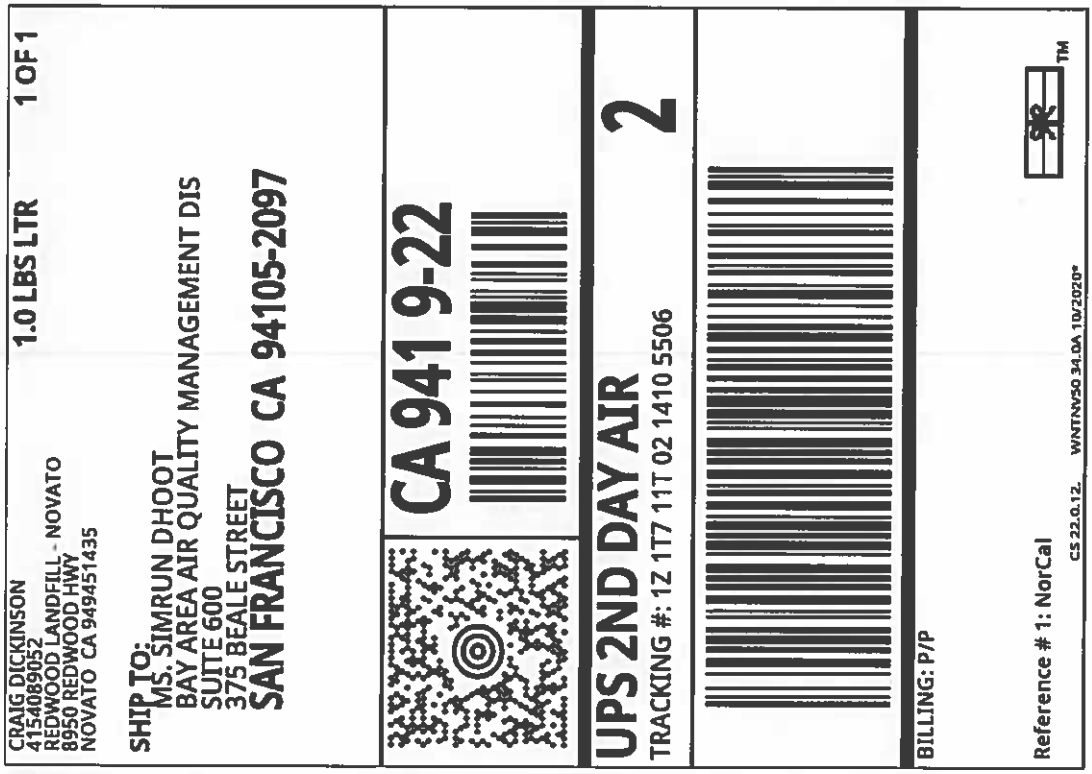
   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To 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™
NORTH BAY CHECK CASHING-AP643
926 GRANT AVE
NOVATO ,CA 94945

UPS Access Point™
CVS STORE # 9947
2035 NOVATO BLVD
NOVATO ,CA 94947

UPS Access Point™
THE UPS STORE
936 7TH ST
NOVATO ,CA 94945

FOLD HERE



Proof of Delivery

Dear Customer,

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

Tracking Number
1Z1T711T0214105506

Weight
1.00 LBS

Service

UPS 2nd Day Air®

Shipped / Billed On
10/13/2020

Delivered On

10/16/2020 11:26 A.M.

Delivered To
SAN FRANCISCO, CA, US

Received By

LAM

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: 10/16/2020 3:38 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	x Shutdown x Startup Malfunction	RLI0103C	11/13/19 10:30 10/23/20 14:45	11/13/19 10:32 10/23/20 14:47	0.03 0.03	8,284.25	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	10/23/2020
2	x Shutdown Startup Malfunction	RLLC0207	5/14/20 9:00 N/A	5/14/20 9:02	0.03	N/A	Well decommissioned pursuant to AN #30065 on 5/14/20	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) N/A	Procedures 1 to 3	Yes (Go to 9) x No N/A	Yes (Go to 10) No		Mike Chan	N/A
3	x Shutdown Startup Malfunction	RLLC0208	5/14/20 8:55 N/A	5/14/20 8:57	0.03	N/A	Well decommissioned pursuant to AN #30065 on 5/14/20	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) N/A	Procedures 1 to 3	Yes (Go to 9) x No N/A	Yes (Go to 10) No		Mike Chan	N/A
4	x Shutdown x Startup Malfunction	RLLC0242	5/26/20 11:15 5/27/20 7:50	5/26/20 11:17 5/27/20 7:52	0.03 0.03	20.58	Inspection/maintenance of well located in active fill area	x 113: Inspection/Maintenance 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	5/27/2020
5	x Shutdown x Startup Malfunction	RLLC0176	6/17/20 14:00 7/7/20 11:00	6/17/20 14:02 7/7/20 11:02	0.03 0.03	477.00	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	7/7/2020
6	x Shutdown x Startup Malfunction	RLLC0177	7/2/20 8:05 7/6/20 11:30	7/2/20 8:07 7/6/20 11:32	0.03 0.03	99.42	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	7/6/2020
7	x Shutdown x Startup Malfunction	RLI00134	7/6/20 9:25 7/28/20 10:55	7/6/20 9:27 7/28/20 10:57	0.03 0.03	529.50	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	7/28/2020
8	x Shutdown Startup Malfunction	RLLC0165	7/7/20 14:10 N/A	7/7/20 14:12	0.03	N/A	Manual shutdown to isolate from fire. Well decommissioned pursuant to AN #30065 on 7/7/20	113: Inspection/Maintenance 116: Well Raising x 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) N/A	Procedures 1 to 3	Yes (Go to 9) x No N/A	Yes (Go to 10) No		Mike Chan	7/7/2020
9	x Shutdown Startup Malfunction	RLLC0166	7/7/20 14:10 N/A	7/7/20 14:12	0.03	N/A	Manual shutdown to isolate from fire. Well decommissioned pursuant to AN #30065 on 7/7/20	113: Inspection/Maintenance 116: Well Raising x 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) N/A	Procedures 1 to 3	Yes (Go to 9) x No N/A	Yes (Go to 10) No		Mike Chan	7/7/2020
10	x Shutdown x Startup Malfunction	RLI00140	7/7/20 14:10 7/8/20 9:45	7/7/20 14:12 7/8/20 9:47	0.03 0.03	19.58	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	7/8/2020
11	x Shutdown x Startup Malfunction	RLI00142	7/7/20 14:10 7/8/20 9:45	7/7/20 14:12 7/8/20 9:47	0.03 0.03	19.58	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	7/8/2020
12	x Shutdown x Startup Malfunction	RLLC0217	7/7/20 14:10 7/8/20 9:45	7/7/20 14:12 7/8/20 9:47	0.03 0.03	19.58	Well raising, well located in active fill area	113: Inspection/Maintenance x 116: Well Raising 117: Gas Collection 118: Construction Activities	x Manual (Go to 7) Automatic (Go to 9) x Manual (Go to 7) Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	Yes (Go to 9) x No Yes (Go to 9) x No	Yes (Go to 10) No Yes (Go to 10) No		Mike Chan	7/8/2020

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	[x] Shutdown [x] Startup [ ] Malfunction	RLI00083	7/7/20 17:48 7/8/20 9:45	7/7/20 17:50 7/8/20 9:47	0.03 0.03	15.95	Manual shutdown to isolate from fire and repair well.	[ ] 113: Inspection/Maintenance [ ] 116: Well Raising [x] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) [x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	[ ] Yes (Go to 9) [x] No [ ] Yes (Go to 9) [x] No	[ ] Yes (Go to 10) [ ] No [ ] Yes (Go to 10) [ ] No		Mike Chan	7/8/2020
14	[x] Shutdown [x] Startup [ ] Malfunction	RLI0120D	7/7/20 17:48 7/8/20 9:45	7/7/20 17:50 7/8/20 9:47	0.03 0.03	15.95	Manual shutdown to isolate from fire and repair well.	[ ] 113: Inspection/Maintenance [ ] 116: Well Raising [x] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) [x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	[ ] Yes (Go to 9) [x] No [ ] Yes (Go to 9) [x] No	[ ] Yes (Go to 10) [ ] No [ ] Yes (Go to 10) [ ] No		Mike Chan	7/8/2020
15	[x] Shutdown [ ] Startup [ ] Malfunction	RLI00089	7/7/20 17:48 N/A	7/7/20 17:50	0.03	N/A	Manual shutdown to isolate from fire. Well decommissioned pursuant to AN #30065 on 7/8/20	[ ] 113: Inspection/Maintenance [ ] 116: Well Raising [x] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No	[ ] Yes (Go to 10) [ ] No		Mike Chan	7/8/2020
16	[x] Shutdown [ ] Startup [ ] Malfunction	RLIHC105	7/7/20 17:48 N/A	7/7/20 17:50	0.03	N/A	Manual shutdown to isolate from fire. Well decommissioned pursuant to AN #30065 on 7/8/20	[ ] 113: Inspection/Maintenance [ ] 116: Well Raising [x] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No	[ ] Yes (Go to 10) [ ] No		Mike Chan	7/8/2020
17	[x] Shutdown [ ] Startup [ ] Malfunction	RLLC0169	7/7/20 17:48 N/A	7/7/20 17:50	0.03	N/A	Manual shutdown to isolate from fire. Well decommissioned pursuant to AN #30065 on 7/8/20	[ ] 113: Inspection/Maintenance [ ] 116: Well Raising [x] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No	[ ] Yes (Go to 10) [ ] No		Mike Chan	7/8/2020
18	[x] Shutdown [ ] Startup [ ] Malfunction	RLLC0170	7/7/20 17:48 N/A	7/7/20 17:50	0.03	N/A	Manual shutdown to isolate from fire. Well decommissioned pursuant to AN #30065 on 7/8/20	[ ] 113: Inspection/Maintenance [ ] 116: Well Raising [x] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No	[ ] Yes (Go to 10) [ ] No		Mike Chan	7/8/2020
19	[x] Shutdown [ ] Startup [ ] Malfunction	RLLC0171	7/7/20 17:48 N/A	7/7/20 17:50	0.03	N/A	Manual shutdown to isolate from fire. Well decommissioned pursuant to AN #30065 on 7/8/20	[ ] 113: Inspection/Maintenance [ ] 116: Well Raising [x] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No	[ ] Yes (Go to 10) [ ] No		Mike Chan	7/8/2020
20	[x] Shutdown [ ] Startup [ ] Malfunction	RLLC0213	7/7/20 17:48 N/A	7/7/20 17:50	0.03	N/A	Manual shutdown to isolate from fire. Well decommissioned pursuant to AN #30065 on 7/8/20	[ ] 113: Inspection/Maintenance [ ] 116: Well Raising [x] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No	[ ] Yes (Go to 10) [ ] No		Mike Chan	7/8/2020
21	[x] Shutdown [x] Startup [ ] Malfunction	RLLC0186	7/13/20 10:30 8/14/20 8:40	7/13/20 10:32 8/14/20 8:42	0.03 0.03	766.17	Well raising, well located in active fill area	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) [x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	[ ] Yes (Go to 9) [x] No [ ] Yes (Go to 9) [x] No	[ ] Yes (Go to 10) [ ] No [ ] Yes (Go to 10) [ ] No		Mike Chan	8/14/2020
22	[x] Shutdown [x] Startup [ ] Malfunction	RLLC0187	7/24/20 8:30 8/14/20 8:35	7/24/20 8:32 8/14/20 8:37	0.03 0.03	504.08	Well raising, well located in active fill area	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) [x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	[ ] Yes (Go to 9) [x] No [ ] Yes (Go to 9) [x] No	[ ] Yes (Go to 10) [ ] No [ ] Yes (Go to 10) [ ] No		Mike Chan	8/14/2020
23	[x] Shutdown [x] Startup [ ] Malfunction	RLLC0188	8/4/20 14:35 9/3/20 9:30	8/4/20 14:37 9/3/20 9:32	0.03 0.03	714.92	Well raising, well located in active fill area	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) [x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	[ ] Yes (Go to 9) [x] No [ ] Yes (Go to 9) [x] No	[ ] Yes (Go to 10) [ ] No [ ] Yes (Go to 10) [ ] No		Mike Chan	9/3/2020
24	[x] Shutdown [ ] Startup [ ] Malfunction	RLLC0189	8/14/20 9:45 Well offline as of November 1, 2020	8/14/20 9:47	0.03	1,886.25	Well raising, well located in active fill area	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) [x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	[ ] Yes (Go to 9) [x] No [ ] Yes (Go to 9) [ ] No	[ ] Yes (Go to 10) [ ] No [ ] Yes (Go to 10) [ ] No		Mike Chan	11/1/2020

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
25	[ ] Shutdown [x] Startup [ ] Malfunction	RLI00029	8/19/20 10:55 N/A	8/19/20 10:57	0.03	N/A	Well decommissioned pursuant to AN #30065 on 8/19/20	[x] 113: Inspection/Maintenance [ ] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) N/A	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No N/A	[ ] Yes (Go to 10) [ ] No		Mike Chan	8/19/2020
26	[x] Shutdown [ ] Startup [ ] Malfunction	RLLC0175	8/19/20 10:35 N/A	8/19/20 10:37	0.03	N/A	Well decommissioned pursuant to AN #30065 on 8/19/20	[x] 113: Inspection/Maintenance [ ] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) N/A	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No N/A	[ ] Yes (Go to 10) [ ] No		Mike Chan	8/19/2020
27	[x] Shutdown [ ] Startup [ ] Malfunction	RLLC0178	8/19/20 10:40 N/A	8/19/20 10:42	0.03	N/A	Well decommissioned pursuant to AN #30065 on 8/19/20	[x] 113: Inspection/Maintenance [ ] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) N/A	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No N/A	[ ] Yes (Go to 10) [ ] No		Mike Chan	8/19/2020
28	[ ] Shutdown [x] Startup [ ] Malfunction	RLLC0246	9/1/20 13:30 N/A	9/1/20 13:32	0.03	N/A	Well startup pursuant to AN #30065	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) N/A	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No N/A	[ ] Yes (Go to 10) [ ] No		Mike Chan	9/1/2020
29	[ ] Shutdown [x] Startup [ ] Malfunction	RLLC0247	9/1/20 9:10 N/A	9/1/20 9:12	0.03	N/A	Well startup pursuant to AN #30065	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) N/A	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No N/A	[ ] Yes (Go to 10) [ ] No		Mike Chan	9/1/2020
30	[ ] Shutdown [x] Startup [ ] Malfunction	RLLC0248	9/1/20 9:12 N/A	9/1/20 9:14	0.03	N/A	Well startup pursuant to AN #30065	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) N/A	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No N/A	[ ] Yes (Go to 10) [ ] No		Mike Chan	9/1/2020
31	[ ] Shutdown [x] Startup [ ] Malfunction	RLLC0249	9/1/20 8:42 N/A	9/1/20 8:44	0.03	N/A	Well startup pursuant to AN #30065	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) N/A	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No N/A	[ ] Yes (Go to 10) [ ] No		Mike Chan	9/1/2020
32	[ ] Shutdown [x] Startup [ ] Malfunction	RLLC0250	9/1/20 8:44 N/A	9/1/20 8:46	0.03	N/A	Well startup pursuant to AN #30065	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) N/A	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No N/A	[ ] Yes (Go to 10) [ ] No		Mike Chan	9/1/2020
33	[ ] Shutdown [x] Startup [ ] Malfunction	RLLC0251	9/1/20 8:46 N/A	9/1/20 8:48	0.03	N/A	Well startup pursuant to AN #30065	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) N/A	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No N/A	[ ] Yes (Go to 10) [ ] No		Mike Chan	9/1/2020
34	[ ] Shutdown [x] Startup [ ] Malfunction	RLLC0255	9/1/20 11:30 N/A	9/1/20 11:32	0.03	N/A	Well startup pursuant to AN #30065	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) N/A	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No N/A	[ ] Yes (Go to 10) [ ] No		Mike Chan	9/1/2020
35	[ ] Shutdown [x] Startup [ ] Malfunction	RLLC0256	9/1/20 11:26 N/A	9/1/20 11:28	0.03	N/A	Well startup pursuant to AN #30065	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) N/A	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No N/A	[ ] Yes (Go to 10) [ ] No		Mike Chan	9/1/2020
36	[x] Shutdown [x] Startup [ ] Malfunction	RLLC0180	9/2/20 13:30 10/30/20 12:15	9/2/20 13:32 10/30/20 12:17	0.03 0.03	1,390.75	Well raising, well located in active fill area	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) [x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	[ ] Yes (Go to 9) [x] No [ ] Yes (Go to 9) [x] No	[ ] Yes (Go to 10) [ ] No [ ] Yes (Go to 10) [ ] No		Mike Chan	10/30/2020

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
37	[ ] Shutdown [x] Startup [ ] Malfunction	RLLC0190	9/2/20 13:30 10/30/20 12:20	9/2/20 13:32 10/30/20 12:22	0.03 0.03	1,390.83	Well raising, well located in active fill area	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) [x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	[ ] Yes (Go to 9) [x] No [ ] Yes (Go to 9) [x] No	[ ] Yes (Go to 10) [ ] No [ ] Yes (Go to 10) [ ] No		Mike Chan	10/30/2020
38	[x] Shutdown [x] Startup [ ] Malfunction	RLI00135	9/4/20 13:30 9/28/20 10:45	9/4/20 13:32 9/28/20 10:47	0.03 0.03	573.25	Well raising, well located in active fill area	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) [x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	[ ] Yes (Go to 9) [x] No [ ] Yes (Go to 9) [x] No	[ ] Yes (Go to 10) [ ] No [ ] Yes (Go to 10) [ ] No		Mike Chan	9/28/2020
39	[ ] Shutdown [x] Startup [ ] Malfunction	RLLC0252	9/10/20 8:30 N/A	9/10/20 8:32	0.03	N/A	Well startup pursuant to AN #30065	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No	[ ] Yes (Go to 10) [ ] No		Mike Chan	N/A
40	[ ] Shutdown [x] Startup [ ] Malfunction	RLLC0253	9/10/20 8:33 N/A	9/10/20 8:35	0.03	N/A	Well startup pursuant to AN #30065	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No	[ ] Yes (Go to 10) [ ] No		Mike Chan	N/A
41	[ ] Shutdown [x] Startup [ ] Malfunction	RLLC0254	9/10/20 8:36 N/A	9/10/20 8:38	0.03	N/A	Well startup pursuant to AN #30065	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3	[ ] Yes (Go to 9) [x] No	[ ] Yes (Go to 10) [ ] No		Mike Chan	N/A
42	[x] Shutdown [x] Startup [ ] Malfunction	RLLC0188	10/6/20 10:30 10/8/20 11:30	10/6/20 10:32 10/8/20 11:32	0.03 0.03	49.00	Well raising, well located in active fill area	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) [x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	[ ] Yes (Go to 9) [x] No [ ] Yes (Go to 9) [x] No	[ ] Yes (Go to 10) [ ] No [ ] Yes (Go to 10) [ ] No		Mike Chan	10/8/2020
43	[x] Shutdown [x] Startup [ ] Malfunction	RLIHC101	10/28/20 11:00 Well offline as of November 1, 2020	10/28/20 11:02	0.03	85.00	Well raising, well located in active fill area	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] Manual (Go to 7) [ ] Automatic (Go to 9) [x] Manual (Go to 7) [ ] Automatic (Go to 9)	Procedures 1 to 3 Procedures 1 to 4	[ ] Yes (Go to 9) [x] No [ ] Yes (Go to 9) [x] No	[ ] Yes (Go to 10) [ ] No [ ] Yes (Go to 10) [ ] No		Mike Chan	11/1/2020
44	[x] Shutdown [ ] Startup [ ] Malfunction	RLI0105C	10/31/20 10:30 Well offline as of November 1, 2020	10/31/20 10:32	0.03	13.50	Well raising, well located in active fill area	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] 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) [x] No [ ] Yes (Go to 9) [ ] No	[ ] Yes (Go to 10) [ ] No [ ] Yes (Go to 10) [ ] No		Mike Chan	11/1/2020
45	[x] Shutdown [ ] Startup [ ] Malfunction	RLI0126C	10/31/20 11:00 Well offline as of November 1, 2020	10/31/20 11:02	0.03	13.00	Well raising, well located in active fill area	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] 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) [x] No [ ] Yes (Go to 9) [ ] No	[ ] Yes (Go to 10) [ ] No [ ] Yes (Go to 10) [ ] No		Mike Chan	11/1/2020
46	[x] Shutdown [ ] Startup [ ] Malfunction	RLLC0206	10/31/20 11:30 Well offline as of November 1, 2020	10/31/20 11:32	0.03	12.50	Well raising, well located in active fill area	[ ] 113: Inspection/Maintenance [x] 116: Well Raising [ ] 117: Gas Collection [ ] 118: Construction Activities	[x] 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) [x] No [ ] Yes (Go to 9) [ ] No	[ ] Yes (Go to 10) [ ] No [ ] Yes (Go to 10) [ ] No		Mike Chan	11/1/2020

(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".

APPENDIX E

A-51 AND A-60 FLARE TEMPERATURE REPORTS

Redwood Landfill, Novato, CA

A-51 Flare TEMPERATURE DEVIATION/ INOPERATIVE MONITOR REPORT **May 1, 2020 to October 31, 2020**

REPORT PREPARED BY:	Michael Chan	**DATE:**	November 25, 2020
TEMPERATURE SENSING DEVICE:	Thermocouple	**MODEL:**	Thermo-Electric

START DATE & TIME	END DATE & TIME	TEMP (^{o}F) / FLOW	CAUSE	EXPLANATION	ACTION TAKEN
No deviations or inoperative monitors during the month of May 2020					
No deviations or inoperative monitors during the month of June 2020					
No deviations or inoperative monitors during the month of July 2020					
No deviations or inoperative monitors during the month of August 2020					
No deviations or inoperative monitors during the month of September 2020					
No deviations or inoperative monitors during the month of October 2020					

COMMENTS:

1 In accordance with Title V Permit Condition Number 19867, Part 22a, 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 **May 1, 2020 to October 31, 2020**

REPORT PREPARED BY:	Michael Chan	**DATE:**	November 25, 2020
TEMPERATURE SENSING DEVICE:	Thermocouple	**MODEL:**	Thermo-Electric

START DATE & TIME	END DATE & TIME	TEMP (^{o}F) / FLOW	CAUSE	EXPLANATION	ACTION TAKEN
No deviations or inoperative monitors during the month of May 2020					
No deviations or inoperative monitors during the month of June 2020					
No deviations or inoperative monitors during the month of July 2020					
No deviations or inoperative monitors during the month of August 2020					
No deviations or inoperative monitors during the month of September 2020					
No deviations or inoperative monitors during the month of October 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 1,535°F (9/20/2019 to 9/14/20) or 1,551°F (9/15/20 - current) limits established during the July 25, 2019 and July 22 & 23, 2020 source tests. 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 May 1, 2020 to October 31, 2020

Date & Time	Date & Time	Total Missing Data Hours	Total Missing Data Days	Comments
There was no missing data for May 2020				
There was no missing data for June 2020				
There was no missing data for July 2020				
There was no missing data for August 2020				
There was no missing data for September 2020				
There was no missing data for October 2020				

Flare A-51	Hours	Days
Total Missing Data:	0.00	0.00
Total Complete Data:	4,416.00	184.00
Missing Data Percentage:	0.00%	0.00%

Emission Control Devices

A-60 Flare Missing Data Summary

Redwood Landfill, Novato, CA

FLARE MISSING DATA REPORT May 1, 2020 to October 31, 2020

Date & Time	Date & Time	Total Missing Data Hours	Total Missing Data Days	Comments
There was no missing data for May 2020				
There was no missing data for June 2020				
There was no missing data for July 2020				
There was no missing data for August 2020				
There was no missing data for September 2020				
There was no missing data for October 2020				

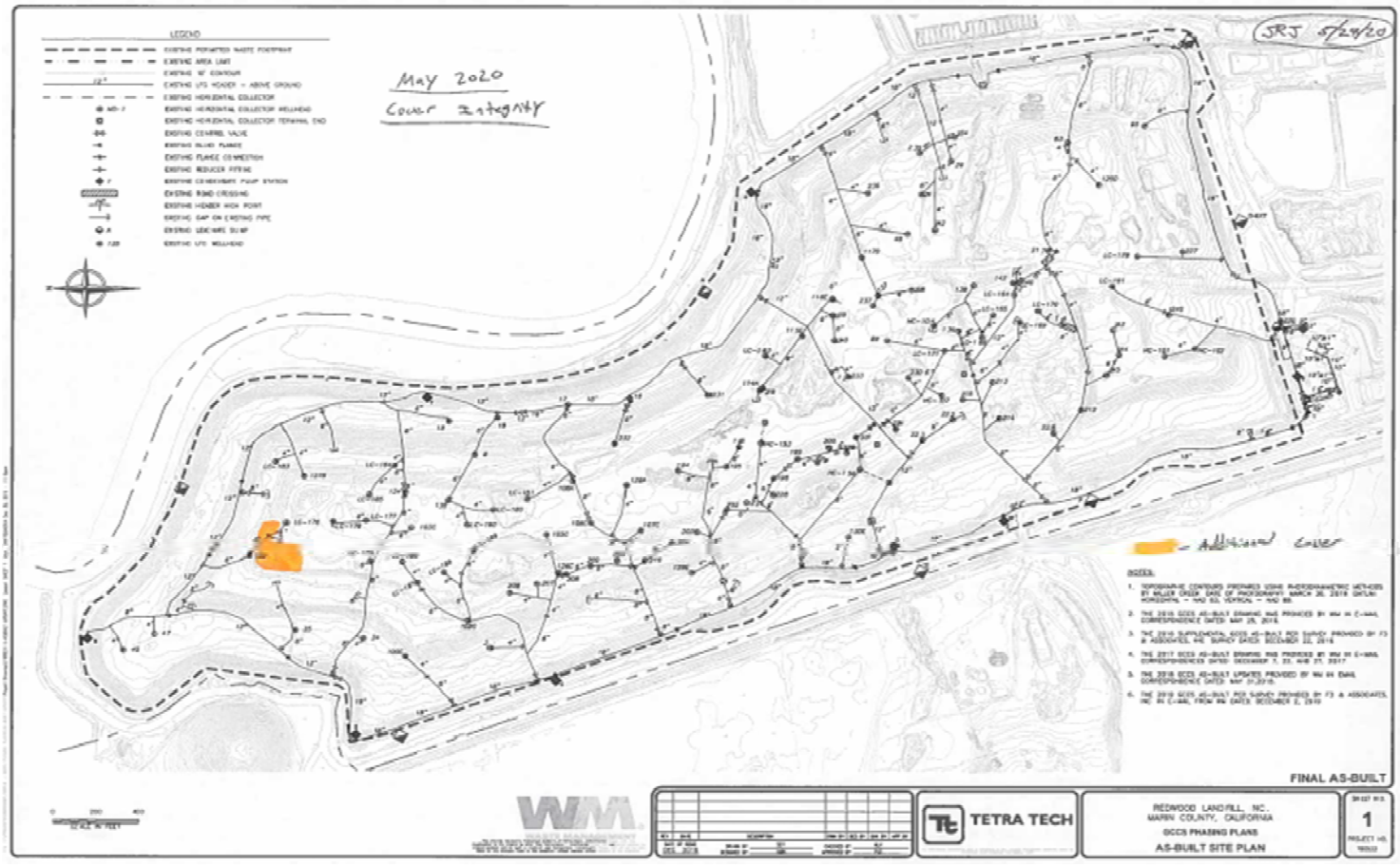
Flare A-60	Hours	Days
Total Missing Data:	0.00	0.00
Total Complete Data:	4,416.00	184.00
Missing Data Percentage:	0.00%	0.00%

APPENDIX G

COVER INTEGRITY MONITORING REPORTS

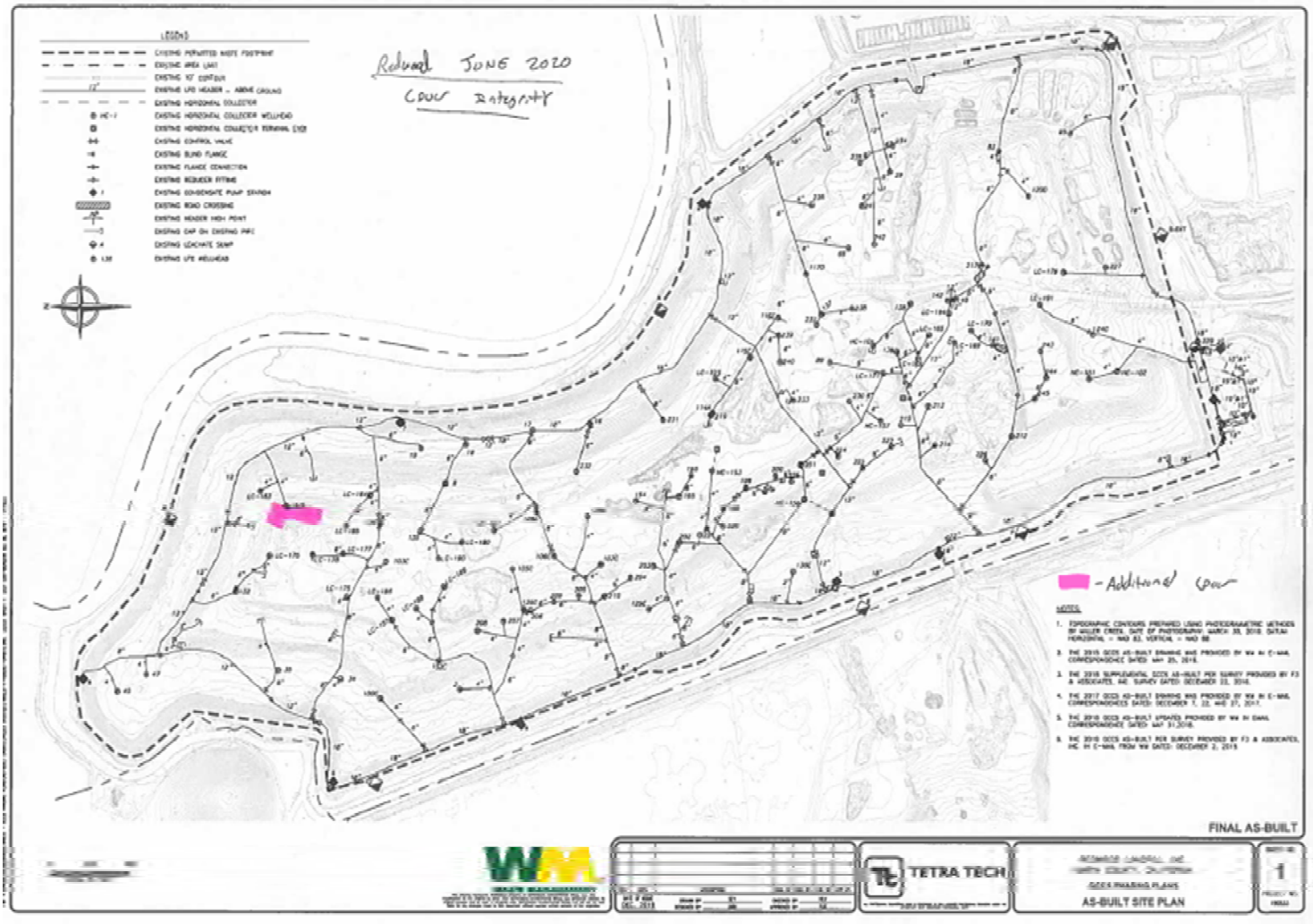
Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill						
Date	5/27/2020	Received		Manager	Ramin Khany	Date	5/27/2020
Technician	S. Johnson	Repairs Complete		Manager	Ramin A. Khany	Date	6/29/20
Cell/Pad	Area B			Cell/Pad			
Description of finding and corrective action: In Area B, additional cover is needed on the northwest facing slope near well 132 and 176. See attached map for details. Corrective Action: Operations added additional soil to the slope described above.				Description of finding and corrective action:			
Date Identified	5/27/2020	Repaired	6/8/2020	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:			
Date Identified		Repaired		Date Identified		Repaired	



Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill					
Date	6/29/2020	**Received**	**Manager**	Ramin Khany	**Date**	6/29/2020
Technician	S. Johnson	**Repairs Complete**	**Manager**		**Date**	
Cell/Pad	**Area B**		Cell/Pad			
Description of finding and corrective action: In Area B, additional cover is needed on the northeast facing slope near well 127. See attached map for details. Corrective Action:			Description of finding and corrective action:			
Date Identified	6/29/2020	**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:			
Date Identified		**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**	



Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill						
Date	7/30/2020	Received		Manager	Ramin Khany	Date	7/30/2020
Technician	S. Johnson	Repairs Complete		Manager		Date	8/31/2020
Cell/Pad	Area D			Cell/Pad			

Description of finding and corrective action: In Area D, additional cover is needed on the deck east of the main haul road. See attached map for details.
Corrective Action: Operations added additional cover to the described area. 8/31/20

Description of findin and corrective action:

Date Identified	7/30/2020	Repaired	8/17/2020
Cell/Pad			

Description of finding and corrective action:

Date Identified		Repaired	
Cell/Pad			

Description of finding and corrective action:

Date Identified		Repaired	
Cell/Pad			

Description of finding and corrective action:

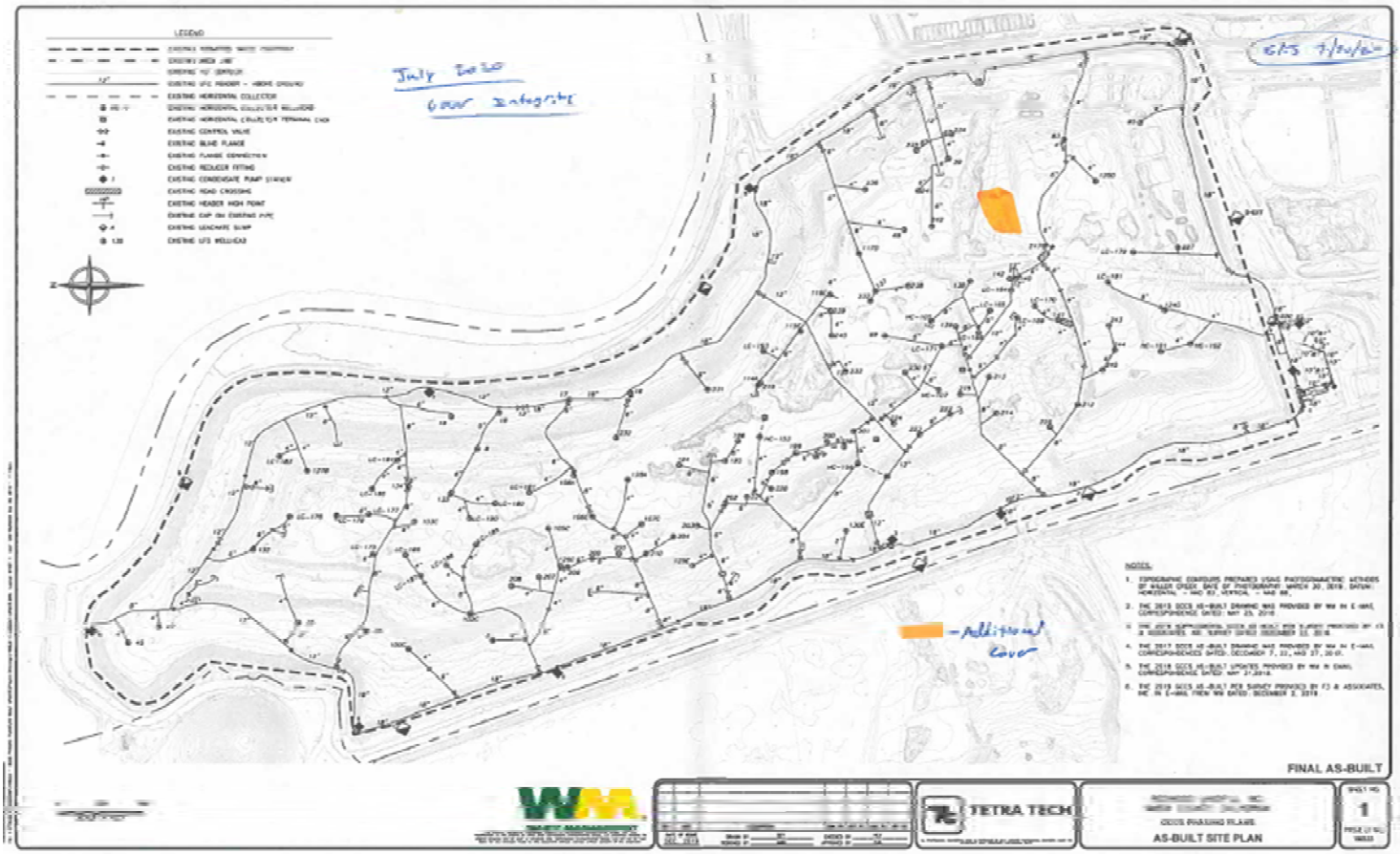
Date Identified		Repaired	
Cell/Pad			

Description of finding and corrective action:

Date Identified		Repaired	
Cell/Pad			

Description of finding and corrective action:

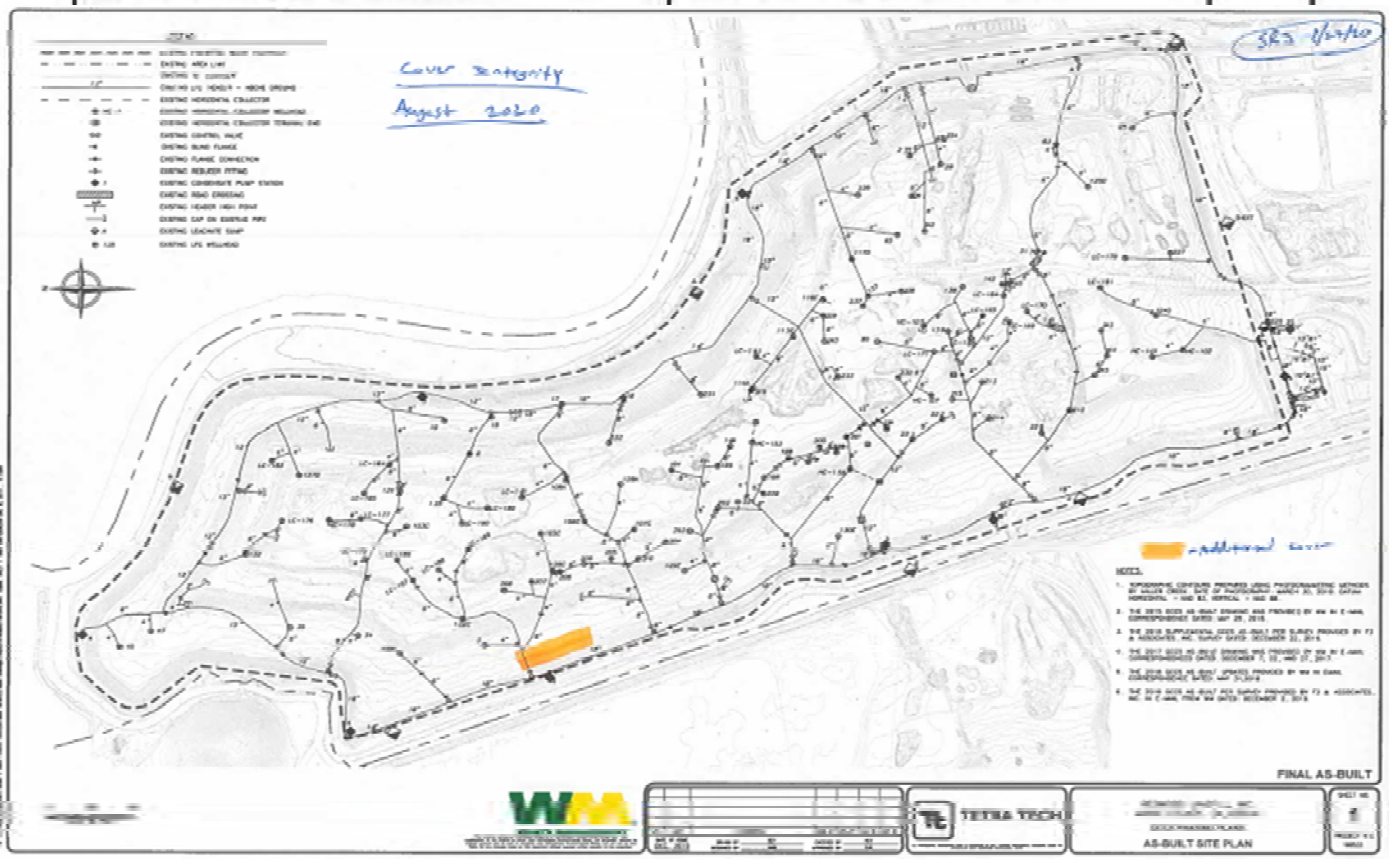
Date Identified		Repaired	
Cell/Pad			



Monthly Cover Integrity Inspection Form

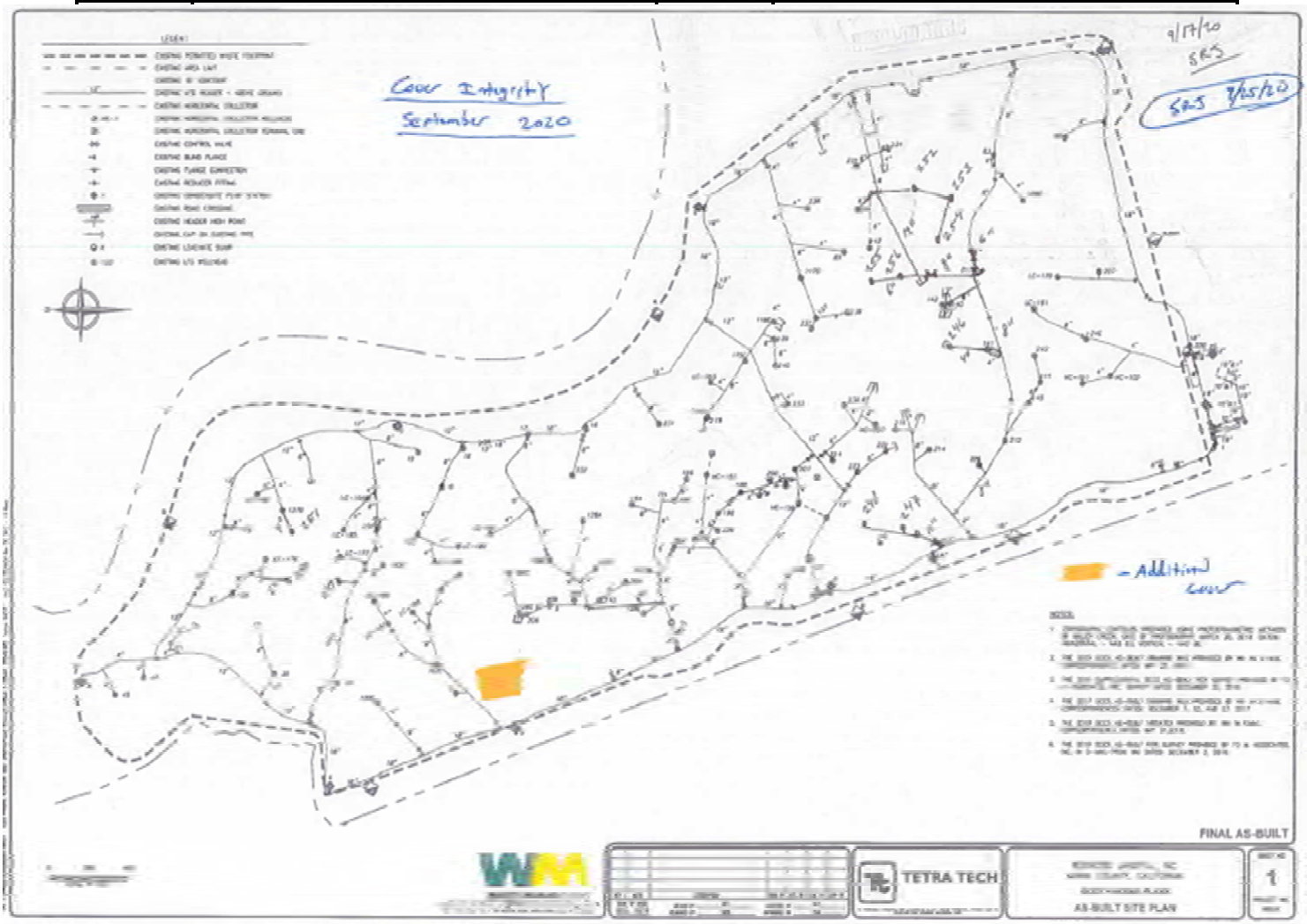
Facility	Waste Management- Redwood Landfill						
Date	8/27/2020	Received		Manager	Ramin Khany	Date	8/27/2020
Technician	S. Johnson	Repairs Complete		Manager		Date	9/8/20
Cell/Pad	Area C			Cell/Pad			

Description of finding and corrective action: In Area C, Additional cover is needed on the west side slope in an area recently filled. See attached map for details. Corrective Action: Operations added additional cover to the described area.	Description of finding and corrective action:
Date Identified: 8/27/2020 Repaired: 9/14/20	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:
Date Identified: Repaired:	Date Identified: Repaired:
Cell/Pad:	Cell/Pad:
Description of finding and corrective action:	Description of finding and corrective action:



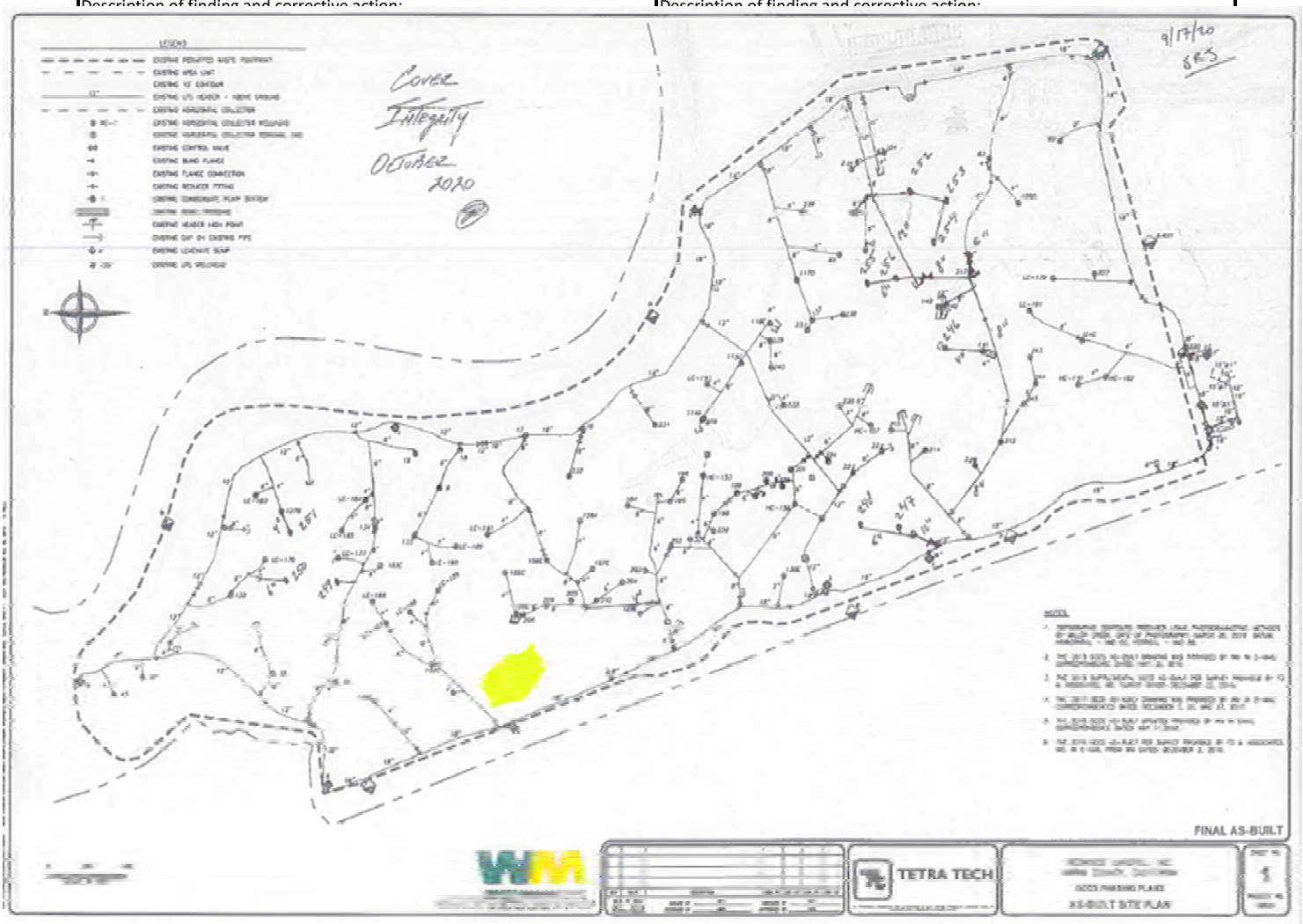
Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill						
Date	9/25/2020	**Received**		**Manager**	Ramin Khany	**Date**	9/25/2020
Technician	S. Johnson	**Repairs Complete**		**Manager**		**Date**	
Cell/Pad	**Area C**			Cell/Pad			
Description of finding and corrective action: In Area C, Additional cover is needed south of Well 3 on the deck that was recently filled. See attached map for details. Corrective Action:				Description of finding and corrective action:			
Date Identified	9/25/2020	**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:			
Date Identified		**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**	



Monthly Cover Integrity Inspection Form

Facility	Waste Management- Redwood Landfill					
Date	10/20/2020	**Received**	**Manager**	Ramin Khany	**Date**	10/20/2020
Technician	S. King	**Repairs Complete**	**Manager**		**Date**	
Cell/Pad	**Area C**		Cell/Pad			
Description of finding and corrective action: In Area C, Additional cover is needed south West of Well 3, West of well 205, on the deck that was recently filled. See attached map for details. Corrective Action:			Description of finding and corrective action:			
Date Identified	10/15/2020	**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:			
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

June 23, 2020

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

Re: Second 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 Second 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.

SECOND QUARTER 2020 SEM AND COMPONENT LEAK RESULTS

The following is a summary of the SEM and component leak monitoring results completed for the Second Quarter 2020.

Instantaneous Surface Emissions Monitoring Results

The Instantaneous surface monitoring was performed on May 21, 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 seven (7) exceedances of 500 ppm_v as methane detected on May 21, 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 May 28, 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 June 18, 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 May 21, 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 May 18, 19, and 20, 2020 and attempted to be in accordance with the ACO and requirements outlined in CCR Title 17 §95469. Redwood SEM is required every 2 months (there were two SEM events in Quarter 1) with a Quarter 2 SEM event required in the month of May. Due to rain, the initially scheduled event in early May was postponed (which impacted this site and another landfill site's monitoring schedule). The rescheduled SEM event was for May 18, 2020 and could not be postponed again due to the contractor's project obligations and the reduced labor availability due to the COVID-19 pandemic. Rain was estimated to be about 0.1 inches on May 17 and 0.1 inches on May 18, 2020. This exceeded the rain requirement of no precipitation ≥0.01" within 24 hours of monitoring on May 18, 2020. Further postponement of the May SEM event would have pushed it into June; hence the May SEM event was initiated on May 18, 2020.

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 May 20, 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
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: 2
PERFORMED BY: RES
LANDFILL NAME: **Redwood Landfill, Inc.**

Grid Number	Flag Number	Date of Monitoring	Concentration of Emission (ppm_v)	Comments
36	O31	5/21/2020	2,200	Gray Pipe
24	O21	5/21/2020	700	Surface
39	O22	5/21/2020	1,700	Surface
15	O32	5/21/2020	3,000	Surface
25	O23	5/21/2020	2,200	Surface
154	O24	5/21/2020	30,000	Surface
127	O33	5/21/2020	858	Black Pipe
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: 2

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**
O31	5/21/2020	2,200	5/22/2020	Additional Soil/ Water/ Compaction	5/28/2020	139		6/18/2020	106.4		Gray Pipe
O21	5/21/2020	700	5/22/2020	Additional Soil/ Water/ Compaction	5/28/2020	60		6/18/2020	37.8		Surface
O22	5/21/2020	1,700	5/22/2020	Additional Soil/ Water/ Compaction	5/28/2020	15		6/18/2020	16.5		Surface
O32	5/21/2020	3,000	5/22/2020	Additional Soil/ Water/ Compaction	5/28/2020	43		6/18/2020	41.0		Surface
O23	5/21/2020	2,200	5/22/2020	Additional Soil/ Water/ Compaction	5/28/2020	29		6/18/2020	19.1		Surface
O24	5/21/2020	30,000	5/22/2020	Additional Soil/ Water/ Compaction	5/28/2020	65		6/18/2020	18.7		Surface
O33	5/21/2020	858	5/22/2020	Additional Soil/ Water/ Compaction	5/28/2020	102		6/18/2020	11.7		Black Pipe

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

2020 QUARTER: 2

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**
O31	5/21/2020	2,200	5/28/2020	139					Gray Pipe
O21	5/21/2020	700	5/28/2020	60					Surface
O22	5/21/2020	1,700	5/28/2020	15					Surface
O32	5/21/2020	3,000	5/28/2020	43					Surface
O23	5/21/2020	2,200	5/28/2020	29					Surface
O24	5/21/2020	30,000	5/28/2020	65					Surface
O33	5/21/2020	858	5/28/2020	102					Black Pipe

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

2020 QUARTER: 2
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					

N

0 200 400
SCALE IN FEET

LEGEND

PROPERTY BOUNDARY
APPROXIMATE WASTE FOOTPRINT
3 ⊕ EXISTING LFG EXTRACTION WELL
EXISTING 10' CONTOUR
105 SEM GRID BLOCK

PROPERTY LINE

APPROXIMATE WASTE FOOTPRINT

EXISTING FLARE STATION

INSTRUMENTS 5-20-20

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

This drawing represents a protected property of Cornerstone Environmental Group LLC. Any modification to the original by other than Cornerstone Environmental Group LLC personnel renders the original useless and as such is rejected and Cornerstone Environmental Group LLC will not be held liable for any damages made to the document without written consent of the originator.

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

SURFACE EMISSIONS MONITORING
GRID MAP

SHEET NO. 1
PROJECT NO. 140521

File: K:\PROJECTS\REDWOOD\140521 - COMPLIANCE_PROJECT DRAWINGS\SEM\2014\SURFACE_SCM MAP 11x17.dwg Layout: SHT 1 User: richard.lim Jun 23, 2014 - 12:45pm

N

0 200 400
SCALE IN FEET

LEGEND

- PROPERTY BOUNDARY
- APPROXIMATE WASTE FOOTPRINT
- 3 ⊕ EXISTING LFG EXTRACTION WELL
- EXISTING 10' CONTOUR
- 105 SEM GRID BLOCK

PROPERTY LINE

APPROXIMATE WASTE FOOTPRINT

EXISTING FLARE STATION

2ND QUARTER 2020
NSPS

= UPWIND

= DOWNWIND

PERIMETER SWEEP

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 3, 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: MEH			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 140527

Orange Flag Landfill Surface Emissions Monitoring
Exceedances and Monitoring Log

Site: REDWOOD

Quarter / Year:	2ND 2020
Technician:	LENGHWADE
Instrument:	TVA 1000
Calibration Standard:	500

Page 1 of 1 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	
Θ-31	36	2,200	5-21-20										GREY PIPE
Θ-21	24	700	↓										SURFACE
Θ-22	39	1,700	↓										SURFACE
Θ-32	15	3,000	↓										SURFACE
Θ-23	25	2,200	↓										SURFACE
Θ-24	154	30,000	↓										SURFACE
Θ-33	127	858	↓										BLACK PIPE
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LONG HWADE, OMAR PINEDA, AARON MCBRIDE, ANTHONY PERERA

Date: 5-21-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 47 Precip: 0 Upwind BG: 2.0 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
61	LW	0520	0535	28	2	3	11	
62	AM	0520	0535	15	2	3	11	
63	AP	0520	0535	13	2	3	11	
56	OP	0520	0535	110	2	3	11	
57	LW	0535	0550	37	2	4	11	
51	AM	0535	0550	89	2	4	11	
52	AP	0535	0550	37	2	4	11	
46	OP	0535	0550	124	2	4	11	
47	LW	0550	0605	22	2	4	11	
41	AM	0550	0605	76	2	4	11	
42	AP	0550	0605	19	2	4	11	
36	OP	0550	0605	2,200	2	4	11	GREY PIPE
37	LW	0605	0620	15	2	4	11	
31	AM	0605	0620	96	2	4	11	
32	AP	0605	0620	17	2	4	11	
26	OP	0605	0620	47	2	4	11	
27	LW	0620	0635	18	3	5	11	
22	AM	0620	0635	15	3	5	11	
23	AP	0620	0635	27	3	5	11	
17	OP	0620	0635	13	3	5	11	
18	LW	0635	0650	21	2	4	12	
13	AM	0635	0650	26	2	4	12	
14	AP	0635	0650	14	2	4	12	
9	OP	0635	0650	19	2	4	12	
10	LW	0650	0705	16	2	4	11	
5	AM	0650	0705	11	2	4	11	
6	AP	0650	0705	13	2	4	11	
1	OP	0650	0705	9	2	4	11	
2	LW	0705	0720	7	2	4	11	
3	AM	0705	0720	7	2	4	11	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 2

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGHWADE, OMAR PERALTA
AARON MCBRIDE
ANTHONY PERALTA

Date: 5-21-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 49 Precip: 0 Upwind BG: 2.0 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
4	AP	0705	0720	15	2	4	11	
7	OP	0705	0720	24	2	4	11	
8	LW	0720	0735	16	2	4	11	
11	AM	0720	0735	45	2	4	11	
12	AP	0720	0735	37	2	4	11	
15	OP	0720	0735	3,000	2	4	11	SURFACE
16	LW	0735	0750	57	2	4	11	
19	AM	0735	0750	21	2	4	11	
20	AP	0735	0750	74	2	4	11	
21	OP	0735	0750	56	2	4	11	
24	LW	0750	0805	700	2	4	11	SURFACE
25	AM	0750	0805	2,200	2	4	11	SURFACE
28	AP	0750	0805	31	2	4	11	
29	OP	0750	0805	84	2	4	11	
33	LW	0805	0820	47	2	4	11	
34	AM	0805	0820	64	2	4	11	
38	AP	0805	0820	32	2	4	11	
39	OP	0805	0820	1,700	2	4	11	SURFACE
43	LW	0820	0835	29	2	4	12	
44	AM	0820	0835	85	2	4	11	
48	AP	0820	0835	61	2	4	11	
53	OP	0820	0835	28	2	4	12	
58	LW	0835	0850	37	2	3	12	
64	AM	0835	0850	24	2	3	12	
70	AP	0835	0850	19	2	3	12	
71	OP	0835	0850	22	2	3	12	
76	LW	0850	0905	16	2	3	12	
77	AM	0850	0905	41	2	3	12	
88	AP	0850	0905	50	2	3	12	
89	OP	0850	0905	25	2	3	12	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leighwade | Omar peralta |
Aaron McBroy | |
Anthony peralta | |

Date: 5-21-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 51 Precip: 0 Upwind BG: 2.0 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
65	LW	0905	0920	47	2	4	12	
99	AM	0905	0920	28	2	4	12	
100	AP	0905	0920	57	2	4	12	
109	OP	0905	0920	33	2	4	12	
110	LW	0920	0935	40	2	3	12	
120	AM	0920	0935	29	2	3	12	
121	AP	0920	0935	46	2	3	12	
131	OP	0920	0935	24	2	3	12	
132	LW	0935	0950	18	2	3	12	
140	AM	0935	0950	37	2	3	12	
141	AP	0935	0950	52	2	3	12	
149	OP	0935	0950	84	2	3	12	
150	LW	0950	1005	113	2	3	11	
157	AM	0950	1005	42	2	3	11	
158	AP	0950	1005	38	2	3	11	
155	OP	0950	1005	24	2	3	11	
156	LW	1005	1020	62	1	2	9	
147	AM	1005	1020	20	1	2	9	
148	AP	1005	1020	16	1	2	9	
138	OP	1005	1020	24	1	2	9	
139	LW	1020	1035	19	1	2	9	
129	AM	1020	1035	21	1	2	9	
130	AP	1020	1035	107	1	2	9	
118	OP	1020	1035	27	1	2	9	
119	LW	1035	1050	16	1	2	9	
107	AM	1035	1050	24	1	2	9	
108	AP	1035	1050	25	1	2	9	
97	OP	1035	1050	15	1	2	9	
98	LW	1050	1105	13	1	2	9	
87	AM	1050	1105	11	1	2	9	

Attach Calibration Sheet
Attach site map showing grid ID

Page 3 of 7

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: CRAIG WADE, OMER PENCHEFF, AARON MCBRIDE, ANTHONY PENCHEFF

Date: 5-21-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 54 Precip: 0 Upwind BG: 2.0 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
86	AP	1050	1105	9	1	2	9	
85	OP	1050	1105	7	1	2	9	
83	LW	1105	1120	7	1	2	11	
84	AM	1105	1120	8	1	2	11	
95	AP	1105	1120	13	1	2	11	
96	OP	1105	1120	21	1	2	11	
105	LW	1120	1135	17	1	2	12	
106	AM	1120	1135	15	1	2	12	
116	AP	1120	1135	84	1	2	12	
117	OP	1120	1135	63	1	2	12	
205	LW	1135	1150	13	1	2	12	
201	AM	1135	1150	11	1	2	12	
196	AP	1135	1150	16	1	2	12	
197	OP	1135	1150	11	1	2	12	
190	LW	1150	1205	56	1	2	12	
191	AM	1150	1205	14	1	2	12	
184	AP	1150	1205	12	1	2	12	
185	OP	1150	1205	18	1	2	12	
176	LW	1205	1220	14	1	2	12	
177	AM	1205	1220	22	1	2	12	
161	AP	1205	1220	15	1	2	12	
170	OP	1205	1220	13	1	2	12	
162	LW	1220	1245	17	1	2	12	
153	AM	1220	1245	28	1	2	12	
145	AP	1220	1245	15	1	2	12	
136	OP	1220	1245	27	1	2	12	
127	LW	1315	1330	858	1	2	12	BLACK PIPE
128	AM	1315	1330	92	1	2	12	
137	AP	1315	1330	116	1	2	12	
146	OP	1315	1330	130	1	2	12	

Attach Calibration Sheet
Attach site map showing grid ID

Page 4 of 7

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE, ANTHONY PORCELLA
AARON MCBRIDE
ANTHONY PORCELLA

Date: 5-21-20 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 60 Precip: 0 Upwind BG: 2.0 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
154	LW	1330	1345	30,000	1	2	4	SURFACE
163	AM	1330	1345	84	1	2	4	
164	AP	1330	1345	38	1	2	4	
171	OP	1330	1345	59	1	2	4	
172	LW	1345	1400	72	1	2	4	
178	AM	1345	1400	45	1	2	4	
179	AP	1345	1400	69	1	2	4	
186	OP	1345	1400	43	1	2	4	
187	LW	1400	1415	29	1	2	12	
192	AM	1400	1415	31	1	2	12	
193	AP	1400	1415	54	1	2	12	
198	OP	1400	1415	43	1	2	12	
199	LW	1415	1430	21	1	2	12	
202	AM	1415	1430	17	1	2	12	
203	AP	1415	1430	29	1	2	12	
206	OP	1415	1430	15	1	2	12	
207	LW	1430	1445	13	1	2	12	
208	AM	1430	1445	24	1	2	12	
204	AP	1430	1445	16	1	2	12	
200	OP	1430	1445	28	1	2	12	
194	LW	1445	1500	17	1	2	12	
195	AM	1445	1500	24	1	2	12	
188	AP	1445	1500	21	1	2	12	
189	OP	1445	1500	17	1	2	12	
180	LW	1500	1515	29	1	2	13	
181	AM	1500	1515	14	1	2	13	
173	AP	1500	1515	38	1	2	13	
174	OP	1500	1515	56	1	2	13	
165	LW	1515	1530	32	1	2	13	
166	AM	1515	1530	19	1	2	13	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE, OMAR PERALTA, AARON MCBRIDE, ANTHONY PERALTA

Date: 5-21-20 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 61 Precip: 0 Upwind BG: 2.0 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
167	AP	1515	1530	29	1	2	12	
175	OP	1515	1530	15	1	2	12	
182	LW	1530	1545	11	1	2	12	
183	AM	1530	1545	17	1	2	12	
168	AP	1530	1545	13	1	2	12	
169	OP	1530	1545	26	1	2	12	
159	LW	1545	1600	31	1	2	12	
160	AM	1545	1600	20	1	2	12	
151	AP	1545	1600	77	1	2	12	
152	OP	1545	1600	45	1	2	12	
142	LW	1600	1615	37	1	2	4	
143	AM	1600	1615	89	1	2	4	
133	AP	1600	1615	47	1	2	4	
134	OP	1600	1615	20	1	2	4	
122	LW	1615	1630	36	1	2	4	
123	AM	1615	1630	57	1	2	4	
111	AP	1615	1630	56	1	2	4	
112	OP	1615	1630	39	1	2	4	
101	LW	1630	1645	29	1	2	11	
102	AM	1630	1645	46	1	2	11	
90	AP	1630	1645	52	1	2	11	
91	OP	1630	1645	30	1	2	11	
78	LW	1645	1700	28	1	2	12	
79	AM	1645	1700	44	1	2	12	
72	AP	1645	1700	19	1	2	12	
73	OP	1645	1700	27	1	2	12	
66	LW	1700	1715	40	1	2	14	
67	AM	1700	1715	154	1	2	14	
59	AP	1700	1715	57	1	2	14	
60	OP	1700	1715	34	1	2	14	

Attach Calibration Sheet
Attach site map showing grid ID

Page 6 of 7

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE | OMAR PERALTA
AARON MCBRIDE
ANTHONY PERALTA

Date: 5-21-20 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 63 Precip: 0 Upwind BG: 2.0 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
68	LW	1715	1730	38	1	2	14	
69	AM	1715	1730	18	1	2	14	
74	AP	1715	1730	47	1	2	14	
75	OP	1715	1730	22	1	2	14	
80	LW	1730	1745	94	1	2	15	
81	AM	1730	1745	93	1	2	15	
82	AP	1730	1745	61	1	2	15	
92	OP	1730	1745	36	1	2	15	
93	LW	1745	1800	22	1	2	15	
94	AM	1745	1800	18	1	2	15	
103	AP	1745	1800	29	1	2	15	
104	OP	1745	1800	114	1	2	15	
113	LW	1800	18.15	31	1	2	13	
114	AM	1800	1815	69	1	2	13	
115	AP	1800	1815	29	1	2	13	
124	OP	1800	1815	41	1	2	13	
125	LW	1815	1830	22	1	2	12	
126	AM	1815	1830	57	1	2	12	
135	AP	1815	1830	26	1	2	12	
144	OP	1815	1830	54	1	2	12	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 2

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGHANNE _____ _____ _____

_____ _____ _____

_____ _____ _____

Date: 5-20-20 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	
49								ACTIVE-TRASH
54								↓
30								
35								
40								
45								
50								
55								

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 1

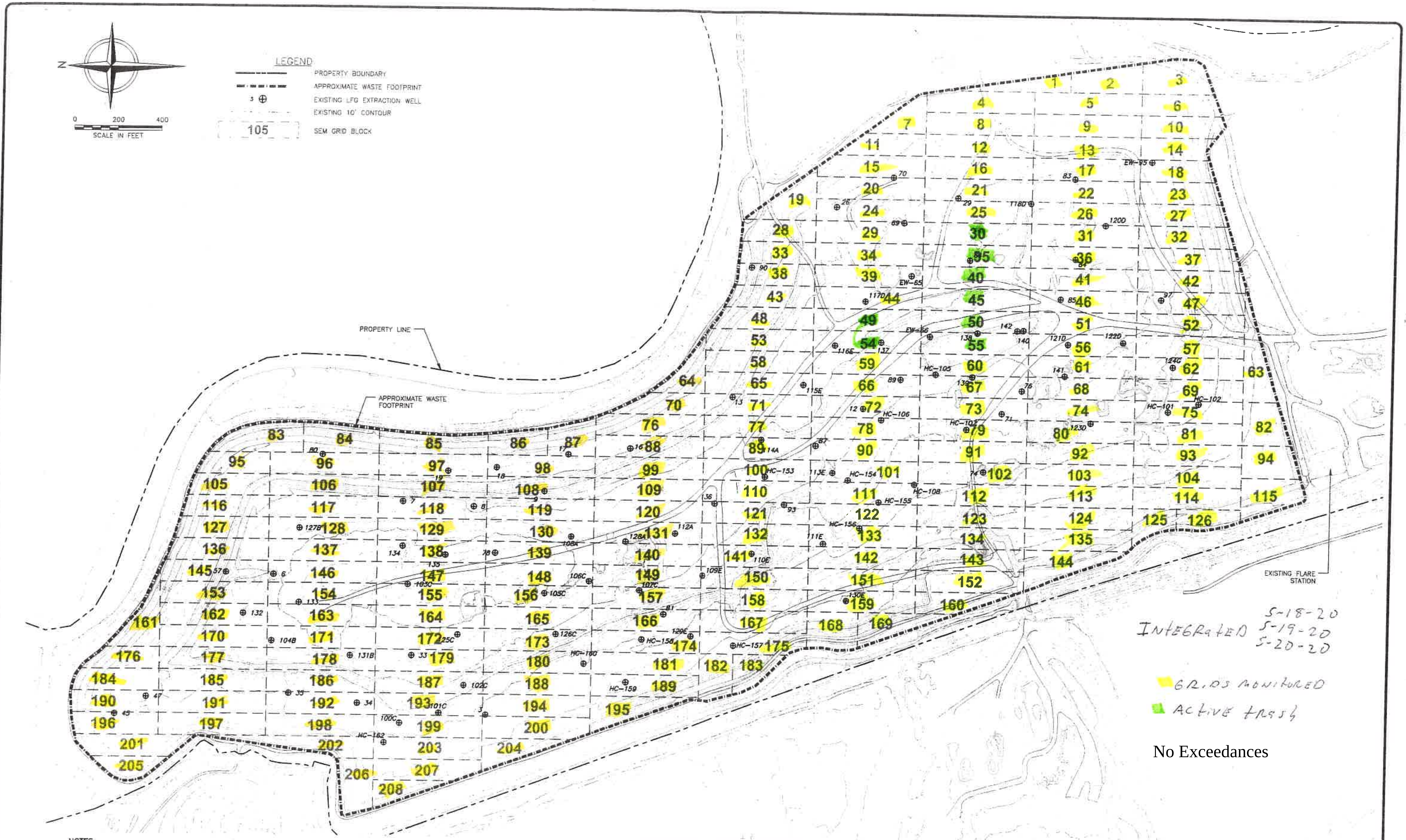
Attachment B

Integrated Surface Emission Monitoring Event Records

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

2020 QUARTER: 2
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			
Exceedance	Monitoring	Reading	Monitoring	No Exced.	No Exced.	Monitoring	No Exced.	No Exced.	
Grid ID No.	Date	ppm	Date	<25 ppm	>25 ppm	Date	<25 ppm	>25 ppm	**Comments**
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.

WM 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: LESLI WADE, ANTHONY PERALTA, AARON MCBRIDE, OMAR PERALTA

Cal. Gas Exp. Date: 9-2-20

Date: 5-18-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 62 Precip: _____ Upwind BG: 2.0 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	1240	1305	3.25	1	2	9	
2	AM	1240	1305	4.11	1	2	9	
3	AP	1240	1305	3.77	1	2	9	
4	OP	1240	1305	3.22	1	2	9	
5	LW	1305	1330	4.29	1	2	9	
6	AM	1305	1330	3.56	1	2	9	
7	AP	1305	1330	3.74	1	2	9	
8	OP	1305	1330	3.38	1	2	9	
9	LW	1330	1355	4.41	1	2	9	
10	AM	1330	1355	3.70	1	2	9	
11	AP	1330	1355	5.28	1	2	9	
12	OP	1330	1355	6.21	1	2	9	
13	LW	1355	1420	6.84	3	4	9	
14	AM	1355	1420	5.12	3	4	9	
15	AP	1355	1420	6.06	3	4	9	
16	OP	1355	1420	5.79	3	4	9	
17	LW	1420	1445	4.08	3	4	9	
18	AM	1420	1445	3.62	3	4	9	
22	AP	1420	1445	14.81	3	4	9	
23	OP	1420	1445	5.25	3	4	9	
26	LW	1445	1510	14.38	3	4	9	
27	AM	1445	1510	5.11	3	4	9	
31	AP	1445	1510	4.45	3	4	9	
32	OP	1445	1510	5.03	3	4	9	
36	LW	1510	1535	4.61	3	4	9	
37	AM	1510	1535	5.50	3	4	9	
41	AP	1510	1535	5.89	3	4	9	
42	OP	1510	1535	5.22	3	4	9	
46	LW	1535	1600	4.74	3	5	9	
47	AM	1535	1600	5.81	3	5	9	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: CRAIG WADE, ANTHONY PERALTA, AARON MCBRIDE, OMAR PERALTA

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

Date: 5-18-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 62 Precip: _____ Upwind BG: 2.0 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
51	AP	1535	1600	5.75	3	5	9	
52	OP	1535	1600	4.81	3	5	9	
56	CW	1600	1625	5.33	3	4	9	
57	AM	1600	1625	5.64	3	4	9	
61	AP	1600	1625	4.58	3	4	9	
62	OP	1600	1625	5.13	3	4	9	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGHWOOD _____ _____ _____

_____ _____ _____

_____ _____ Cal. Gas Exp. Date: _____

Date: 5-18-20 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	
49								Active - fresh
54								
30								
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: Leish Wade, Omar Pereira, Aaron McBride, Anthony Pereira

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

Date: 5-19-20 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 50 Precip: 0 Upwind BG: 2.0 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
63	LW	0605	0630	4.25	1	2	11	
68	Am	0605	0630	3.60	1	2	11	
69	AP	0605	0630	3.21	1	2	11	
74	OP	0605	0630	5.47	1	2	11	
75	LW	0630	0655	5.29	1	2	11	
80	Am	0630	0655	4.67	1	2	11	
81	AP	0630	0655	5.90	1	2	11	
82	OP	0630	0655	6.89	1	2	11	
92	LW	0655	0720	5.44	1	3	11	
93	Am	0655	0720	6.60	1	3	11	
94	AP	0655	0720	7.26	1	3	11	
103	OP	0655	0720	6.70	1	3	11	
104	LW	0720	0745	5.94	2	3	10	
113	Am	0720	0745	7.26	2	3	10	
114	AP	0720	0745	6.31	2	3	10	
115	OP	0720	0745	5.92	2	3	10	
124	LW	0745	0810	5.15	2	3	11	
125	Am	0745	0810	5.70	2	3	11	
126	AP	0745	0810	4.57	2	3	11	
135	OP	0745	0810	5.39	2	3	11	
144	LW	0810	0835	6.13	2	3	12	
168	Am	0810	0835	5.51	2	3	12	
169	AP	0810	0835	6.86	2	3	12	
160	OP	0810	0835	5.32	2	3	12	
159	LW	0835	0900	7.18	2	3	11	
151	Am	0835	0900	10.70	2	3	11	
152	AP	0835	0900	8.64	2	3	11	
142	OP	0835	0900	8.12	2	3	11	
143	LW	0900	0925	6.95	2	3	11	
133	Am	0900	0925	6.02	2	3	11	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 4

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGHWADE, OMAR PORCHA, AARON MCBRIDE, ANTHONY PORCHA

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

Date: 5-19-20 Instrument Used: TVA1000 Grid Spacing: 25

Temperature: 57 Precip: 0 Upwind BG: 2.0 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
134	AP	0900	0925	7.59	2	3	11	
122	OP	0900	0925	8.14	2	3	11	
123	LW	0925	0950	7.56	2	3	11	
111	AM	0925	0950	9.04	2	3	11	
112	AP	0925	0950	6.75	2	3	11	
101	OP	0925	0950	7.31	2	3	11	
102	LW	0950	1015	8.14	2	3	11	
90	AM	0950	1015	6.27	2	3	11	
91	AP	0950	1015	5.81	2	3	11	
78	OP	0950	1015	6.43	2	3	11	
79	LW	1015	1040	5.28	2	3	11	
72	AM	1015	1040	6.25	2	3	11	
73	AP	1015	1040	6.49	2	3	11	
66	OP	1015	1040	5.91	2	3	11	
67	LW	1040	1105	7.55	2	3	12	
59	AM	1040	1105	6.90	2	3	12	
60	AP	1040	1105	7.35	2	3	12	
99	OP	1040	1105	5.72	2	3	12	
100	LW	1105	1130	4.86	2	3	11	
109	AM	1105	1130	5.99	2	3	11	
110	AP	1105	1130	6.76	2	3	11	
120	OP	1105	1130	5.32	2	3	11	
121	LW	1200	1225	6.68	2	3	11	
131	AM	1200	1225	5.54	2	3	11	
132	AP	1200	1225	4.86	2	3	11	
140	OP	1200	1225	6.74	2	3	11	
141	LW	1225	1250	8.15	2	3	11	
149	AM	1225	1250	11.27	2	3	11	
150	AP	1225	1250	14.58	2	3	11	
157	OP	1225	1250	9.42	2	3	11	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wade; Oscar Peralta; Aaron McBride; Anthony Peralta

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

Date: 5-9-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 62 Precip: 0 Upwind BG: 2.0 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
158	LW	1250	1315	8.65	3	5	11	
166	AM	1250	1315	6.57	3	5	11	
167	AP	1250	1315	7.21	3	5	11	
174	OP	1250	1315	6.28	3	5	11	
175	LW	1315	1340	5.32	3	4	11	
181	AM	1315	1340	5.15	3	4	11	
182	AP	1315	1340	4.77	3	4	11	
183	OP	1315	1340	5.45	3	4	11	
189	LW	1340	1405	5.18	3	5	11	
195	AM	1340	1405	5.69	3	5	11	
208	AP	1340	1405	5.60	3	5	11	
207	OP	1340	1405	4.91	3	5	11	
203	LW	1405	1430	4.58	4	5	11	
204	AM	1405	1430	5.73	4	5	11	
199	AP	1405	1430	5.40	4	5	11	
200	OP	1405	1430	6.37	4	5	11	
193	LW	1430	1455	6.20	4	5	11	
194	AM	1430	1455	5.73	4	5	11	
187	AP	1430	1455	6.57	4	5	11	
188	OP	1430	1455	7.40	4	5	11	
179	LW	1455	1520	9.16	4	5	11	
180	AM	1455	1520	6.42	4	5	11	
172	AP	1455	1520	10.30	4	5	11	
173	OP	1455	1520	7.49	4	5	11	
164	LW	1520	1545	6.31	4	5	10	
165	AM	1520	1545	6.55	4	5	10	
155	AP	1520	1545	5.86	4	5	10	
156	OP	1520	1545	6.39	4	5	10	
147	LW	1545	1610	5.25	4	5	10	
148	AM	1545	1610	5.71	4	5	10	

Attach Calibration Sheet
Attach site map showing grid ID

Page 3 of 4

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Josh Wade, Omar Peralta, Aaron McBride, Anthony Peralta

Cal. Gas Exp. Date: 9-2-20

Date: 5-19-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 65 Precip: 0 Upwind BG: 2.0 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
138	AP	1545	1610	5.26	4	5	10	
139	op	1545	1610	8.49	4	5	10	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGHWADE, OMAR PERALTA, _____
AARON MCBRIDE, _____, _____
ANTHONY PERALTA, _____, Cal. Gas Exp. Date: 9-21-20

Date: 5-20-20 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 46 Precip: 0 Upwind BG: 2.0 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
206	LW	0600	0625	5.37	1	2	4	
202	AM	0600	0625	4.51	1	2	4	
205	AP	0600	0625	4.92	1	2	4	
201	OP	0600	0625	5.06	1	2	4	
196	LW	0625	0650	5.89	1	2	4	
197	AM	0625	0650	6.03	1	2	4	
198	AP	0625	0650	5.27	1	2	4	
190	OP	0625	0650	5.49	1	2	4	
191	LW	0650	0715	6.17	1	2	10	
192	AM	0650	0715	5.64	1	2	10	
184	AP	0650	0715	6.77	1	2	10	
185	OP	0650	0715	5.34	1	2	10	
186	LW	0715	0740	7.38	1	2	10	
176	AM	0715	0740	5.24	1	2	10	
177	AP	0715	0740	6.47	1	2	10	
178	OP	0715	0740	6.13	1	2	10	
170	LW	0740	0805	5.57	1	2	11	
171	AM	0740	0805	8.71	1	2	11	
161	AP	0740	0805	4.35	1	2	11	
162	OP	0740	0805	6.85	1	2	11	
163	LW	0805	0830	8.13	1	2	9	
153	AM	0805	0830	5.77	1	2	9	
154	AP	0805	0830	16.22	1	2	9	
145	OP	0805	0830	5.30	1	2	9	
146	LW	0830	0855	10.82	1	2	11	
136	AM	0830	0855	5.07	1	2	11	
137	AP	0830	0855	7.45	1	2	11	
127	OP	0830	0855	5.22	1	2	11	
128	LW	0855	0920	6.74	1	2	11	
129	AM	0855	0920	8.62	1	2	11	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 3

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wade; Oren Perelta; Aaron McBride; Anthony Perelta

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

Date: 5-20-20 Instrument Used: TVA1000 Grid Spacing: 25

Temperature: 51 Precip: 0 Upwind BG: 2.0 Downwind BG: 2.4

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
130	AP	0855	0920	5.46	1	2	11	
116	OP	0855	0920	6.18	1	2	11	
117	LW	0920	0945	5.32	1	2	12	
118	AM	0920	0945	8.61	1	2	12	
119	AP	0920	0945	6.14	1	2	12	
105	OP	0920	0945	5.32	1	2	12	
106	LW	0945	1010	5.15	1	2	3	
107	AM	0945	1010	6.12	1	2	3	
108	AP	0945	1010	5.75	1	2	3	
95	OP	0945	1010	4.89	1	2	3	
96	LW	1010	1035	5.38	1	2	3	
97	AM	1010	1035	5.21	1	2	3	
98	AP	1010	1035	5.43	1	2	3	
83	OP	1010	1035	4.17	1	2	3	
84	LW	1035	1100	3.61	1	2	4	
85	AM	1035	1100	3.25	1	2	4	
86	AP	1035	1100	3.76	1	2	4	
87	OP	1035	1100	3.21	1	2	4	
88	LW	1100	1125	5.45	1	2	3	
89	AM	1100	1125	5.62	1	2	3	
76	AP	1100	1125	6.34	1	2	3	
77	OP	1100	1125	5.98	1	2	3	
70	LW	1125	1150	6.74	1	3	3	
71	AM	1125	1150	6.42	1	3	3	
64	AP	1125	1150	4.38	1	3	3	
65	OP	1125	1150	7.22	1	3	3	
58	LW	1220	1245	8.66	2	3	7	
53	AM	1220	1245	7.39	2	3	7	
48	AP	1220	1245	7.26	2	3	7	
43	OP	1220	1245	8.41	2	3	7	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 3

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WHOK, ONOFRE PERALTA, AARON MCBRIDE, ANTHONY PERALTA

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

Date: 5-20-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 57 Precip: 0 Upwind BG: 2.0 Downwind BG: 2.9

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
44	LW	1245	1310	8.63	2	3	4	
38	AM	1245	1310	12.23	2	3	4	
39	AP	1245	1310	9.17	2	3	4	
33	OP	1245	1310	6.10	2	3	4	
34	LW	1310	1335	8.43	2	4	4	
28	AM	1310	1335	6.11	2	4	4	
29	AP	1310	1335	8.54	2	4	4	
24	OP	1310	1335	23.26	2	4	4	
19	LW	1335	1400	7.34	2	4	4	
20	AM	1335	1400	10.64	2	4	4	
21	AP	1335	1400	15.81	2	4	4	
25	OP	1335	1400	21.64	2	4	4	

Attach Calibration Sheet
Attach site map showing grid ID

Page 3 of 3

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: 2
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

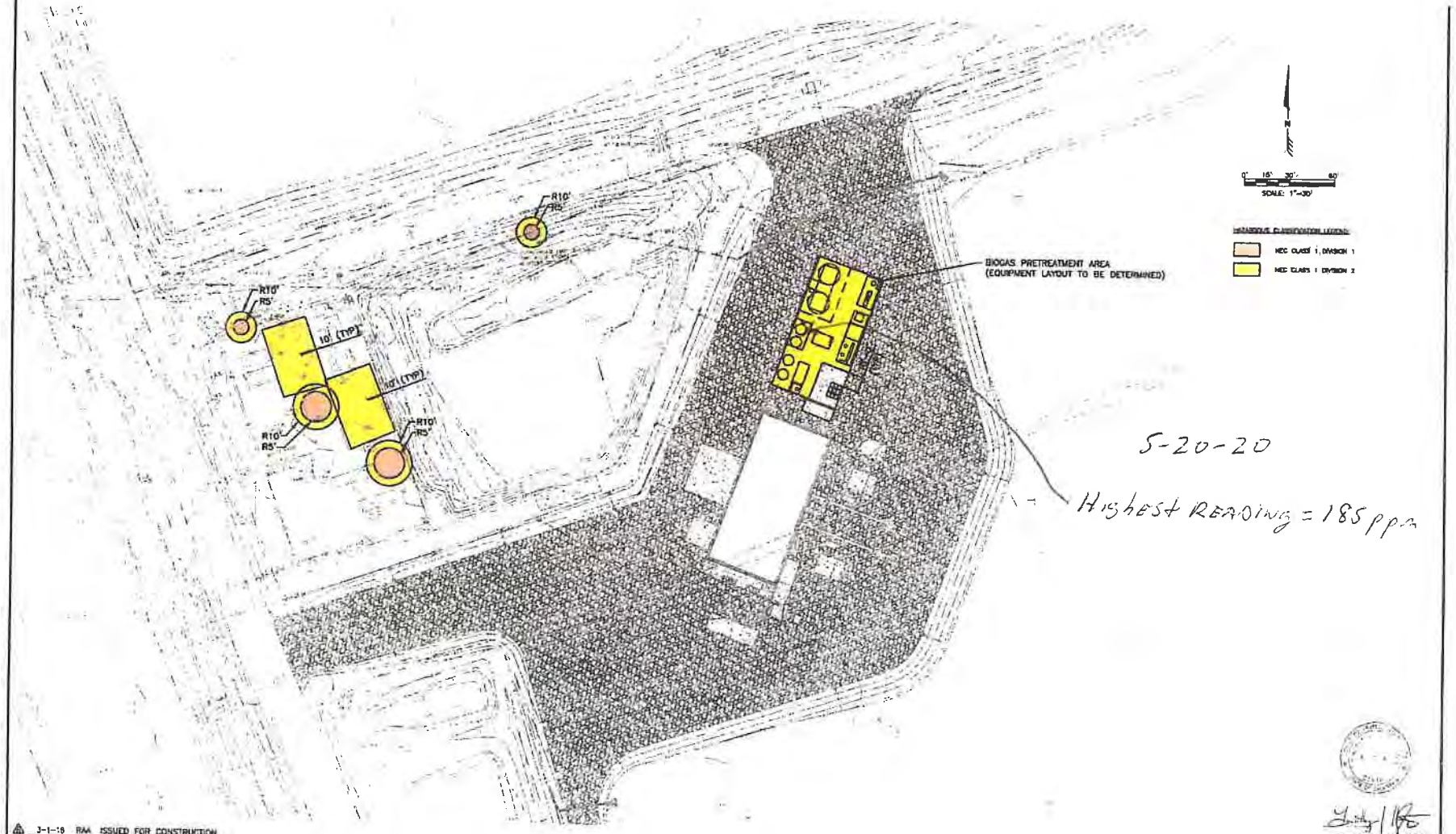
2020 QUARTER: 2
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY: S. Johnson
LANDFILL NAME: Redwood Landfill, Inc.

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



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

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

ACEng
www.oc-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

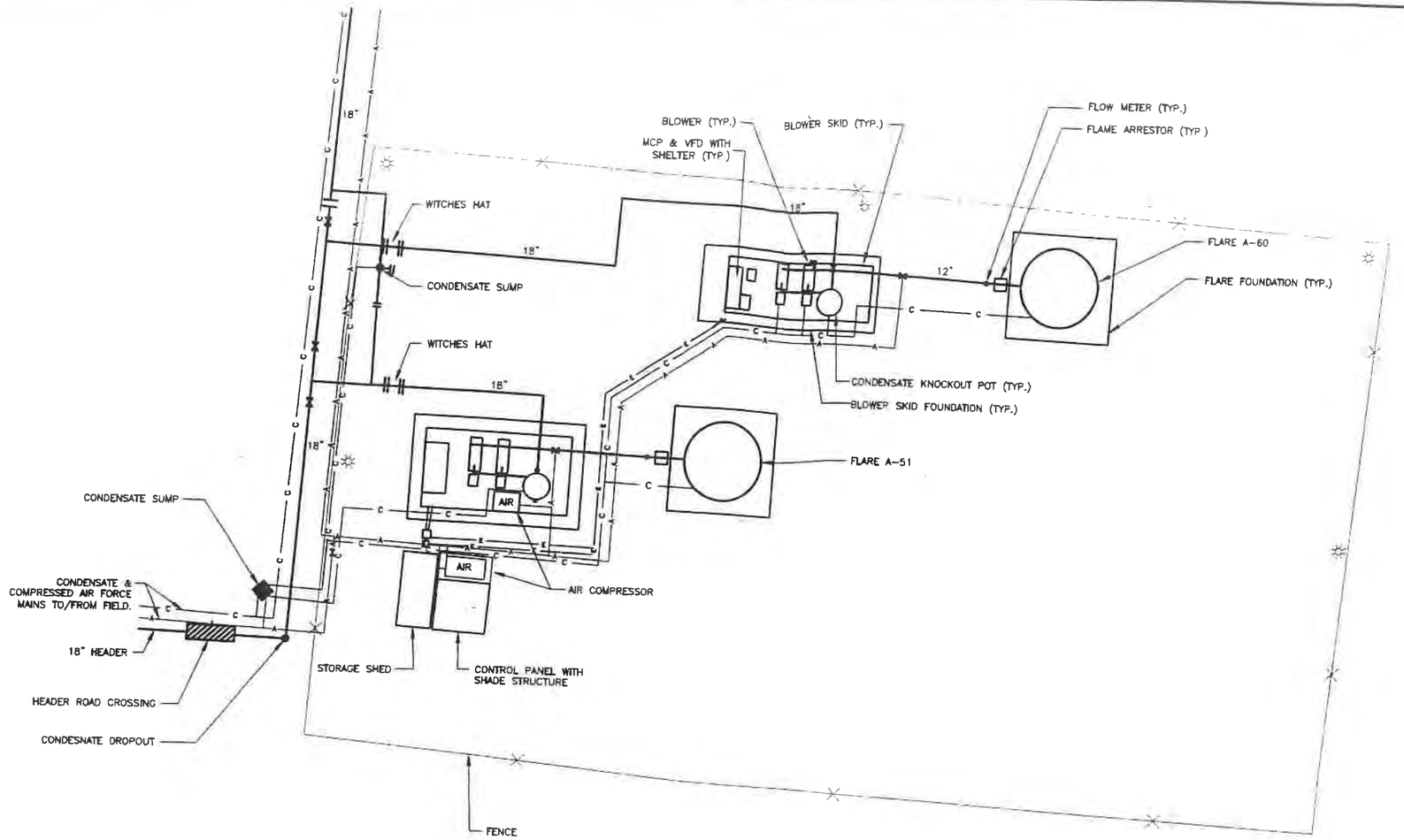
DATE OF SAMPLING: 5-20-20
TECHNICIAN: LEIGH WADE

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 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.



LEGEND

- EXISTING PIPING
- EXISTING FLANGE
- LIGHT SYMBOL
- EXISTING PIPING
- EXISTING BLIND FLANGE
- EXISTING VALVE
- C — 2" HDPE SDR-7 CONDENSATE FORCE MAIN
- A — 2" HDPE SDR-9 COMPRESSED AIR FORCE MAIN
- ROAD CROSSING
- CONDENSATE SUMP

5-20-20

NO EXCEEDANCES

DRAFT

WASTE MANAGEMENT

PAUL J STOUT, P.E

P.E Lic No C52627 Date

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE

DRAWN BY: DESIGNED BY: CHECKED BY: APPROVED BY:

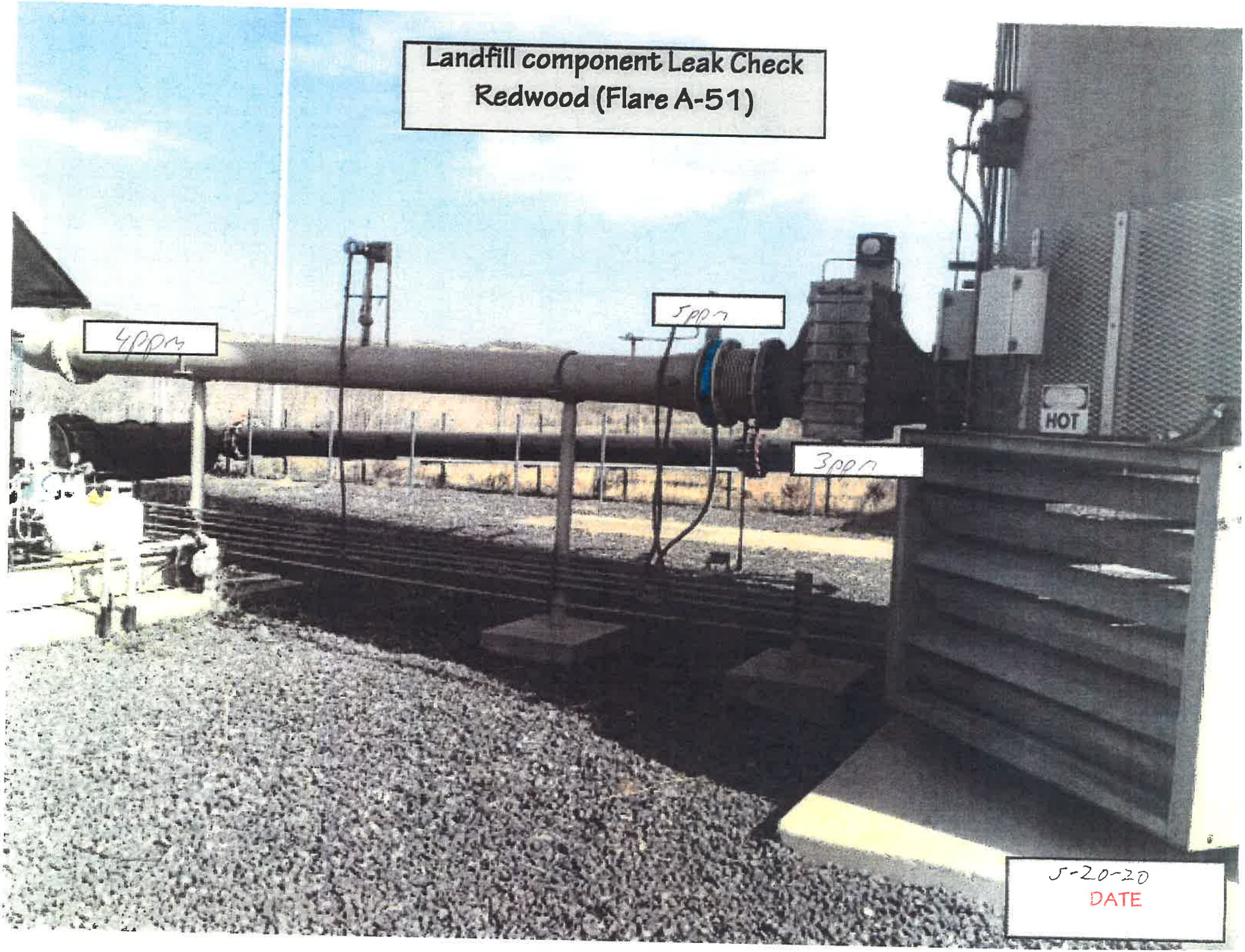
CORNERSTONE Environmental Group, LLC

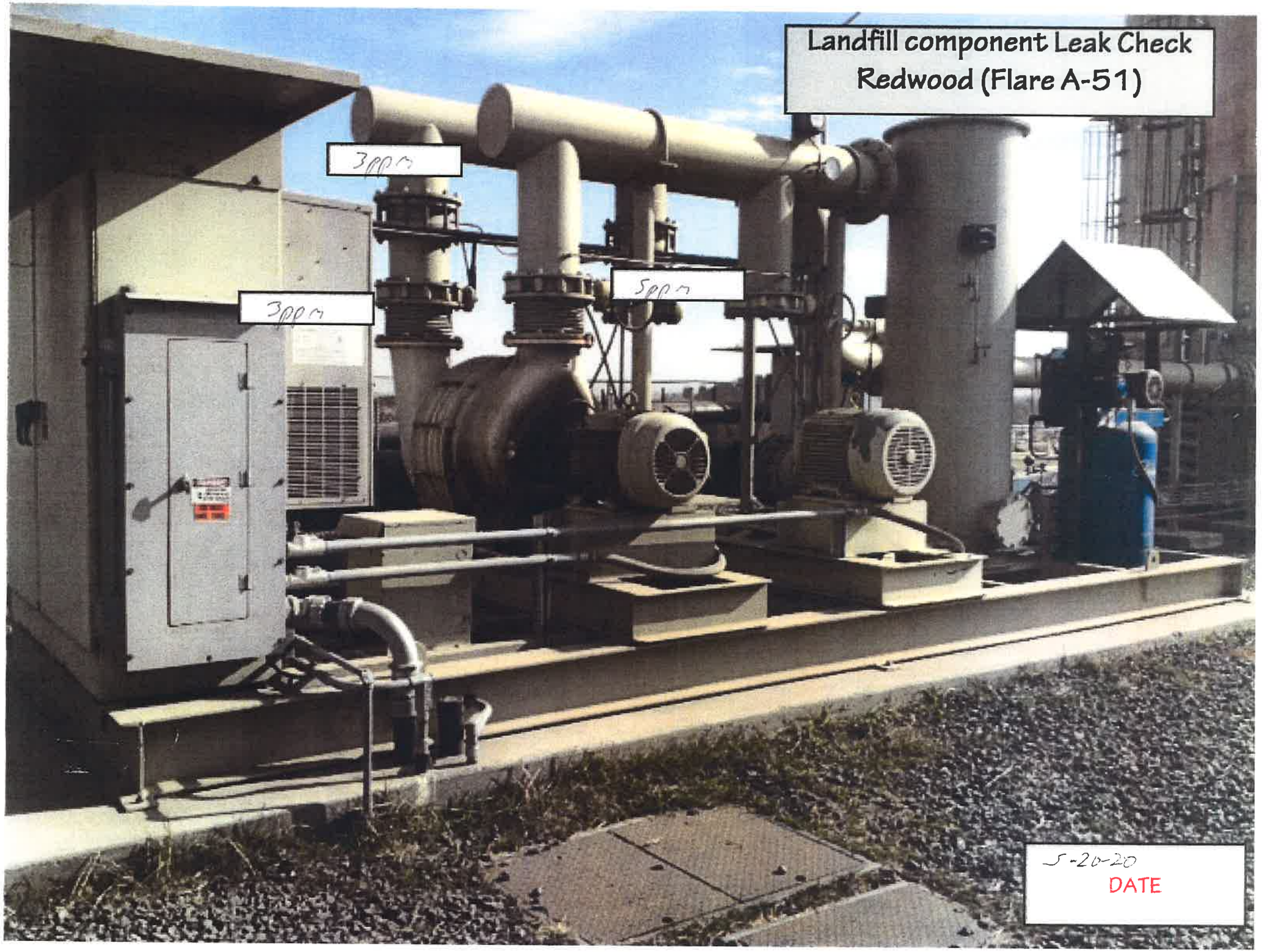
WASTE MANAGEMENT OF CALIFORNIA, INC
REDWOOD LANDFILL, INC.
NOVATO, MARIN COUNTY, CALIFORNIA

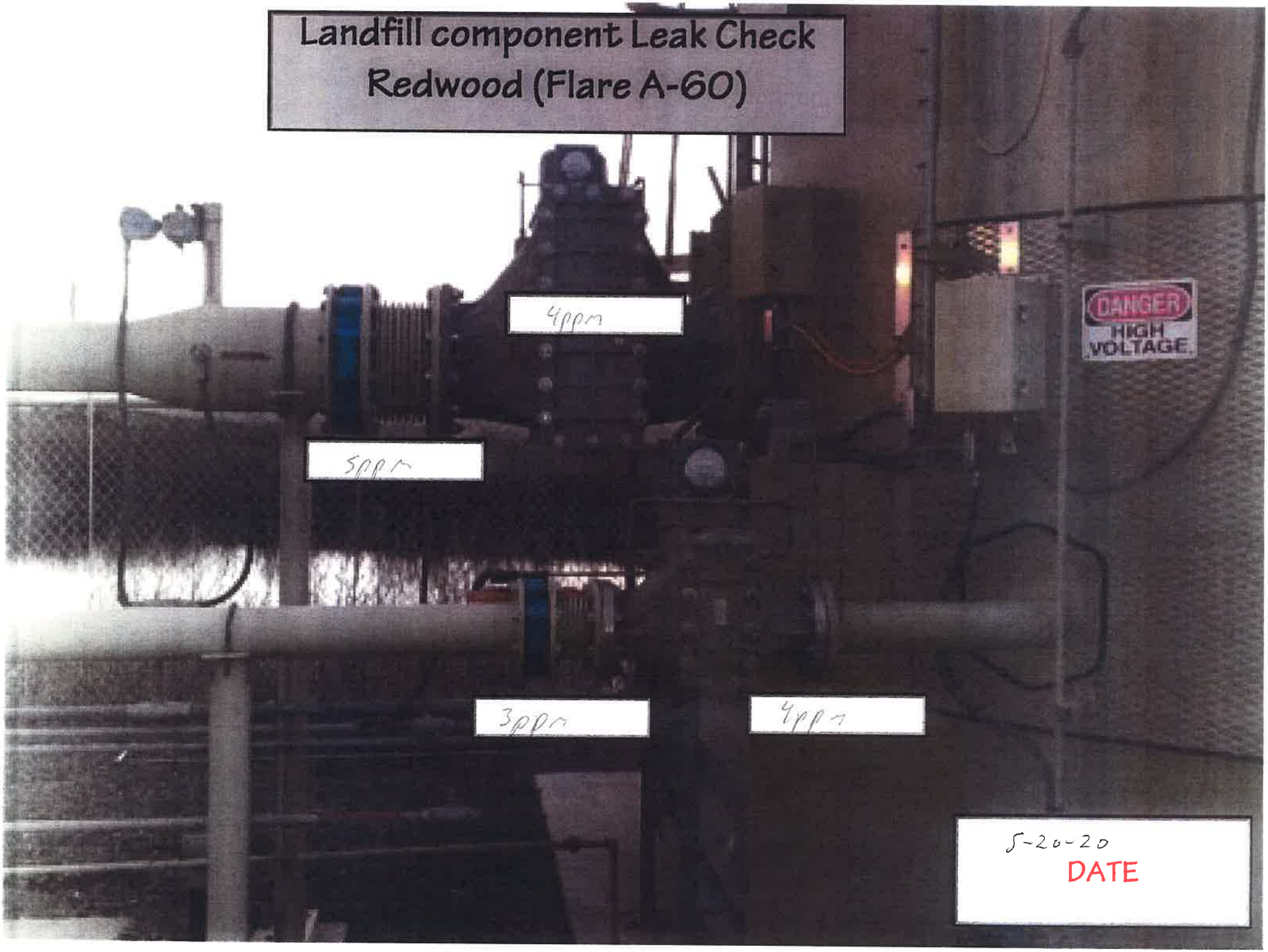
LFG FLARE AND GCCS AS-BUILT FACILITY SITE PLAN

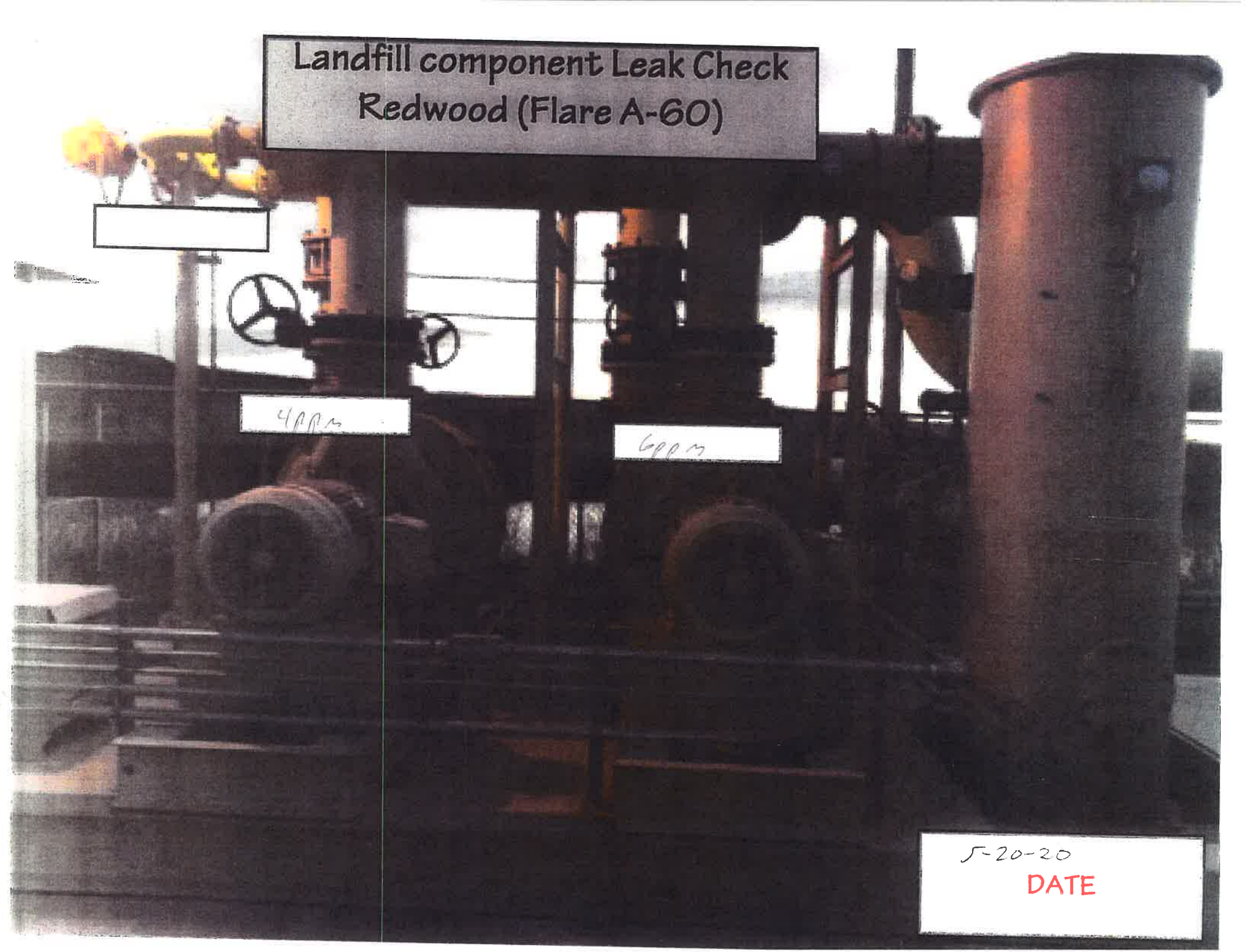
SHEET NO 1

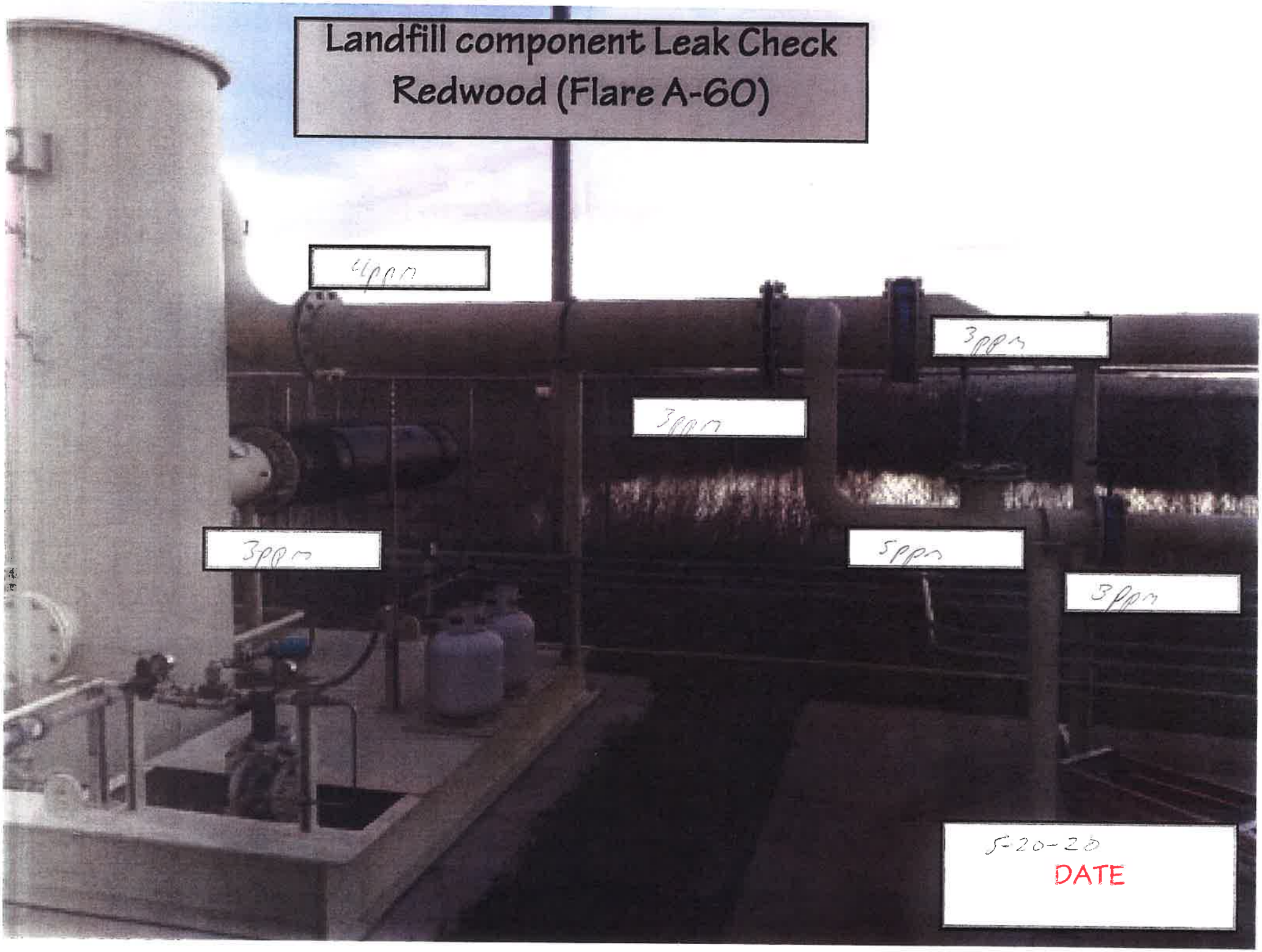
PROJECT NO 70314


Landfill component Leak Check
Redwood (Flare A-51)
4ppm
5ppm
3ppm
HOT
5-20-20
DATE


Landfill component Leak Check
Redwood (Flare A-51)
3ppm
3ppm
5ppm
5-20-20
DATE


Landfill component Leak Check
Redwood (Flare A-60)
4ppm
5ppm
3ppm
4ppm
DANGER
HIGH
VOLTAGE
5-20-20
DATE


Landfill component Leak Check
Redwood (Flare A-60)
4ppm
6ppm
5-20-20
DATE


Landfill component Leak Check
Redwood (Flare A-60)
4ppm
3ppm
3ppm
3ppm
5ppm
3ppm
5-20-25
DATE

Attachment D

Weather Station Data

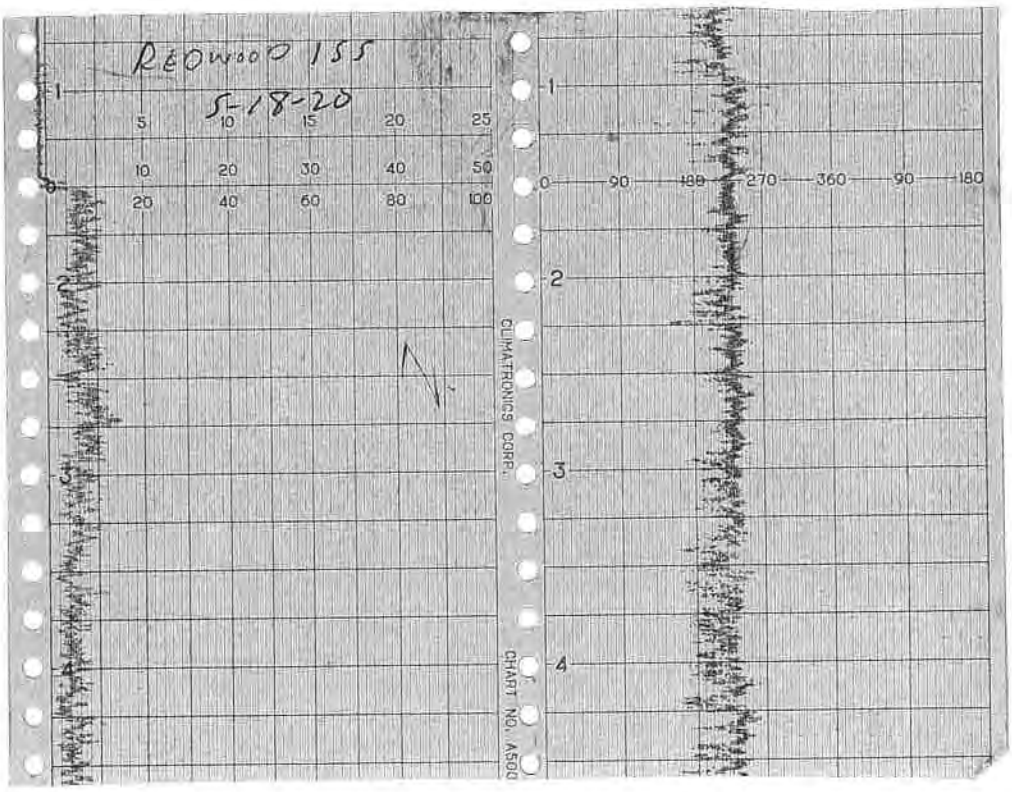
RES Environmental Inc.

16-POINT WIND DIRECTION INDEX

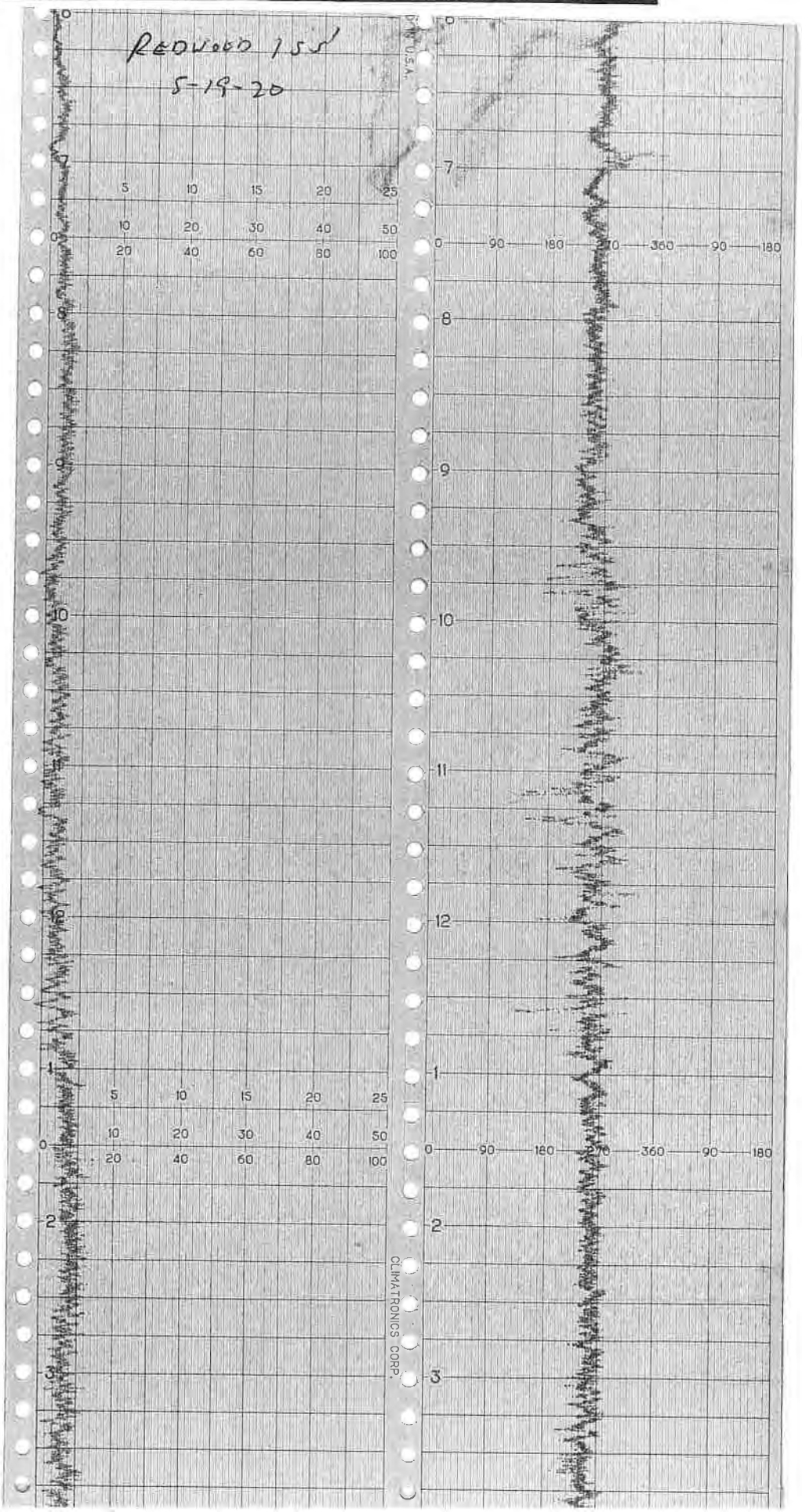
NO	DIRECTION	DEGREES		
		FROM	CENTER	TO
16	NORTH (N)	348.8	360.0	011.3
1	NORTH-NORTHEAST (NNE)	011.3	022.5	033.8
2	NORTHEAST (NE)	033.8	045.0	056.3
3	EAST-NORTHEAST (ENE)	056.3	067.5	078.8
4	EAST (E)	078.8	090.0	101.3
5	EAST-SOUTHEAST (ESE)	101.3	112.5	123.8
6	SOUTHEAST (SE)	123.8	135.0	146.3
7	SOUTH-SOUTHEAST (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

865 Via Lata ▪ Colton, California 92324 ▪ (909) 422-1001 Fax (909) 422-0707

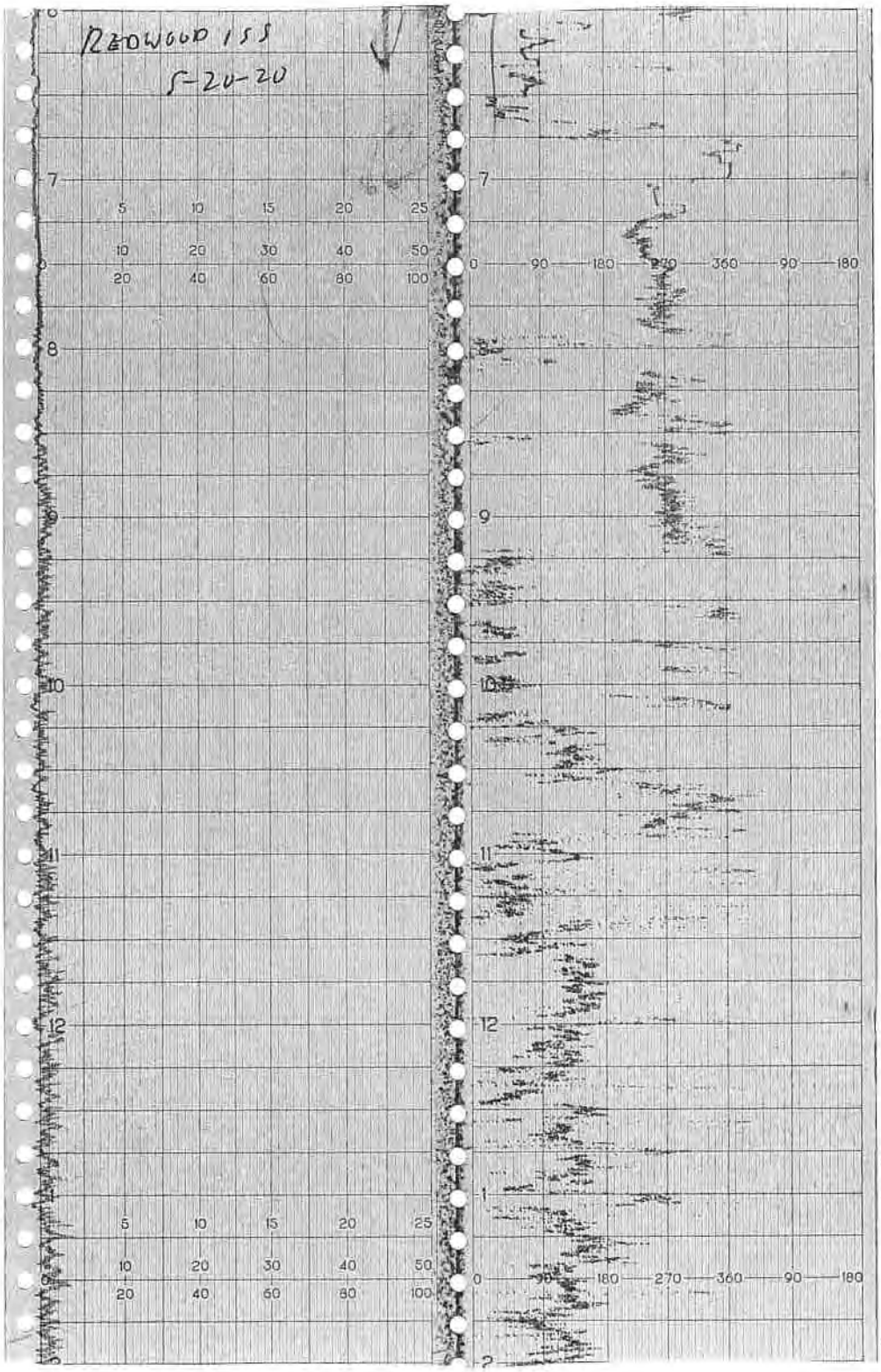
WIND SPEED & DIRECTION CHART ROLL



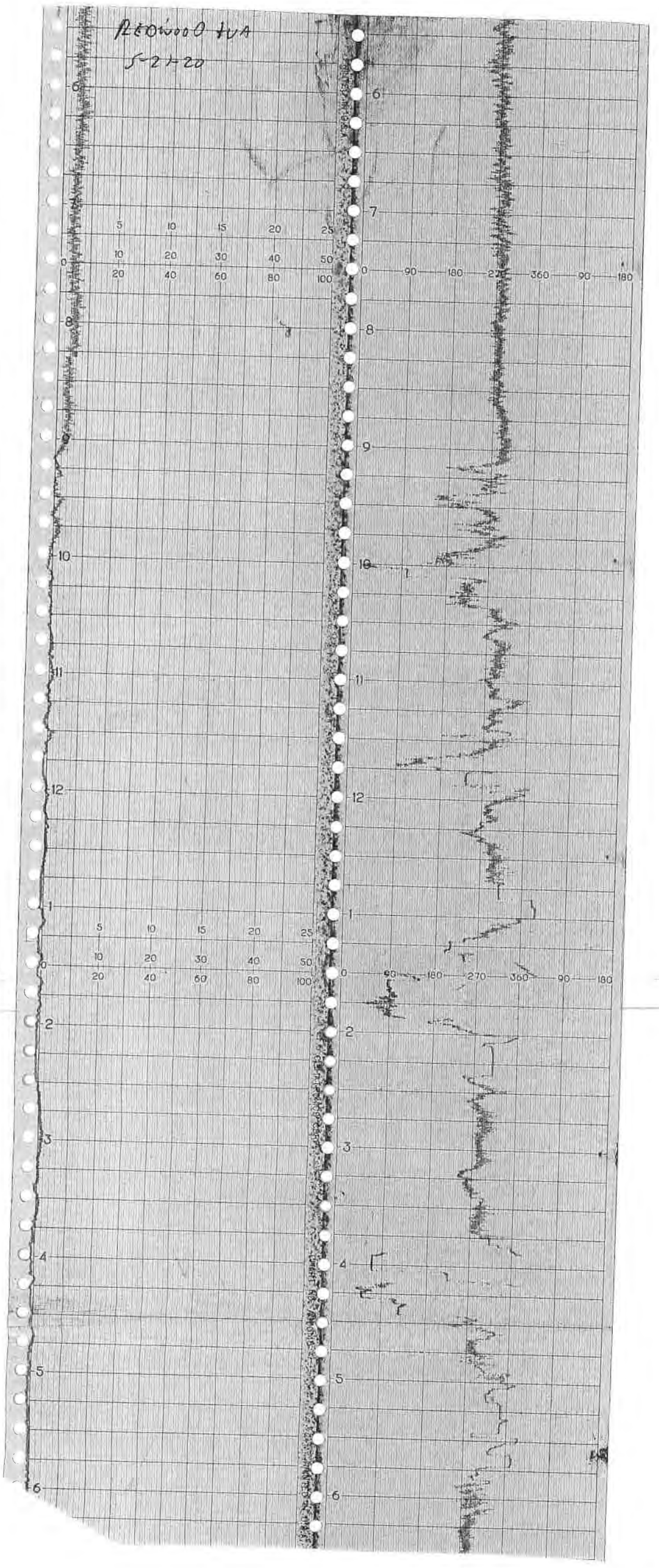
WIND SPEED & DIRECTION CHART ROLL



WIND SPEED & DIRECTION CHART ROLL



WIND SPEED & DIRECTION CHART ROLL



Attachment E

Calibration Records

RESPONSE TIME TEST RECORD

Date: 5/28/20

Expiration Date (3 months): 8/28/20

Time: 1015 AM — PM

Instrument Make: Thermo Model: Micro FID S/N: CEMF340

Measurement #1:

Stabilized Reading Using Calibration Gas: 497.5 ppm
90% of the Stabilized Reading: 447.75 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 1 seconds (a)

Measurement #2:

Stabilized Reading Using Calibration Gas: 497.0 ppm
90% of the Stabilized Reading: 447.3 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 2 seconds (b)

Measurement #3:

Stabilized Reading Using Calibration Gas: 499.9 ppm
90% of the Stabilized Reading: 449.91 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 1 seconds (c)

Calculate Response Time:

$\frac{(a)+(b)+(c)}{3}$ = 1.33 seconds (must be less than 30 seconds)

Performed By: [signature]

CALIBRATION PRECISION TEST RECORD

Date: 5/28/20

Expiration Date (3 months): 8/28/20

Time: 1015 AM ——— PM

Instrument Make: Photovac Model: MicroFID S/N: C2MF340

Measurement #1:

Meter Reading for Zero Air: 0.2 ppm (a)

Meter Reading for Calibration Gas: 498.2 ppm (b)

Measurement #2:

Meter Reading for Zero Air: 0.3 ppm (c)

Meter Reading for Calibration Gas: 498.9 ppm (d)

Measurement #3:

Meter Reading for Zero Air: 0.1 ppm (e)

Meter Reading for Calibration Gas: 498.3 ppm (f)

Calculate Precision:

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

0.307 % (must be < than 10%)

Performed By: [signature]

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Landfill Date: 5/28/20

Time: 1015 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 = 500.5 ppm
3. Adjust meter to read 500 ppm. ✓

Background Determination Procedure

1. Upwind Reading (highest in 30 seconds): 0.4 ppm (a)
2. Downwind Reading (highest in 30 seconds): 0.5 ppm (b)

Calculate Background Value:

$\frac{(a) + (b)}{2}$ Background = 0.45 ppm

Performed By: [signature]

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Landfill Date: 6/18/20

Time: — AM 1300 PM

Instrument Make: Photovac Model: MicroFID S/N: C2MF340

Calibration Procedure

1. Allow instrument to internally zero itself while introducing zero air.
2. Introduce the calibration gas into the probe.

   Stable Reading = 500.1 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): 0.2 ppm (b)

Calculate Background Value:

$\frac{(a) + (b)}{2}$ Background = 0.15 ppm

Performed By: [signature]

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: NORWOOD INSTRUMENT MAKE: HEATH

MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 5-18-20 TIME: 1230

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
2.0 ppm	2.4 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	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	0.22 ppm	24 ppm	1
#2	0.13 ppm	25 ppm	0
#3	0.10 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: LOUISA WOLF Date/Time: 5-18-20-1230

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Renwood INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 11 SERIAL #: 1036346774

MONITORING DATE: 5-18-20 TIME: 1230

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
2.0 ppm	2.4 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	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	0.36 ppm	23 ppm	2
#2	0.29 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			2.6 #DIV/0! Must be less than 10%

Performed By: Anthony Perrotta Date/Time: 5-18-20-1230

RES Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Aldens

MODEL: TVA 1000 EQUIPMENT #: 12 SERIAL #: 103624674

MONITORING DATE: 5-18-20 TIME: 1230

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
2.0 ppm	2.4 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	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	0.21 ppm	23 ppm	2
#2	0.16 ppm	24 ppm	1
#3	0.09 ppm	25 ppm	0
Calculate Precision [STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1			4.0 #DIV/0! Must be less than 10%

Performed By: Aaron McBride Date/Time 5-18-20 1230

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 13 SERIAL #: 1162746775

MONITORING DATE: 5-18-20 TIME: 1230

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
2.0 ppm	2.4 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	24 ppm	21.6 ppm	7
#2	24 ppm	21.6 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	0.31 ppm	24 ppm	1
#2	0.20 ppm	24 ppm	1
#3	0.17 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 Omar Perella Date/Time: 5-18-20-1230

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 5-19-20 TIME: 0600

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
2.0 ppm	2.4 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	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	0.26 ppm	24 ppm	1
#2	0.14 ppm	25 ppm	0
#3	0.12 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 LOUIS WADE Date/Time: 5-19-20 - 0600

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Heath

MODEL: VUA1000 EQUIPMENT #: 11 SERIAL #: 103634724

MONITORING DATE: 5-19-20 TIME: 0600

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
2.0 ppm	2.4 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	23 ppm	20.7 ppm	7
#2	24 ppm	21.6 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	0.18 ppm	23 ppm	2
#2	0.11 ppm	24 ppm	1
#3	0.08 ppm	25 ppm	0
Calculate Precision [STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1			4.0 #DIV/0! Must be less than 10%

Performed By ANTHONY PORRATA Date/Time: 5-19-20-0600

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Hanna

MODEL: HVA 1000 EQUIPMENT #: 12 SERIAL #: 10362467 4/

MONITORING DATE: 5-19-20 TIME: 0600

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
2.0 ppm	2.4 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	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	0.12 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 5-19-20-0600

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 5-19-20 TIME: 0600

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
2.0 ppm	2.4 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	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	0.25 ppm	25 ppm	0
#3	0.17 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: OMAR PERALTA Date/Time: 5-19-20-0600

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Ramwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 5-20-20 TIME: 0550

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
2.0 ppm	2.4 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	24 ppm	21.6 ppm	5
#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	0.27 ppm	24 ppm	1
#2	0.18 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: Joshua Wood Date/Time: 5-20-20 -0550

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 11 SERIAL #: 1036396774

MONITORING DATE: 5-20-20 TIME: 0550

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
2.0 ppm	2.4 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	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	0.24 ppm	24 ppm	1
#2	0.18 ppm	24 ppm	1
#3	0.14 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: ANTHONY PORTER Date/Time: 5-20-20 - 0550

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Ultra

MODEL: TVA1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 5-20-20 TIME: 0550

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
2.0 ppm	2.4 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	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	0.18 ppm	23 ppm	2
#2	0.11 ppm	25 ppm	0
#3	0.09 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		.26 #DIV/0! Must be less than 10%

Performed By: AARON MCBRIDE Date/Time: 5-20-20 - 0550

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 5-20-20 TIME: 0550

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
2.0 ppm	2.4 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	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	0.27 ppm	23 ppm	2
#2	0.14 ppm	24 ppm	1
#3	0.11 ppm	25 ppm	0
Calculate Precision [STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1			4.0 #DIV/0! Must be less than 10%

Performed By: Omar Pacheco Date/Time: 5-20-20-0550

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 5-21-20 TIME: 0515

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
2.0 ppm	2.4 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	6
#2	501 ppm	451 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	0.20 ppm	495 ppm	5
#2	0.16 ppm	501 ppm	1
#3	0.14 ppm	500 ppm	0
Calculate Precision [STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/500 X 100/1			0.40 #DIV/0! Must be less than 10%

Performed By: Leighwade Date/Time: 5-21-20 ~ 0515

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Heath

MODEL: TVA1000 EQUIPMENT #: 11 SERIAL #: 1036346774

MONITORING DATE: 5-21-20 TIME: 0515

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
2.0 ppm	2.4 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	5
#2	498 ppm	448 ppm	5
#3	500 ppm	450 ppm	5
Calculate Response Time (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	0.27 ppm	490 ppm	10
#2	0.14 ppm	498 ppm	2
#3	0.08 ppm	500 ppm	0
Calculate Precision [STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/500 X 100/1			0.8 #DIV/0! Must be less than 10%

Performed By: Anthony Perich Date/Time: 5-20-20 0515

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: HORIBA

MODEL: VA 1000 EQUIPMENT #: 12 SERIAL #: 10362467

MONITORING DATE: 5-20-20 TIME: 0515

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
2.0 ppm	2.4 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	503 ppm	453 ppm	6
#2	500 ppm	450 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	0.41 ppm	503 ppm	3
#2	0.22 ppm	500 ppm	0
#3	0.14 ppm	500 ppm	0
Calculate Precision [STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/500 X 100/1			0.20 #DIV/0! Must be less than 10%

Performed By: AARON McBRIDE Date/Time: 5-20-20 0515

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: HEANA

MODEL: TVA1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 5-26-20 TIME: 0515

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
2.0 ppm	2.4 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	496 ppm	446 ppm	7
#2	502 ppm	452 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	496 ppm	4
#2	0.13 ppm	502 ppm	2
#3	0.05 ppm	500 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/500 X 100/1		0.40 #DIV/0! Must be less than 10%

Performed By: OMAR PERALTA Date/Time: 5-26-20 0515

RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: _____

Purpose: _____

Operator: _____

Date: 5-3-20 **Time:** 0930

Model # TVA 1000B

Serial # #10 1036346773

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	(Pass) / Fail	CALIBRATION CHECK
Reading following ignition	2.1 ppm	Calibration Gas (ppm): 500 / Actual (ppm): 500 / % Accuracy: 100%
Leak test	(Pass) / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	(Pass) / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	(Pass) / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	4-3-20	Time required to attain 90% of Cal Gas ppm: 1. 6 / 2. 7 / 3. 7
Factory calibration record w/instrument within 3 months	(Pass) / Fail	Average: 6.6
		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.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: _____

Purpose: _____

Operator: _____

Date: 5-3-20 **Time:** 0945

Model # TLA 10003

Serial # #11 103634677Y

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	(Pass) / Fail	CALIBRATION CHECK
Reading following ignition	2.3 ppm	Calibration Gas (ppm): 500 / Actual (ppm): 500 / % Accuracy: 100%
Leak test	(Pass) / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	(Pass) / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	(Pass) / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	4-3-20	Time required to attain 90% of Cal Gas ppm
Factory calibration record w/instrument within 3 months	(Pass) / Fail	1. 7
		2. 7
		3. 6
		Average 6.6
		Equal to or less than 30 seconds? (Y) N
		Instrument calibrated to CH_4 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.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: _____

Purpose: _____

Operator: _____

Date: 5-3-20 **Time:** 1000

Model # TVA 1000B

Serial # #12 103 624 6741

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	(Pass) / Fail	CALIBRATION CHECK
Reading following ignition	1.8 ppm	Calibration Gas (ppm): 500 / Actual (ppm): 500 / % Accuracy: 100%
Leak test	(Pass) / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	(Pass) / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	(Pass) / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	4-3-20	Time required to attain 90% of Cal Gas ppm
Factory calibration record w/instrument within 3 months	(Pass) / Fail	1. 6 / 2. 6 / 3. 7 / Average 6.3
		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.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: _____

Purpose: _____

Operator: MM CM

Date: 5-3-20 **Time:** 1015

Model # TVA 1000 B

Serial # #13 1102746775

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	(Pass) / Fail	CALIBRATION CHECK
Reading following ignition	1A ppm	Calibration Gas (ppm): 500 / Actual (ppm): 500 / % Accuracy: 100%
Leak test	(Pass) / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	(Pass) / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	(Pass) / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	4-3-20	Time required to attain 90% of Cal Gas ppm: 1. 6 / 2. 6 / 3. 7 / Average 6.3
Factory calibration record w/instrument within 3 months	(Pass) / Fail	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: [signature] DATE: 4-3-20

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	0.59	< 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.

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 #11

SERIAL NUMBER: 1036346774

TECHNICIAN: MM DATE: 4-3-20

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	0,78	< 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.

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 #12

SERIAL NUMBER: 1036246741

TECHNICIAN: [signature] DATE: 4-3-20

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	0.76	< 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.

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 #13

SERIAL NUMBER: 1102746775

TECHNICIAN: MM DATE: 4-3-20

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	501	+/- 125
10000	10000	10,000	+/- 2500
< 1	ZERO GAS	0,41	< 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.

P.O Box 748 ▪ Colton, California 92324
(909) 422-1001 ▪ TOLL FREE (888) 325-1098 ▪ FAX (909) 422-0707 ▪ www.resenvironmental.com

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

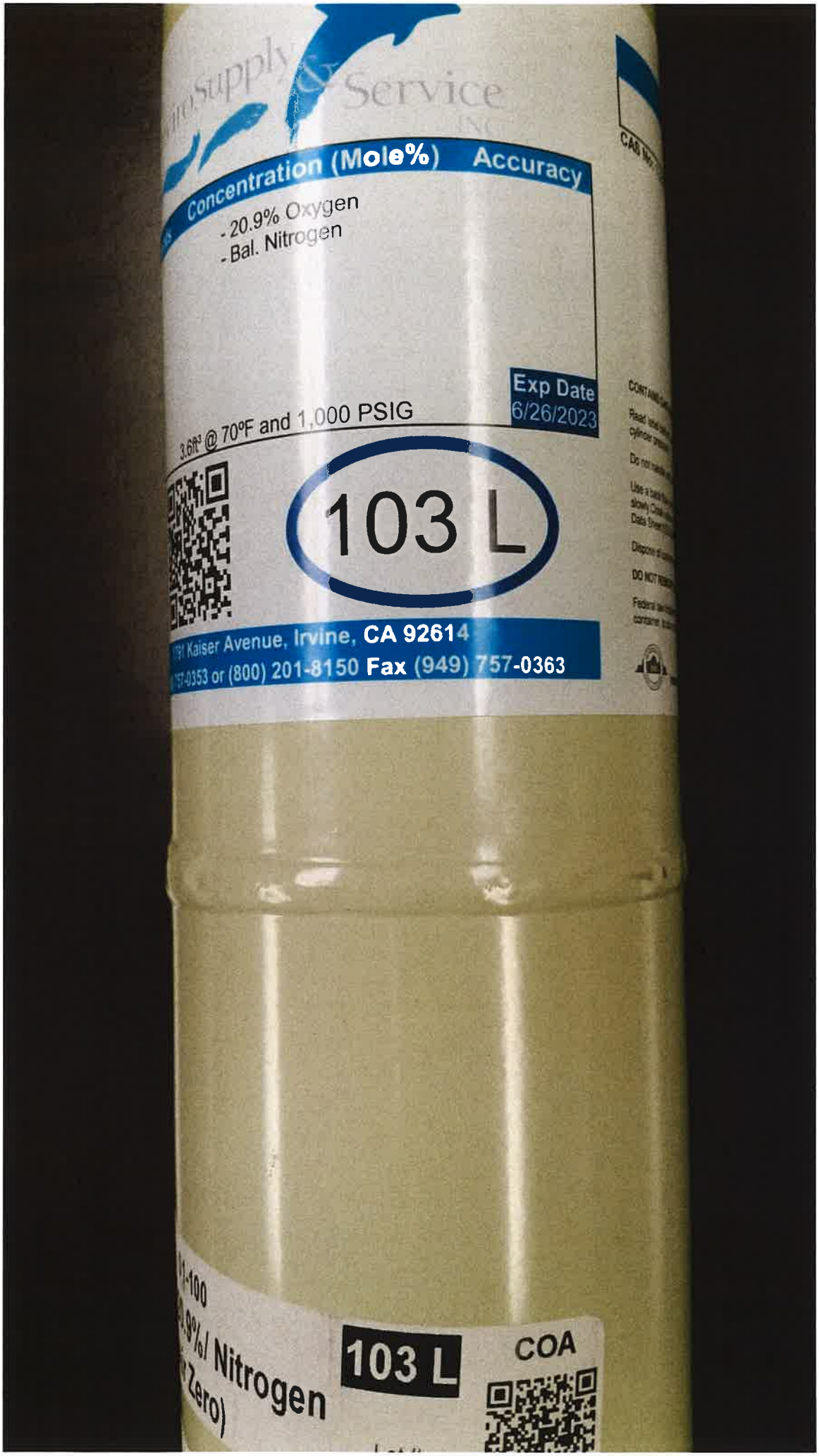
Method of Preparation:

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


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
757-0353 or (800) 201-8150 Fax (949) 757-0363
103 L
COA

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

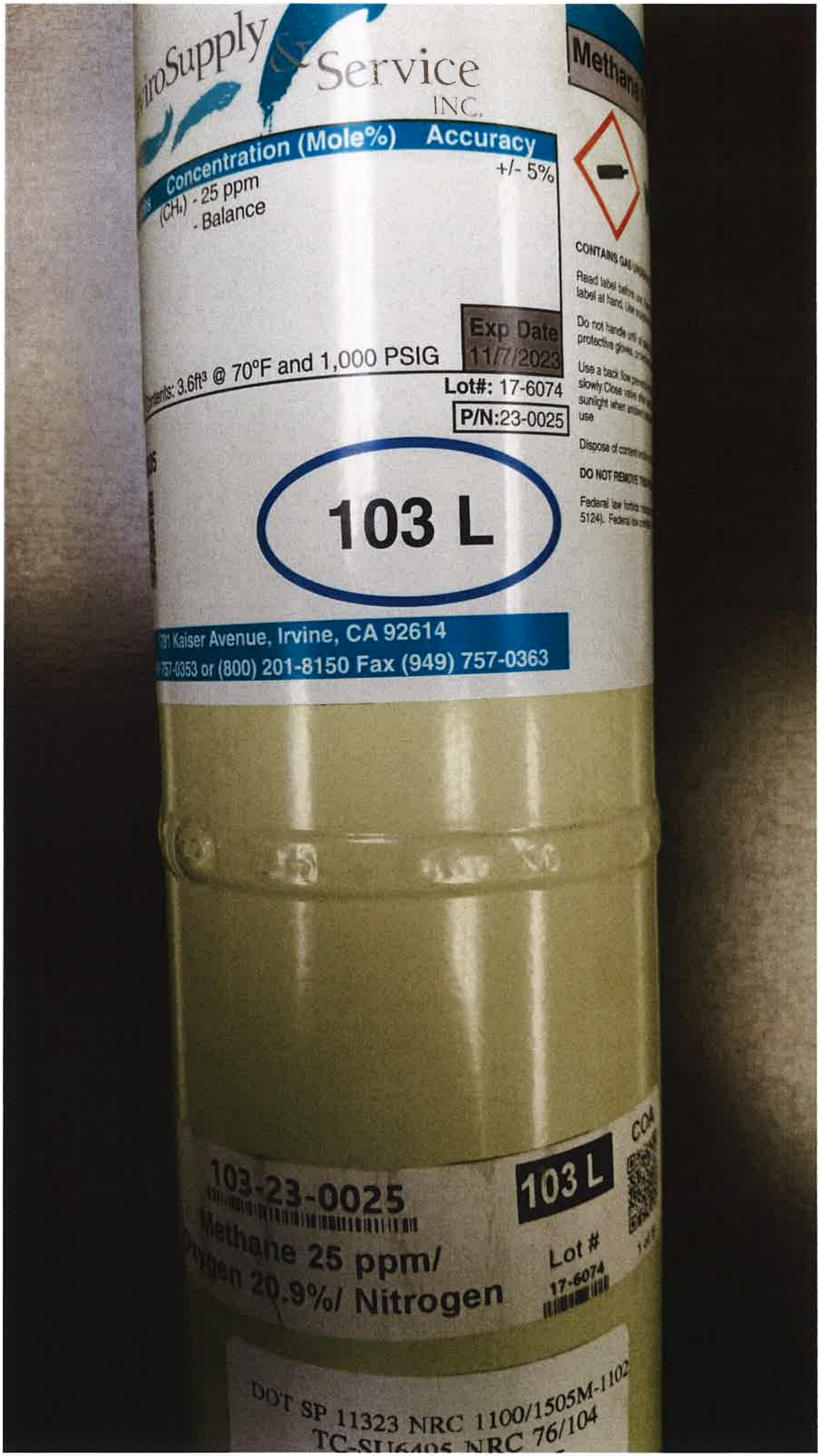
Method of Preparation:

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


Service
INC.
Concentration (Mole%) Accuracy
+/- 5%
- 25 ppm
- Balance
Exp Date
11/7/2023
Lot#: 17-6074
P/N:23-0025
103 L
Kaiser Avenue, Irvine, CA 92614
(949) 757-0353 or (800) 201-8150 Fax (949) 757-0363
103-23-0025
103 L
Methane 25 ppm/
Lot #
17-6074
DOT SP 11323 NRC 1100/1505M-1102
TC-SU6495 NRC 76/104

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

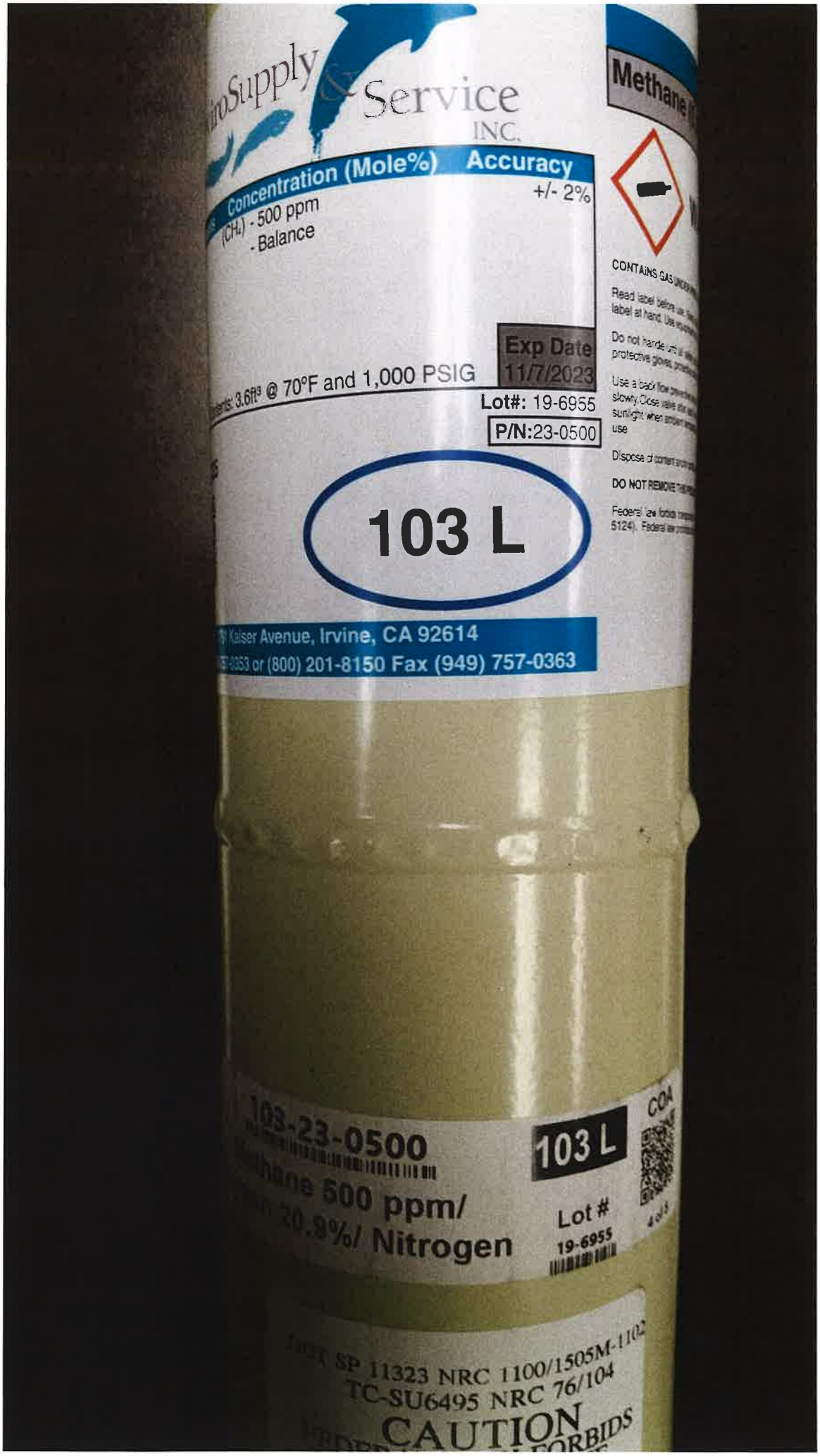
Mfg. Date: 7/24/2019

Parent Cylinder ID Number: 001763

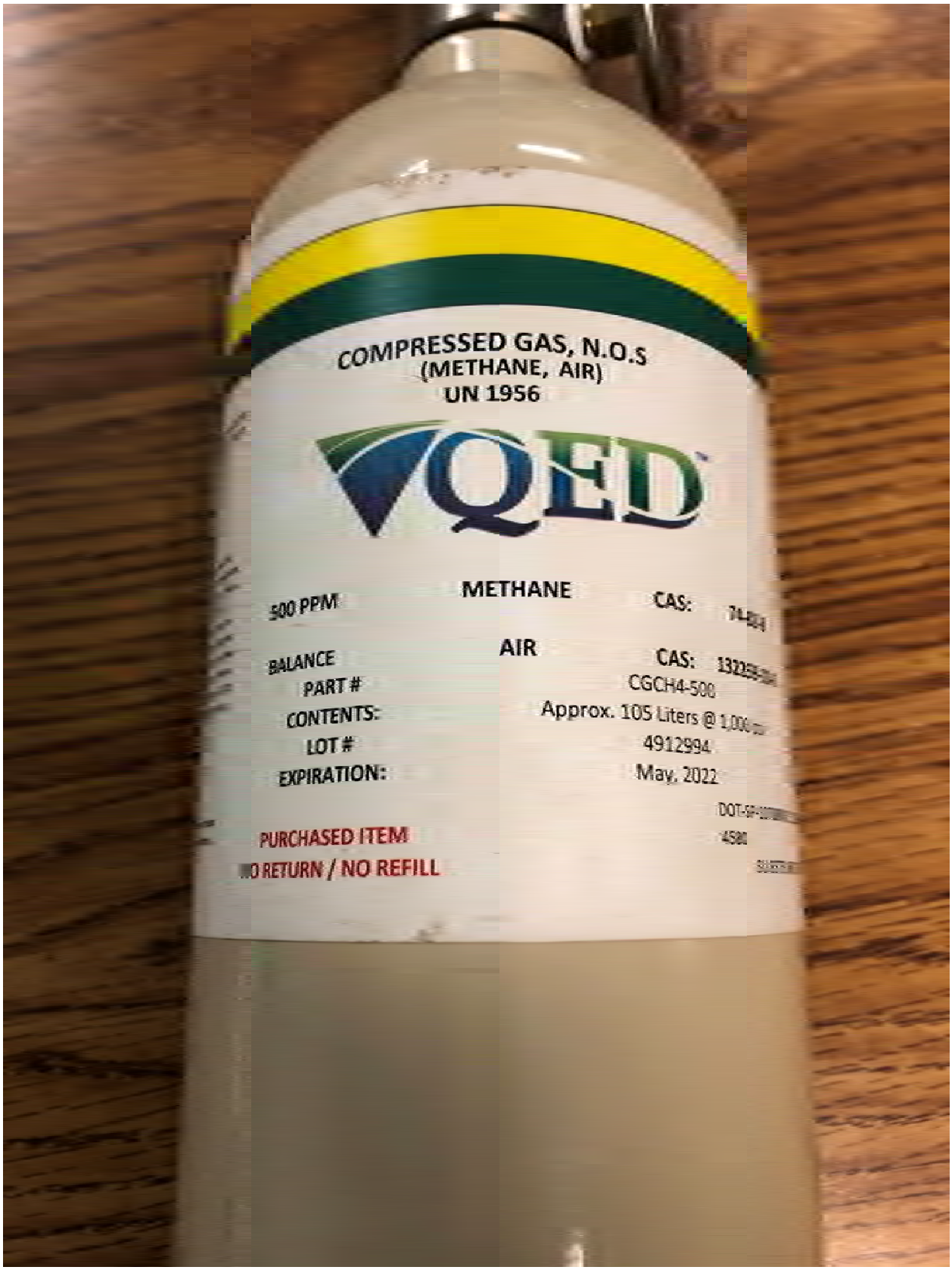
Method of Preparation:
Gravimetric/Pressure Transfilled

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


Service
INC.
Concentration (Mole%)
Accuracy
+/- 2%
(CH4) - 500 ppm
- Balance
Exp Date
11/7/2023
Lot#: 19-6955
P/N:23-0500
103 L
Kaiser Avenue, Irvine, CA 92614
(800) 201-8150 Fax (949) 757-0363
103-23-0500
103 L
Lot #
19-6955
COA
Nitrogen
CAUTION


EQUIPCO
SALES &
2100 MERIDIAN PARK BLVD
Concord, CA 94520
TO REORDER CALL 1 (888) 234-567
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


COMPRESSED GAS, N.O.S
(METHANE, AIR)
UN 1956
QED
500 PPM
METHANE
CAS:
BALANCE
AIR
CAS:
PART #
CGCH4-500
CONTENTS:
Approx. 105 Liters @
LOT #
4912994
EXPIRATION:
May, 2022
PURCHASED ITEM
NO RETURN / NO REFILL

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

September 1, 2020

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

Re: Third 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 Third 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.

THIRD QUARTER 2020 SEM AND COMPONENT LEAK RESULTS

The following is a summary of the SEM and component leak monitoring results completed for the Third Quarter 2020.

Instantaneous Surface Emissions Monitoring Results

The Instantaneous surface monitoring was performed on July 21, 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 eighteen (18) exceedances of 500 ppm_v as methane detected on July 21, 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 July 29, 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 August 18, 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 July 21, 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 July 20, 22, and 23, 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 July 21, 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
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: 3
PERFORMED BY: RES
LANDFILL NAME: Redwood Landfill, Inc.

Grid Number	Flag Number	Date of Monitoring	Concentration of Emission (ppm_v)	Comments
92	O1	7/21/2020	800	Surface
25	O2	7/21/2020	1,000	Surface
90	O3	7/21/2020	1,000	Surface
19	O4	7/21/2020	1,200	Well Sump 8
64	O5	7/21/2020	2,200	Surface
64	O6	7/21/2020	3,000	Capped Well
85	O7	7/21/2020	8,000	Capped Well
85	O8	7/21/2020	1,000	Capped Well
83	O9	7/21/2020	2,000	Capped Well/ 18 VEW
118	O10	7/21/2020	1,200	Well 184
87	O11	7/21/2020	2,000	White Cap Pipe
162	O12	7/21/2020	3,000	Well 132
205	O13	7/21/2020	13,000	Well PZ2
197	O14	7/21/2020	12,000	Capped Well A22
161	O15	7/21/2020	11,000	Capped Well
82	O21	7/21/2020	1,011	Well LS-2
95	O22	7/21/2020	10,488	Pipe HCA17
128	O23	7/21/2020	773	Well 127
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: 3

INITIAL MONITORING PERFORMED BY: RES

FOLLOW-UP MONITORING PERFORMED BY: S.Johnson/S.King

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	7/21/2020	800	7/23/2020	Re-Apply Cover/ Compact	7/29/2020	1		8/18/2020	0		Surface
O2	7/21/2020	1,000	7/23/2020	Re-Apply Cover/ Compact	7/29/2020	9		8/18/2020	61		Surface
O3	7/21/2020	1,000	7/23/2020	Re-Apply Cover/ Compact	7/29/2020	5		8/18/2020	19		Surface
O4	7/21/2020	1,200	7/23/2020	Re-Apply Cover/ Compact	7/29/2020	22		8/18/2020	5		Well Sump 8
O5	7/21/2020	2,200	7/23/2020	Re-Apply Cover/ Compact	7/29/2020	52		8/18/2020	27		Surface
O6	7/21/2020	3,000	7/23/2020	Re-Apply Cover/ Compact	7/29/2020	74		8/18/2020	92		Capped Well
O7	7/21/2020	8,000	7/23/2020	Re-Apply Cover/ Compact	7/29/2020	54		8/18/2020	114		Capped Well
O8	7/21/2020	1,000	7/23/2020	Re-Apply Cover/ Compact	7/29/2020	15		8/18/2020	70		Capped Well
O9	7/21/2020	2,000	7/23/2020	Re-Apply Cover/ Compact	7/29/2020	7		8/18/2020	18		Capped Well/ 18 VEW
O10	7/21/2020	1,200	7/23/2020	Re-Apply Cover/ Compact, Increased BEC's	7/29/2020	2		8/18/2020	6		Well 184
O11	7/21/2020	2,000	7/23/2020	Re-Apply Cover/ Compact	7/29/2020	114		8/18/2020	86		White Cap Pipe
O12	7/21/2020	3,000	7/23/2020	Re-Apply Cover/ Compact, Increased BEC's	7/29/2020	2		8/18/2020	6		Well 132
O13	7/21/2020	13,000	7/23/2020	Re-Apply Cover/ Compact	7/29/2020	27		8/18/2020	59		Well PZ2
O14	7/21/2020	12,000	7/23/2020	Re-Apply Cover/ Compact	7/29/2020	208		8/18/2020	251		Capped Well A22
O15	7/21/2020	11,000	7/23/2020	Re-Apply Cover/ Compact	7/29/2020	152		8/18/2020	110		Capped Well
O21	7/21/2020	1,011	7/23/2020	Re-Apply Cover/ Compact	7/29/2020	19		8/18/2020	6		Well LS-2
O22	7/21/2020	10,488	7/23/2020	Re-Apply Cover/ Compact	7/29/2020	181		8/18/2020	7		Pipe HCA17
O23	7/21/2020	773	7/23/2020	Re-Apply Cover/ Compact, Increased BEC's	7/29/2020	43		8/18/2020	7		Well 127

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

2020 QUARTER: 3

INITIAL MONITORING PERFORMED BY: RES

FOLLOW-UP MONITORING PERFORMED BY: S.Johnson/S.King

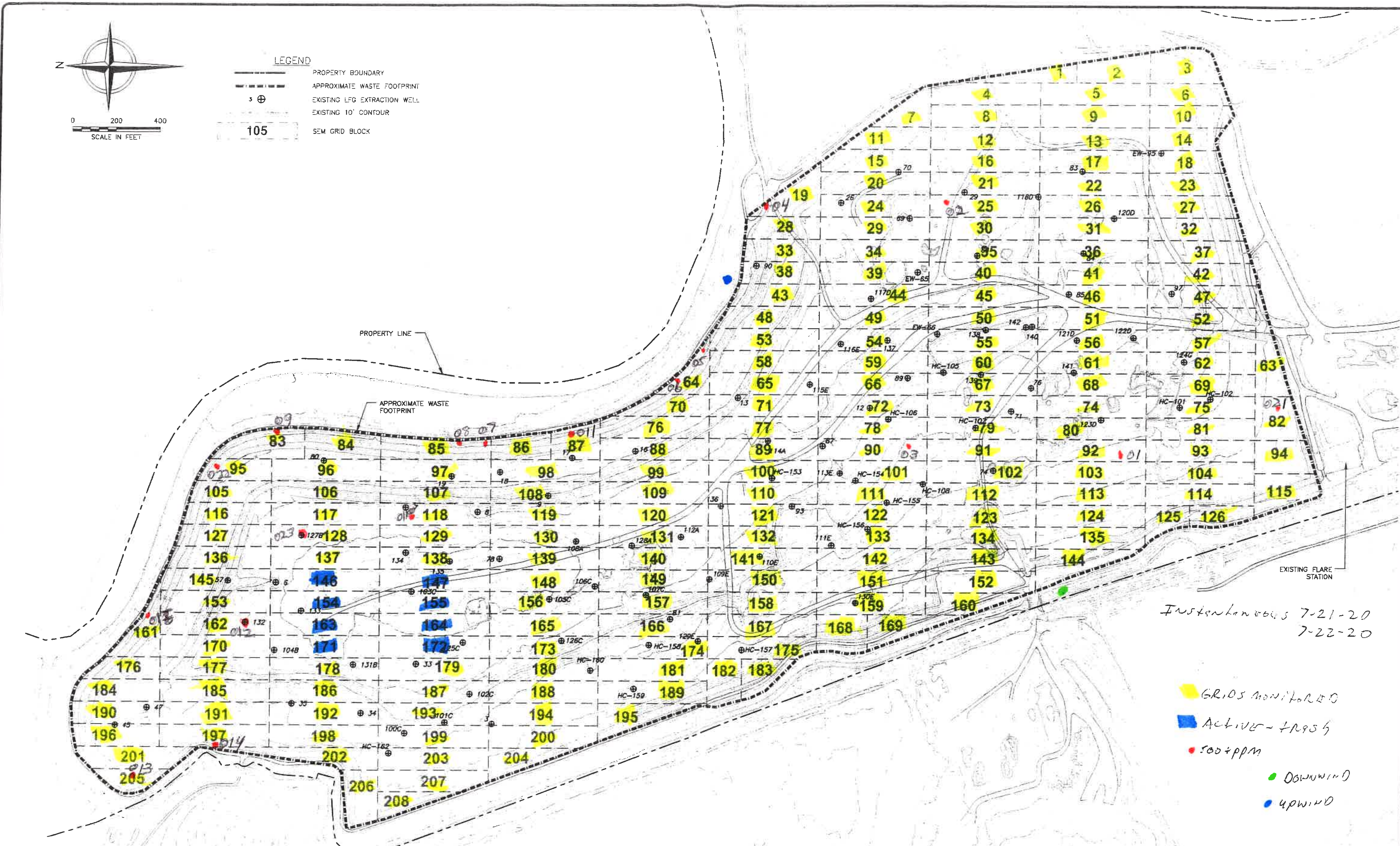
LANDFILL NAME: Redwood Landfill, Inc.

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	7/21/2020	800	7/29/2020	1					Surface
O2	7/21/2020	1,000	7/29/2020	9					Surface
O3	7/21/2020	1,000	7/29/2020	5					Surface
O4	7/21/2020	1,200	7/29/2020	22					Well Sump 8
O5	7/21/2020	2,200	7/29/2020	52					Surface
O6	7/21/2020	3,000	7/29/2020	74					Capped Well
O7	7/21/2020	8,000	7/29/2020	54					Capped Well
O8	7/21/2020	1,000	7/29/2020	15					Capped Well
O9	7/21/2020	2,000	7/29/2020	7					Capped Well/ 18 VEW
O10	7/21/2020	1,200	7/29/2020	2					Well 184
O11	7/21/2020	2,000	7/29/2020	114					White Cap Pipe
O12	7/21/2020	3,000	7/29/2020	2					Well 132
O13	7/21/2020	13,000	7/29/2020	27					Well PZ2
O14	7/21/2020	12,000	7/29/2020	208					Capped Well A22
O15	7/21/2020	11,000	7/29/2020	152					Capped Well
O21	7/21/2020	1,011	7/29/2020	19					Well LS-2
O22	7/21/2020	10,488	7/29/2020	181					Pipe HCA17
O23	7/21/2020	773	7/29/2020	43					Well 127

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

2020 QUARTER: 3
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					



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.

WM WASTE MANAGEMENT

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
DATE OF ISSUE 8/24/2014	DRAWN BY RL	DESIGNED BY MLH	CHECKED BY MED	APPROVED BY PJS		

cornerstone environmental

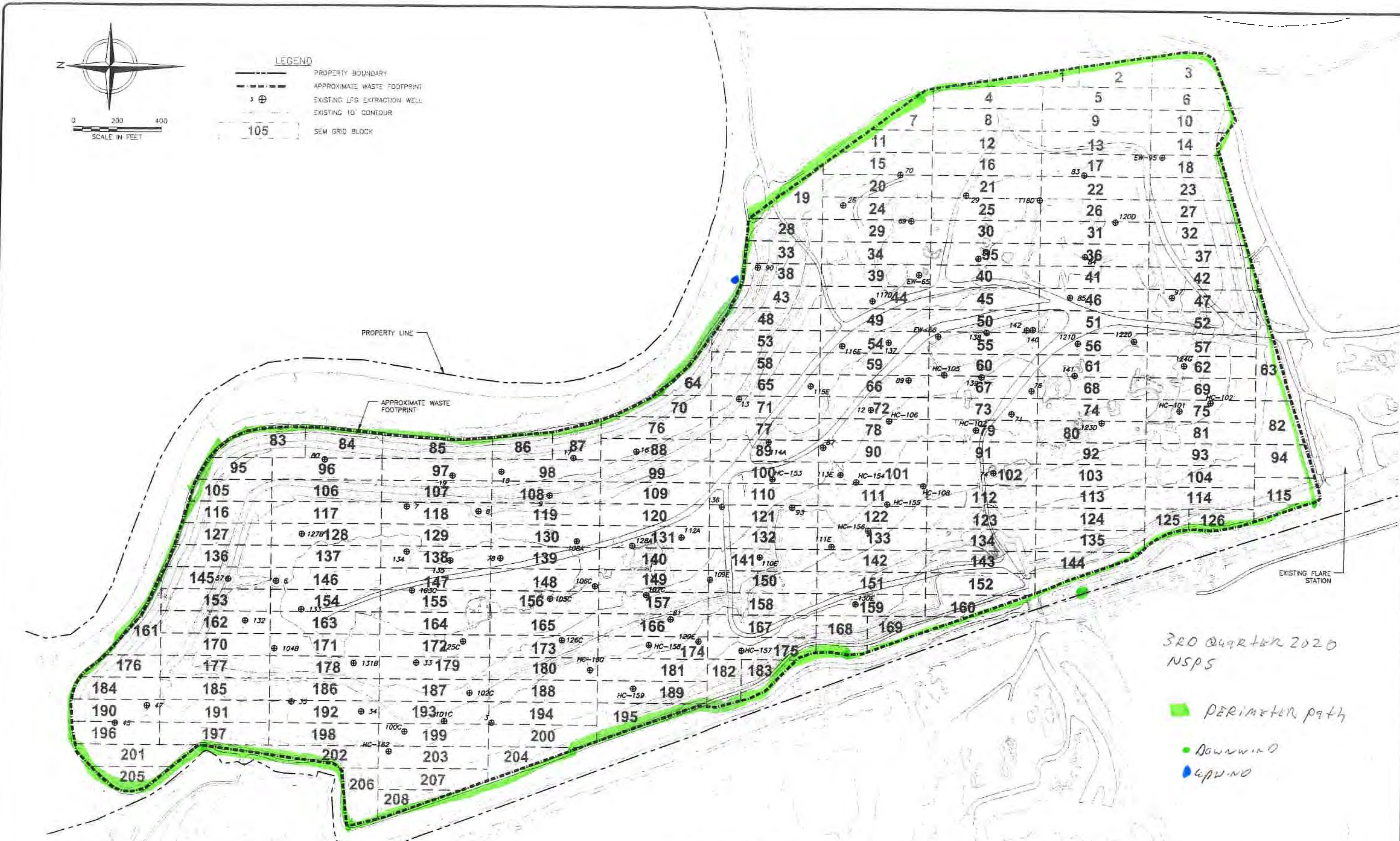
PREPARED BY CORNERSTONE ENVIRONMENTAL GROUP, LLC

REDWOOD LANDFILL, INC.
MARIN COUNTY, CALIFORNIA

SURFACE EMISSIONS MONITORING GRID MAP

SHEET NO 1

PROJECT NO 140521



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:	3RD 2020
Technician:	LEIGHWADE
Instrument:	TVA 1000
Calibration Standard:	500PPM

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	
~~0-~~ 21	82	1,011	7-21-20										WELL LS-2
~~0-~~ 22	95	10,488											PIPE HOLE
~~0-~~ 23	128	773											WELL 127
~~0-~~ 11	87	2,000											WHITE CAP PIPE
~~0-~~ 12	162	3,000											WELL 132
~~0-~~ 1	92	800											SURFACE
~~0-~~ 2	25	1,000											SURFACE
~~0-~~ 3	90	1,000											SURFACE
0- 4	19	1,200											WELL SUMP 8
0- 5	64	2200											SURFACE
~~0-~~ 6	64	3,000											CAPPED WELL
0- 7	85	8,000											CAPPED WELL
0- 8	85	1,000											CAPPED WELL
~~0-~~ 9	83	2,000											CAPPED WELL 18 VEN
0- 10	118	1,200											WELL 184
0- 15	161	11,000											CAPPED WELL
~~0-~~ 13	205	13,000											WELL P22
~~0-~~ 14	197	12,000											CAPPED WELL A22
0-													
0-													
0-													
0-													
0-													
0-													
0-													

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leis Lwade   Dwight Anderson
Omer Peralta
Nick Banks

Date: 7-21-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 55 Precip: 0 Upwind BG: 2.2 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
1	LW	0520	0535	7	1	2	4	
2	OP	0520	0535	7	1	2	4	
3	NB	0520	0535	5	1	2	4	
4	DA	0520	0535	6	1	2	4	
5	LW	0535	0550	6	1	2	4	
6	OP	0535	0550	5	1	2	4	
7	NB	0535	0550	8	1	2	4	
8	DA	0535	0550	7	1	2	4	
9	LW	0550	0605	9	1	2	4	
10	OP	0550	0605	7	1	2	4	
11	NB	0550	06W	7	1	2	4	
12	DA	0550	0605	14	1	2	4	
13	LW	0605	0620	17	2	3	3	
14	OP	0605	0620	26	2	3	3	
15	NB	0605	0620	42	2	3	3	
16	DA	0605	0620	57	2	3	3	
17	LW	0620	0635	11	2	3	1	
18	OP	0620	0635	9	2	3	1	
19	NB	0620	0635	1200	2	3	1	well sump 8
20	DA	0620	0635	45	2	3	1	
21	LW	0635	0650	121	2	3	2	
22	OP	0635	0650	19	2	3	2	
23	NB	0635	0650	17	2	3	2	
24	DA	0635	0650	56	2	3	2	
25	LW	0650	0705	1,000	2	3	2	Surface
26	OP	0650	0705	30	2	3	2	
27	NB	0650	0705	14	2	3	2	
29	DA	0650	0705	74	2	3	2	
30	LW	0705	0720	154	2	3	2	
31	OP	0705	0720	28	2	3	2	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 6

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wade · Dwight Anderson · Omar Pereira · Nick Banks

Date: 7-21-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 57 Precip: 0 Upwind BG: 2.2 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
32	NB	0705	0720	15	2	3	2	
34	DA	0705	0720	47	2	3	2	
35	LW	0720	0735	82	2	3	2	
36	OP	0720	0735	21	2	3	2	
37	NB	0720	0735	16	2	3	2	
39	DA	0720	0735	71	2	3	2	
40	LW	0735	0750	59	2	3	2	
41	OP	0735	0750	36	2	3	2	
42	NB	0735	0750	18	2	3	2	
44	DA	0735	0750	46	2	3	2	
45	LW	0750	0805	77	2	3	2	
46	OP	0750	0805	31	2	3	2	
47	NB	0750	0805	16	2	3	2	
49	DA	0750	0805	108	2	3	2	
50	LW	0805	0820	84	2	4	3	
51	OP	0805	0820	29	2	4	3	
52	NB	0805	0820	24	2	4	3	
54	DA	0805	0820	60	2	4	3	
55	LW	0820	0835	45	2	3	3	
56	OP	0820	0835	24	2	3	3	
57	NB	0820	0835	17	2	3	3	
59	DA	0820	0835	62	2	3	3	
60	LW	0835	0850	44	2	3	3	
61	OP	0835	0850	32	2	3	3	
62	NB	0835	0850	20	2	3	3	
63	DA	0835	0850	17	2	3	3	
66	LW	0850	0905	41	2	4	3	
67	OP	0850	0905	32	2	4	3	
68	NB	0850	0905	27	2	4	3	
69	DA	0850	0905	34	2	4	3	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LewisLwnor   DwightAnderson
OmarPeralta
Nick Bones

Date: 7-21-20 Instrument Used: TVA1000 Grid Spacing: 25

Temperature: 60 Precip: 0 Upwind BG: 2.2 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
72	LW	0905	0920	34	3	4	4	
73	OP	0905	0920	29	3	4	4	
74	NB	0905	0920	31	3	4	4	
75	DA	0905	0920	26	3	4	4	
78	LW	0920	0935	84	3	5	4	
79	OP	0920	0935	52	3	5	4	
80	NB	0920	0935	66	3	5	4	
81	DA	0920	0935	34	3	5	4	
82	LW	0935	0950	1,011	4	5	4	WELL LS-2
90	OP	0935	0950	1,000	4	5	4	SURFACE
91	NB	0935	0950	45	4	5	4	
92	DA	0935	0950	800	4	5	4	SURFACE
93	LW	0950	1005	31	4	5	3	
94	OP	0950	1005	25	4	5	3	
101	NB	0950	1005	65	4	5	3	
102	DA	0950	1005	44	4	5	3	
103	LW	1005	1020	52	4	6	4	
104	OP	1005	1020	31	4	6	4	
111	NB	1005	1020	60	4	6	4	
112	DA	1005	1020	84	4	6	4	
113	LW	1020	1035	22	3	5	4	
114	OP	1020	1035	39	3	5	4	
115	NB	1020	1035	45	3	5	4	
122	DA	1020	1035	32	3	5	4	
123	LW	1035	1050	27	3	5	4	
124	OP	1035	1050	46	3	5	4	
125	NB	1035	1050	27	3	5	4	
126	DA	1035	1050	27	3	5	4	
133	LW	1050	1105	32	4	5	4	
134	OP	1050	1105	67	4	5	4	

Attach Calibration Sheet
Attach site map showing grid ID

Page 3 of 6

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGHWADE, DWIGHT ANDERSON
OMAR PINEDA
NICK BANKS

Date: 7-21-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 64 Precip: 0 Upwind BG: 2.2 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
135	NB	1050	1105	24	4	5	4	
142	DA	1050	1105	26	4	5	4	
143	LW	1105	1120	39	4	6	3	
144	OP	1105	1120	26	4	6	3	
151	NB	1105	1120	44	4	6	3	
152	DA	1105	1120	28	4	6	3	
159	LW	1120	1135	34	4	6	4	
160	OP	1120	1135	22	4	6	4	
168	NB	1120	1135	21	4	6	4	
169	DA	1120	1135	34	4	6	4	
28	LW	1205	1220	27	4	8	3	
33	OP	1205	1220	45	4	8	3	
38	NB	1205	1220	29	4	8	3	
43	DA	1205	1220	67	4	8	3	
48	LW	1220	1235	42	4	6	4	
53	OP	1220	1235	55	4	6	4	
58	NB	1220	1235	43	4	6	4	
64	DA	1220	1235	3,000	4	6	4	CAPPED WELL
65	LW	1235	1250	94	4	7	3	
70	OP	1235	1250	38	4	7	3	
71	NB	1235	1250	56	4	7	3	
76	DA	1235	1250	29	4	7	3	
77	LW	1250	1305	42	4	7	4	
88	OP	1250	1305	54	4	7	4	
89	NB	1250	1305	71	4	7	4	
86	DA	1250	1305	112	4	7	4	
87	LW	1305	1320	2,000	4	6	3	white CAPPED PIPE
83	OP	1305	1320	2,000	4	6	3	CAPPED WELL 18VEN
84	NB	1305	1320	58	4	6	3	
85	DA	1305	1320	8000	4	6	3	CAPPED WELL

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Lois Wagner, Dwight Anderson, Omar Parker, Nick Banks

Date: 7-21-20 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 68 Precip: 0 Upwind BG: 2.2 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
95	LW	1320	1335	10,488	4	7	3	PIPE HCA17
96	OP	1320	1335	34	4	7	3	
97	NB	1320	1335	26	4	7	3	
105	DA	1320	1335	34	4	7	3	
106	LW	1335	1350	51	4	6	3	
107	OP	1335	1350	29	4	6	3	
116	NB	1335	1350	24	4	6	3	
117	DA	1335	1350	45	4	6	3	
118	LW	1350	1405	1,200	4	6	4	Well 184
127	OP	1350	1405	36	4	6	4	
128	NB	1350	1405	773	4	6	4	Well 127
129	DA	1350	1405	48	4	6	4	
136	LW	1405	1420	31	4	6	3	
137	OP	1405	1420	40	4	6	3	
138	NB	1405	1420	54	4	6	3	
145	DA	1405	1420	26	4	6	3	
153	LW	1420	1435	18	4	6	3	
161	OP	1420	1435	11,000	4	6	3	Capped Well
162	NB	1420	1435	3,000	4	6	3	Well 132
170	DA	1420	1435	24	4	6	3	
176	LW	1435	1450	18	4	6	4	
177	OP	1435	1450	26	4	6	4	
184	NB	1435	1450	21	4	6	4	
185	DA	1435	1450	37	4	6	4	
190	LW	1450	1505	20	4	6	4	
191	OP	1450	1505	48	4	6	4	
196	NB	1450	1505	17	4	6	4	
197	DA	1450	1505	12,000	4	6	4	Capped Well A22
201	LW	1505	1520	24	4	6	3	
205	OP	1505	1520	13,000	4	6	3	Well PZ2

Attach Calibration Sheet
Attach site map showing grid ID

Page 5 of 6

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leigh Wade; Dwight Anderson; Dominic Parcella; Nick Banks

Date: 7-21-20 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 77 Precip: 0 Upwind BG: 2.2 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
178	NB	1505	1520	84	4	6	3	
179	DA	1505	1520	62	4	6	3	
186	LW	1520	1535	90	4	6	3	
187	DP	1520	1535	58	4	6	3	
192	NB	1520	1535	39	4	6	3	
193	DA	1520	1535	47	4	6	3	
198	LW	1535	1550	25	4	6	4	
199	DP	1535	1550	19	4	6	4	
202	NB	1535	1550	26	4	6	4	
203	DA	1535	1550	32	4	6	4	
206	LW	1550	1605	18	4	6	4	
207	DP	1550	1605	21	4	6	4	
208	NB	1550	1605	16	4	6	4	
204	DA	1550	1605	39	4	6	4	
200	LW	1605	1620	21	4	8	4	
194	DP	1605	1620	58	4	8	4	
195	NB	1605	1620	26	4	8	4	
188	DA	1605	1620	32	4	8	4	
189	LW	1620	1635	25	4	6	4	
180	DP	1620	1635	77	4	6	4	
181	NB	1620	1635	43	4	6	4	
182	DA	1620	1635	24	4	6	4	
183	LW	1635	1650	19	4	6	4	
173	DP	1635	1650	45	4	6	4	
174	NB	1635	1650	26	4	6	4	
175	DA	1635	1650	54	4	6	4	

Attach Calibration Sheet
Attach site map showing grid ID

Page 6 of 6

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: Leighwood _____ _____ _____

_____ _____ _____

_____ _____ _____

Date: 7-21-20 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	
146								Access-Issue
147								
154								
155								
163								
164								
171								
172								

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 1

REDWOOD LANDFILL
INSTANTANEOUS LANDFILL SURFACE MONITORING

Personnel: LEIGHWOOD, DWIGHT ANDERSON
OMAR PERALTA
NICK BANKS

Date: 7-22-20 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 52 Precip: 0 Upwind BG: 2.2 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
165	LW	0530	0545	34	1	2	2	
166	OP	0530	0545	41	1	2	2	
167	NB	0530	0545	29	1	2	2	
156	DA	0530	0545	47	1	2	2	
157	LW	0545	0600	49	1	2	2	
158	OP	0545	0600	55	1	2	2	
148	NB	0545	0600	31	1	2	2	
149	DA	0545	0600	27	1	2	2	
150	LW	0600	0615	102	2	3	3	
139	OP	0600	0615	27	2	3	3	
140	NB	0600	0615	39	2	3	3	
141	DA	0600	0615	47	2	3	3	
130	LW	0615	0630	22	1	2	4	
131	OP	0615	0630	31	1	2	4	
132	NB	0615	0630	36	1	2	4	
119	DA	0615	0630	24	1	2	4	
120	LW	0630	0645	106	1	2	4	
121	OP	0630	0645	74	1	2	4	
108	NB	0630	0645	28	1	2	4	
109	DA	0630	0645	42	1	2	4	
110	LW	0645	0700	65	1	2	4	
98	OP	0645	0700	34	1	2	4	
99	NB	0645	0700	22	1	2	4	
100	DA	0645	0700	64	1	2	4	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 1

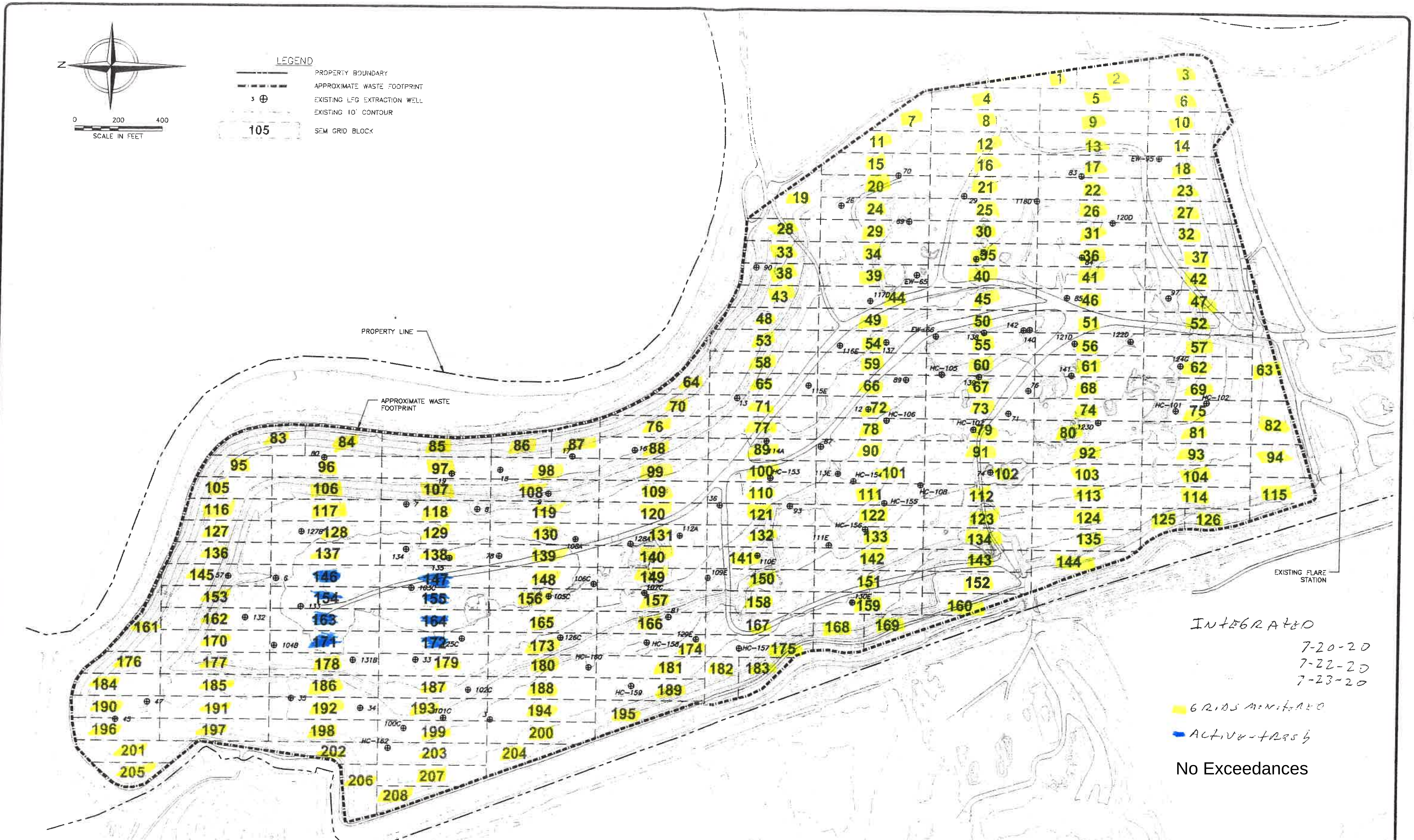
Attachment B

Integrated Surface Emission Monitoring Event Records

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

2020 QUARTER: 3
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			
Exceedance	Monitoring	Reading	Monitoring	No Exced.	No Exced.	Monitoring	No Exced.	No Exced.	
Grid ID No.	Date	ppm	Date	<25 ppm	>25 ppm	Date	<25 ppm	>25 ppm	**Comments**
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.

WM 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, Dwight Anderson, Omar Perez, Nick Banks

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

Date: 7-20-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 70 Precip: 0 Upwind BG: 2.2 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
1	LW	1200	1225	3.82	4	6	4	
2	OP	1200	1225	4.17	4	6	4	
3	ND	1200	1225	3.58	4	6	4	
4	OA	1200	1225	3.21	4	6	4	
5	LW	1225	1250	4.60	4	6	4	
6	OP	1225	1250	3.48	4	6	4	
7	NB	1225	1250	4.89	4	6	4	
8	OA	1225	1250	3.72	4	6	4	
9	LW	1250	1315	3.55	4	6	4	
10	OP	1250	1315	3.14	4	6	4	
11	NB	1250	1315	5.68	4	6	4	
12	DA	1250	1315	4.91	4	6	4	
13	LW	1315	1340	4.46	4	7	4	
14	OP	1315	1340	3.39	4	7	4	
15	NB	1315	1340	10.60	4	7	4	
16	OA	1315	1340	8.49	4	7	4	
17	LW	1340	1405	4.22	4	6	4	
18	OP	1340	1405	3.68	4	6	4	
19	ND	1340	1405	4.94	4	6	4	
20	OA	1340	1405	13.25	4	6	4	
21	LW	1405	1430	19.10	4	6	4	
22	OP	1405	1430	5.74	4	6	4	
23	NB	1405	1430	3.62	4	6	4	
24	DA	1405	1430	11.61	4	6	4	
25	LW	1430	1455	18.36	4	7	4	
26	OP	1430	1455	4.15	4	7	4	
27	NB	1430	1455	3.77	4	7	4	
29	DA	1430	1455	20.16	4	7	4	
30	LW	1455	1520	11.64	4	6	4	
31	OP	1455	1520	4.42	4	6	4	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 2

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEIGH WADE, DWIGHT ANDERSON, AMANPREET SEHDI, NICK BANKS

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

Date: 7-20-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 72 Precip: 0 Upwind BG: 2.2 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
32	NB	1455	1520	3.60	4	6	4	
34	DA	1455	1520	9.71	4	6	4	
35	LW	1520	1545	8.45	4	6	5	
36	OP	1520	1545	6.18	4	6	5	
37	NB	1520	1545	4.55	4	6	5	
39	DA	1520	1545	7.58	4	6	5	
40	LW	1545	1610	11.22	4	6	6	
41	OP	1545	1610	6.29	4	6	6	
42	NB	1545	1610	5.03	4	6	6	
44	DA	1545	1610	8.69	4	6	6	
45	LW	1610	1635	7.36	4	6	4	
46	OP	1610	1635	5.20	4	6	4	
47	NB	1610	1635	4.16	4	6	4	
49	DA	1610	1635	8.54	4	6	4	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 2

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: LEISHWADE _____ _____ _____

_____ _____ _____

_____ _____ Cal. Gas Exp. Date: _____

Date: 7-20-20 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	
146								Active-Inj 5
147								
154								
155								
163								
164								
171								
172								

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 1

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leis Lwade / Dwight Anderson / Omer Pencler / Nick Benks

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

Date: 7-22-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 64 Precip: 0 Upwind BG: 2.2 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
50	LW	0710	0735	6.13	2	3	4	
51	OP	0710	0735	4.80	2	3	4	
52	ND	0710	0735	5.10	2	3	4	
54	DA	0710	0735	8.71	2	3	4	
55	LW	0735	0800	6.24	2	3	4	
56	OP	0735	0800	4.98	2	3	4	
57	ND	0735	0800	4.16	2	3	4	
59	DA	0735	0800	5.70	2	3	4	
60	LW	0800	0825	5.34	2	3	4	
61	OP	0800	0825	4.76	2	3	4	
62	NB	0800	0825	4.39	2	3	4	
63	DA	0800	0825	4.22	2	3	4	
66	LW	0825	0850	7.15	2	3	4	
67	OP	0825	0850	6.92	2	3	4	
68	NB	0825	0850	6.24	2	3	4	
69	DA	0825	0850	5.71	2	3	4	
72	LW	0850	0915	4.86	2	3	4	
73	OP	0850	0915	5.12	2	3	4	
74	ND	0850	0915	5.81	2	3	4	
75	DA	0850	0915	6.14	2	3	4	
78	LW	0915	0940	6.43	2	3	4	
79	OP	0915	0940	5.77	2	3	4	
80	ND	0915	0940	6.34	2	3	4	
81	DA	0915	0940	5.50	2	3	4	
82	LW	0940	1005	5.07	2	3	4	
90	OP	0940	1005	7.45	2	3	4	
91	ND	0940	1005	8.10	2	3	4	
92	DA	0940	1005	6.55	2	3	4	
93	LW	1005	1030	5.41	2	3	4	
94	OP	1005	1030	4.36	2	3	4	

Attach Calibration Sheet
Attach site map showing grid ID

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wade, Dwight Anderson, Omar Portillo, Nick Berks

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

Date: 7-22-20 Instrument Used: TVA1000 Grid Spacing: 25'

Temperature: 69 Precip: 0 Upwind BG: 2.2 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
101	NB	1005	1030	8.75	2	3	4	
102	DA	1005	1030	10.42	2	3	4	
103	LW	1030	1055	7.99	2	3	4	
104	OP	1030	1055	5.84	2	3	4	
111	NB	1030	1055	8.60	2	3	4	
112	DA	1030	1055	6.82	2	3	4	
113	LW	1055	1120	6.35	2	3	4	
114	OP	1055	1120	5.15	2	3	4	
115	NB	1055	1120	5.37	2	3	4	
122	DA	1055	1120	6.80	2	3	4	
123	LW	1120	1145	8.15	2	4	2	
124	OP	1120	1145	6.96	2	4	2	
125	NB	1120	1145	5.79	2	4	2	
126	DA	1120	1145	5.43	2	4	2	
133	LW	1215	1240	7.50	2	4	2	
134	OP	1215	1240	6.86	2	4	2	
135	NB	1215	1240	6.30	2	4	2	
142	DA	1215	1240	9.77	2	4	2	
143	LW	1240	1305	6.53	2	3	1	
144	OP	1240	1305	7.21	2	3	1	
151	NB	1240	1305	9.57	2	3	1	
152	DA	1240	1305	6.12	2	3	1	
159	LW	1305	1330	6.34	3	5	1	
160	OP	1305	1330	5.36	3	5	1	
168	NB	1305	1330	6.12	3	5	1	
169	DA	1305	1330	5.70	3	5	1	
28	LW	1330	1355	7.51	3	4	2	
33	OP	1330	1355	6.90	3	4	2	
38	NB	1330	1355	8.24	3	4	2	
43	DA	1330	1355	7.57	3	4	2	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 3

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Waot; Dwight Anderson; Omar Peralta; Nick Banks

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

Date: 7-22-20 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 74 Precip: 0 Upwind BG: 2.2 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
48	LW	1355	1420	8.16	3	6	2	
53	OP	1355	1420	6.98	3	6	2	
58	NB	1355	1420	7.20	3	6	2	
64	DA	1355	1420	6.11	3	6	2	
65	LW	1420	1445	8.39	4	6	2	
70	OP	1420	1445	7.12	4	6	2	
71	NB	1420	1445	7.54	4	6	2	
76	DA	1420	1445	6.07	4	6	2	
77	LW	1445	1510	7.92	3	4	4	
88	OP	1445	1510	5.50	3	4	4	
89	NB	1445	1510	8.27	3	4	4	
86	DA	1445	1510	5.34	3	4	4	
87	LW	1510	1535	5.70	4	6	4	
83	OP	1510	1535	6.12	4	6	4	
84	NB	1510	1535	5.96	4	6	4	
85	DA	1510	1535	6.72	4	6	4	
95	LW	1535	1600	5.84	4	5	4	
96	OP	1535	1600	5.10	4	5	4	
97	NB	1535	1600	4.78	4	5	4	
105	DA	1535	1600	5.92	4	5	4	
106	LW	1600	1625	4.68	3	4	4	
107	OP	1600	1625	5.50	3	4	4	
116	NB	1600	1625	5.92	3	4	4	
117	DA	1600	1625	7.13	3	4	4	

Attach Calibration Sheet
Attach site map showing grid ID

Page 3 of 3

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leish Wade; Dwight Anderson; Omar Perez(?); Nick Banks

Cal. Gas Exp. Date: 9-2?-20

Date: 7-23-20 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 55 Precip: 0 Upwind BG: 2.2 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION			REMARKS
					AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	
118	LW	0530	0555	6.13	4	8	16	
127	OP	0530	0555	5.48	4	8	16	
128	NB	0530	0555	7.21	4	8	16	
129	DA	0530	0555	5.79	4	8	16	
136	LW	0555	0620	4.50	4	7	16	
137	OP	0555	0620	6.82	4	7	16	
138	NB	0555	0620	5.45	4	7	16	
145	OA	0555	0620	7.23	4	7	16	
153	LW	0620	0645	8.65	4	7	16	
161	OP	0620	0645	5.28	4	7	16	
162	NB	0620	0645	6.11	4	7	16	
170	DA	0620	0645	6.39	4	7	16	
176	LW	0645	0710	5.18	4	8	3	
177	OP	0645	0710	5.96	4	8	3	
184	NB	0645	0710	4.92	4	8	3	
185	DA	0645	0710	5.13	4	8	3	
190	LW	0710	0735	5.54	4	9	2	
191	OP	0710	0735	5.07	4	9	2	
196	NB	0710	0735	4.72	4	9	2	
197	DA	0710	0735	4.60	4	9	2	
201	LW	0735	0800	4.38	4	8	4	
205	OP	0735	0800	4.22	4	8	4	
178	NB	0735	0800	7.96	4	8	4	
179	OA	0735	0800	9.25	4	8	4	
186	LW	0800	0825	6.52	4	6	3	
187	OP	0800	0825	7.08	4	6	3	
192	NB	0800	0825	6.43	4	6	3	
193	DA	0800	0825	7.21	4	6	3	
198	LW	0825	0850	6.64	4	6	2	
199	OP	0825	0850	5.98	4	6	2	

Attach Calibration Sheet
Attach site map showing grid ID

Page 1 of 3

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wade, Dwight Anderson, Omar Perez Lara(?), Nick Banks

Cal. Gas Exp. Date: 9-21-25

Date: 7-23-20 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 61 Precip: 0 Upwind BG: 2.2 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
202	NB	0825	0850	5.50	4	6	2	
203	DA	0825	0850	5.97	4	6	2	
206	LW	0850	0915	6.06	4	6	4	
207	OP	0850	0915	5.54	4	6	4	
208	NB	0850	0915	5.70	4	6	4	
209	DA	0850	0915	5.39	4	6	4	
200	LW	0915	0940	6.06	4	5	4	
194	OP	0915	0940	5.32	4	5	4	
195	NB	0915	0940	6.18	4	5	4	
188	DA	0915	0940	5.82	4	5	4	
189	LW	0940	1005	6.10	4	5	4	
180	OP	0940	1005	7.50	4	5	4	
181	NB	0940	1005	6.97	4	5	4	
182	DA	0940	1005	5.12	4	5	4	
183	LW	1005	1030	5.46	3	5	4	
173	OP	1005	1030	7.84	3	5	4	
174	NB	1005	1030	7.02	3	5	4	
175	DA	1005	1030	6.84	3	5	4	
165	LW	1100	1125	6.15	2	3	4	
166	OP	1100	1125	5.97	2	3	4	
167	NB	1100	1125	7.14	2	3	4	
156	DA	1100	1125	6.02	2	3	4	
157	LW	1125	1150	6.54	2	3	4	
158	OP	1125	1150	8.29	2	3	4	
148	NB	1125	1150	6.54	2	3	4	
149	DA	1125	1150	5.37	2	3	4	
150	LW	1150	1215	9.25	2	3	4	
139	OP	1150	1215	5.50	2	3	4	
140	NB	1150	1215	6.07	2	3	4	
141	DA	1150	1215	6.25	2	3	4	

Attach Calibration Sheet
Attach site map showing grid ID

Page 2 of 3

REDWOOD LANDFILL
INTEGRATED LANDFILL SURFACE MONITORING

Personnel: Leigh Wade ; Dwight Anderson ; Omar Peralta ; Nick Benks

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

Date: 7-23-20 Instrument Used: TVA 1000 Grid Spacing: 25'

Temperature: 72 Precip: 0 Upwind BG: 2.2 Downwind BG: 2.6

GRID ID	STAFF INITIALS	START TIME	STOP TIME	TOC PPM	WIND INFORMATION AVG SPEED	MAX. SPEED	DIRECTION 16 POINT	REMARKS
130	LW	1215	1240	5.87	2	3	9	
131	OP	1215	1240	6.03	2	3	9	
132	NB	1215	1240	5.29	2	3	9	
119	DA	1215	1240	5.33	2	3	9	
120	LW	1240	1305	6.08	2	3	9	
121	OP	1240	1305	6.86	2	3	9	
108	NB	1240	1305	4.71	2	3	9	
109	DA	1240	1305	5.13	2	3	9	
110	LW	1305	1330	7.24	2	3	9	
98	OP	1305	1330	5.18	2	3	9	
99	NB	1305	1330	5.77	2	3	9	
100	DA	1305	1330	7.60	2	3	9	

Attach Calibration Sheet
Attach site map showing grid ID

Page 3 of 3

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: 3
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

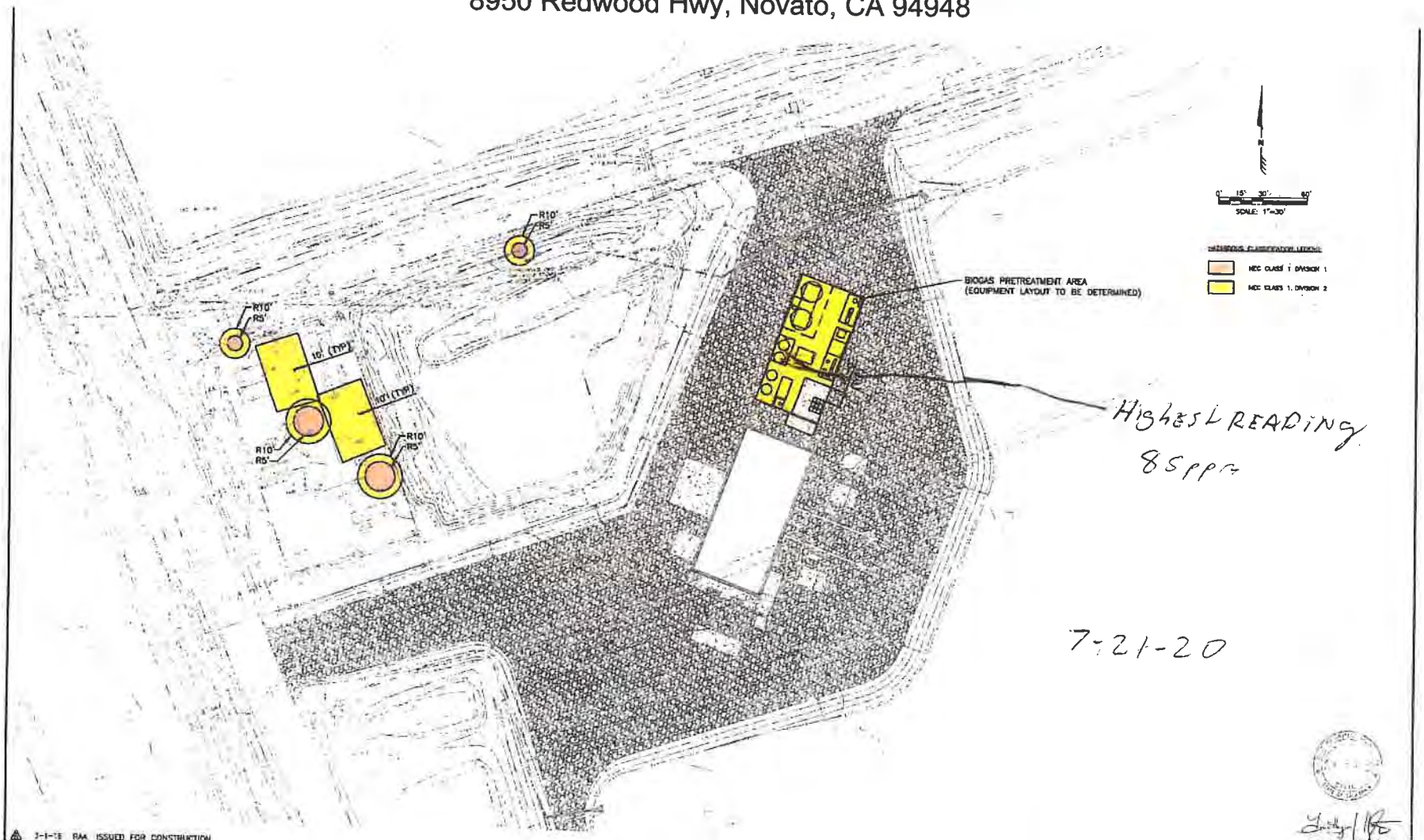
2020 QUARTER: 3
INITIAL MONITORING PERFORMED BY: RES
FOLLOW-UP MONITORING PERFORMED BY: S. Johnson
LANDFILL NAME: Redwood Landfill, Inc.

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



REV	DATE	BY	DESCRIPTION
7	7-1-15	RAA	ISSUED FOR CONSTRUCTION
6	10-26-15	RAA	BUILDING PERMIT APPLICATION SET
5	10-2-15	RAA	95% DESIGN RESUBMITTAL
4	8-7-15	RAA	ISSUED FOR GAS TREATMENT SKID BID
3	6-12-15	RAA	95% DESIGN SUBMITTAL
2	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	DESCRIPTION	PROJECT NO.
WASTE MANAGEMENT RENEWABLE ENERGY LANDFILL TO GAS ENERGY PROJECT REDWOOD LANDFILL, NOVATO, CA	PROPOSED CONDITIONS AND HAZARDOUS AREA CLASSIFICATIONS	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

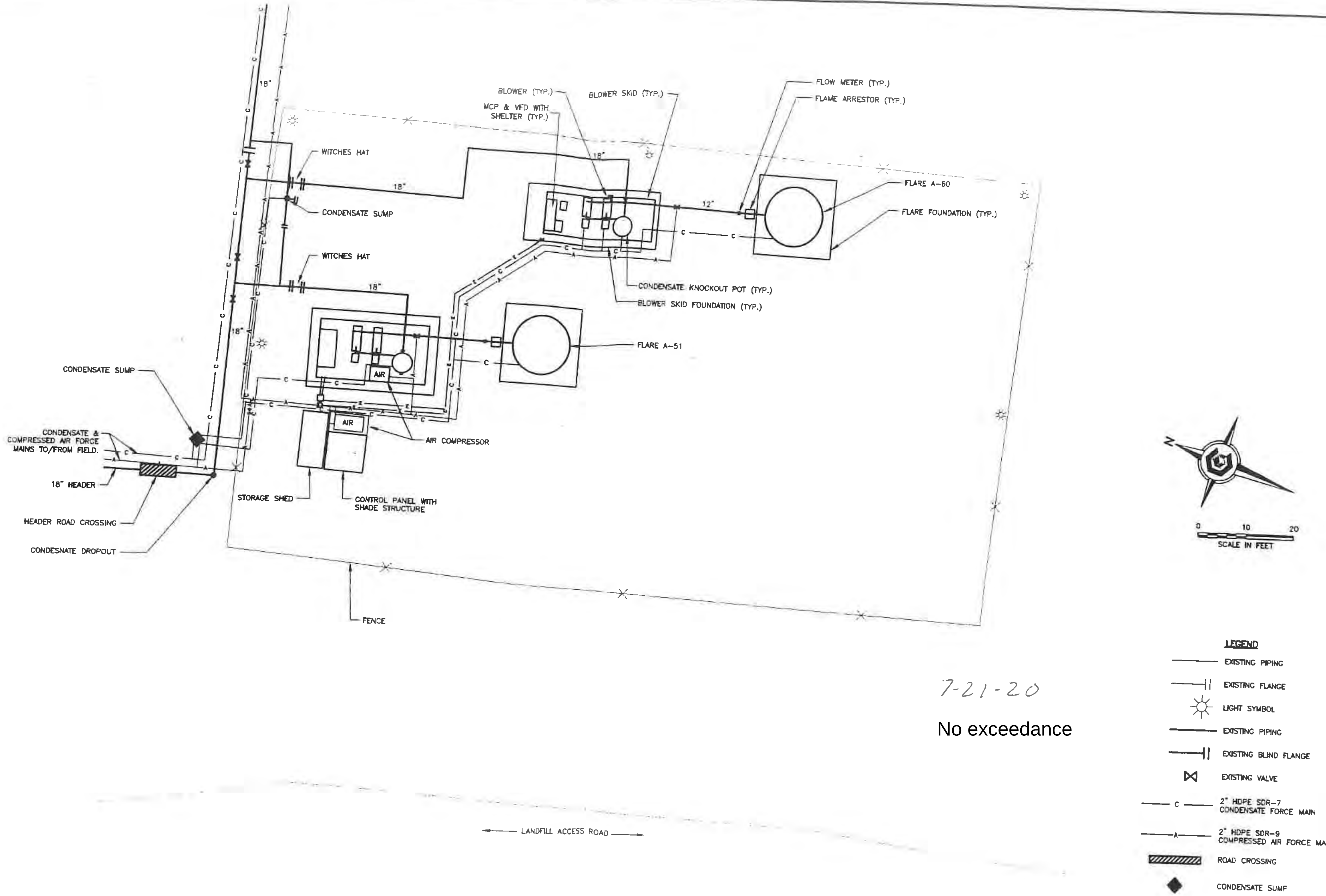
DATE OF SAMPLING: 7-21-20
TECHNICIAN: Leigh Wnoe

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.



7-21-20

No exceedance

DRAFT

WASTE MANAGEMENT

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

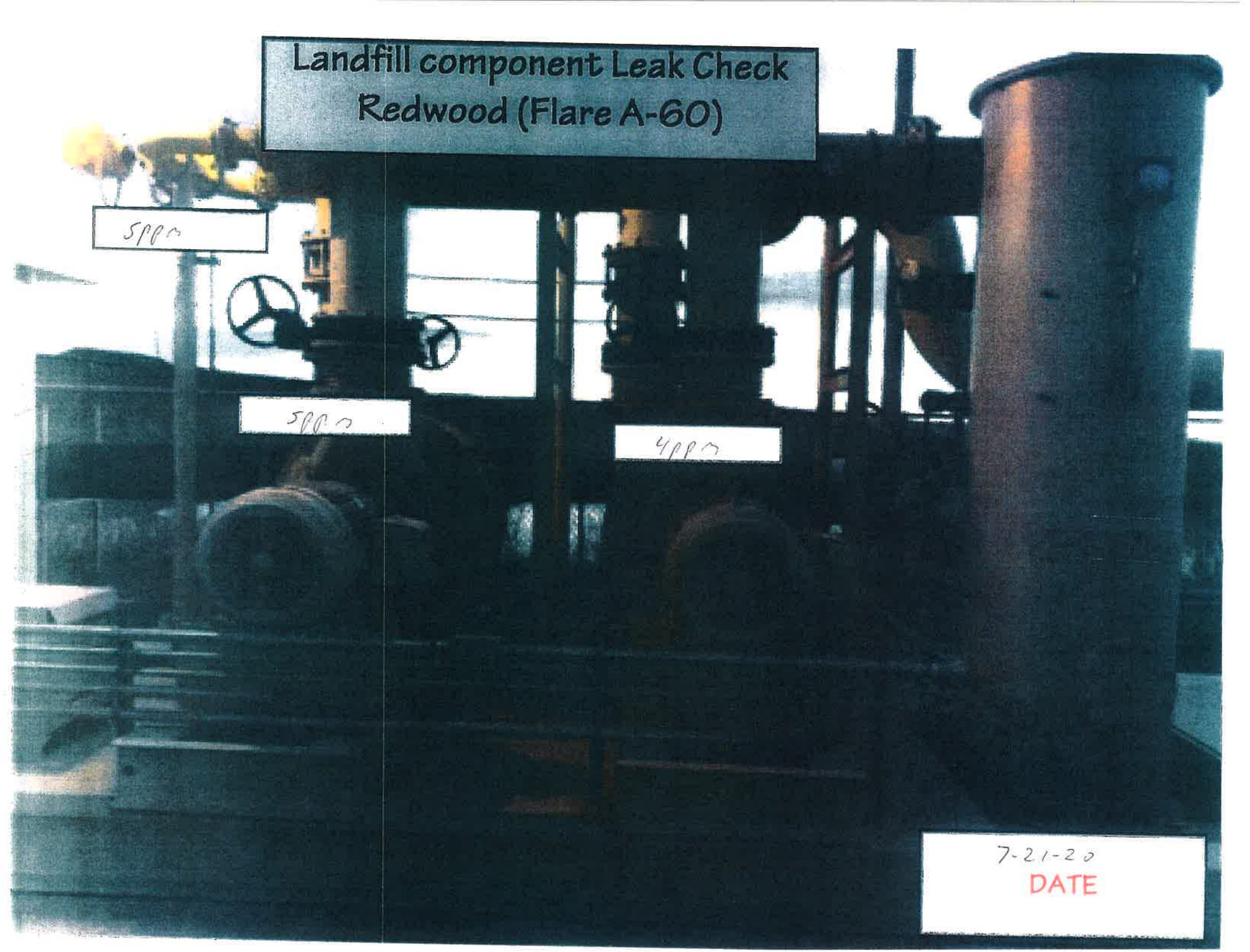
WASTE MANAGEMENT OF CALIFORNIA, INC.
REDWOOD LANDFILL, INC.
NOVATO, MARIN COUNTY, CALIFORNIA

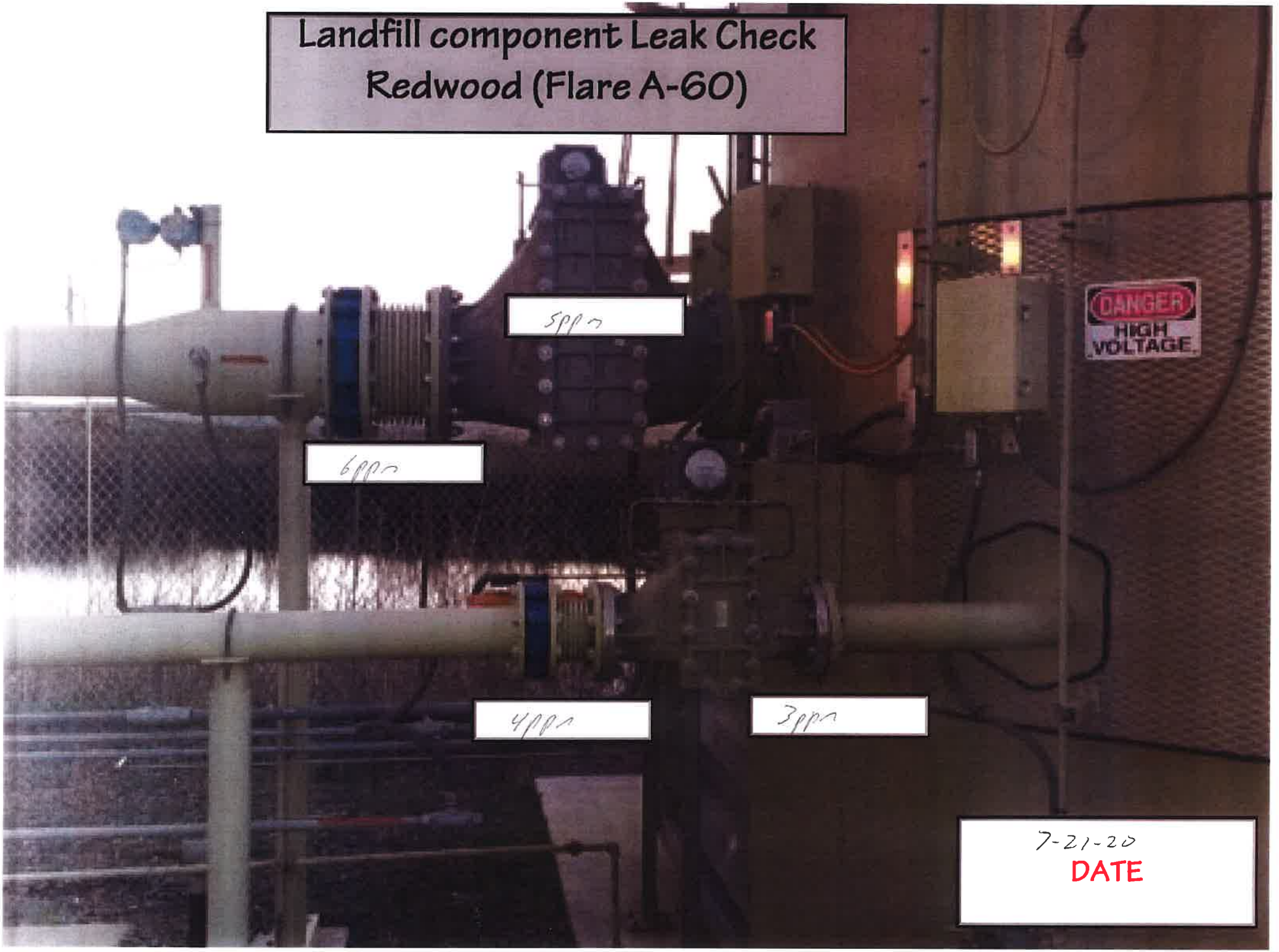
LFG FLARE AND GCCS AS-BUILT
FACILITY SITE PLAN

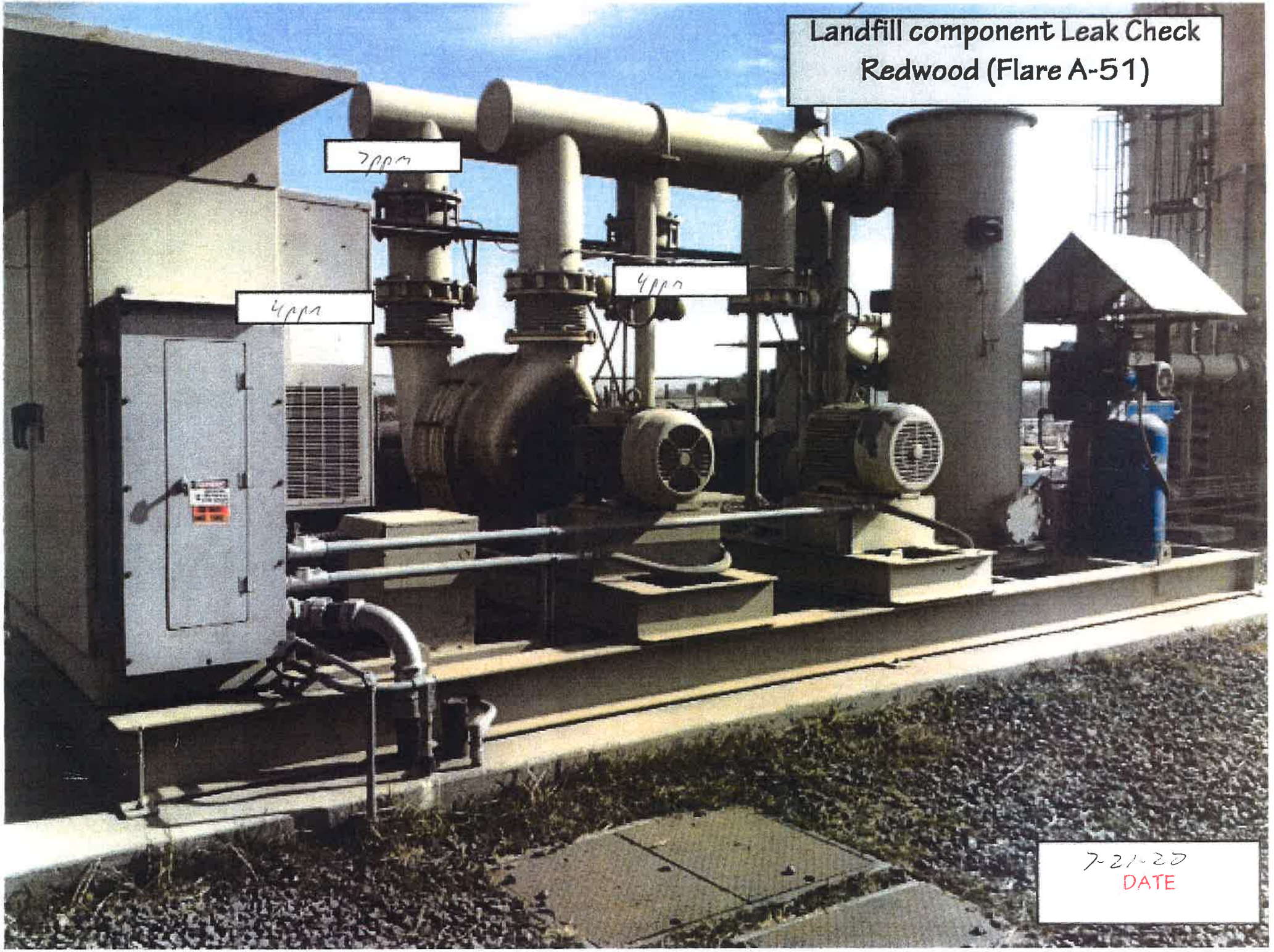
SHEET NO. 1

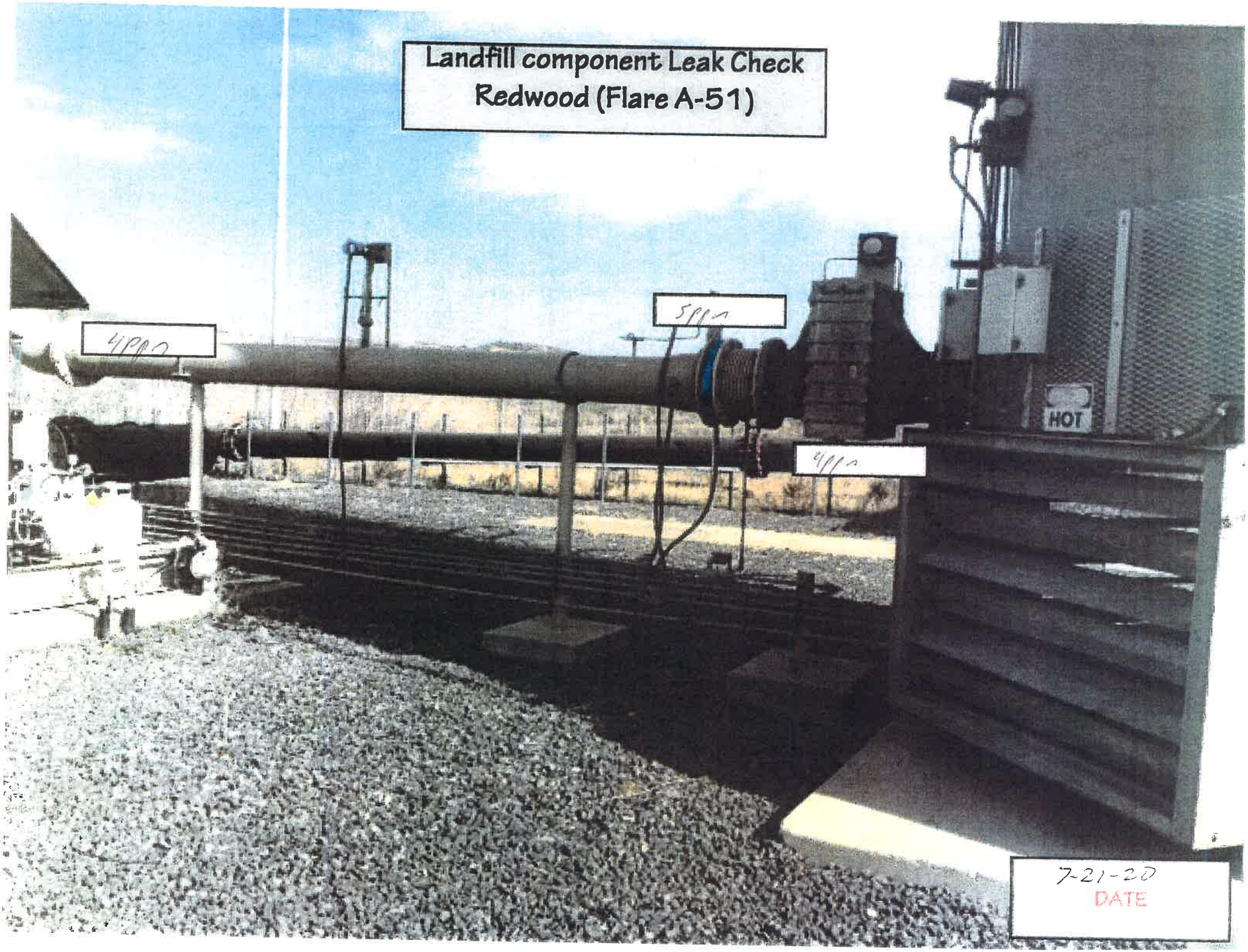
PROJECT NO. 70314


Landfill component Leak Check
Redwood (Flare A-60)
300
400
400
400
400
300
7-21-20
DATE


Landfill component Leak Check
Redwood (Flare A-60)
5ppm
5ppm
4ppm
7-21-20
DATE


Landfill component Leak Check
Redwood (Flare A-60)
5ppm
6ppm
4ppm
3ppm
DANGER
HIGH VOLTAGE
7-21-20
DATE


Landfill component Leak Check
Redwood (Flare A-51)
7ppm
4ppm
4ppm
7-21-20
DATE


Landfill component Leak Check
Redwood (Flare A-51)
HOT
7-21-20
DATE

Attachment D

Weather Station Data

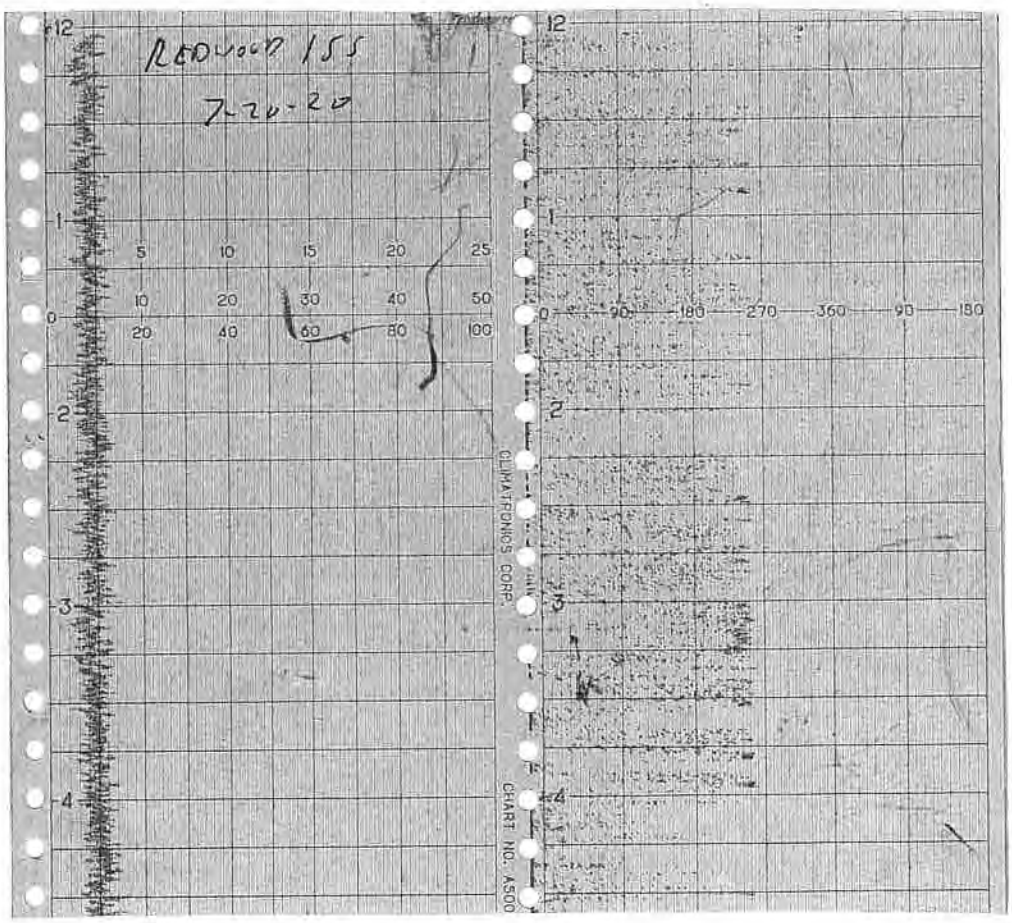
RES Environmental Inc.

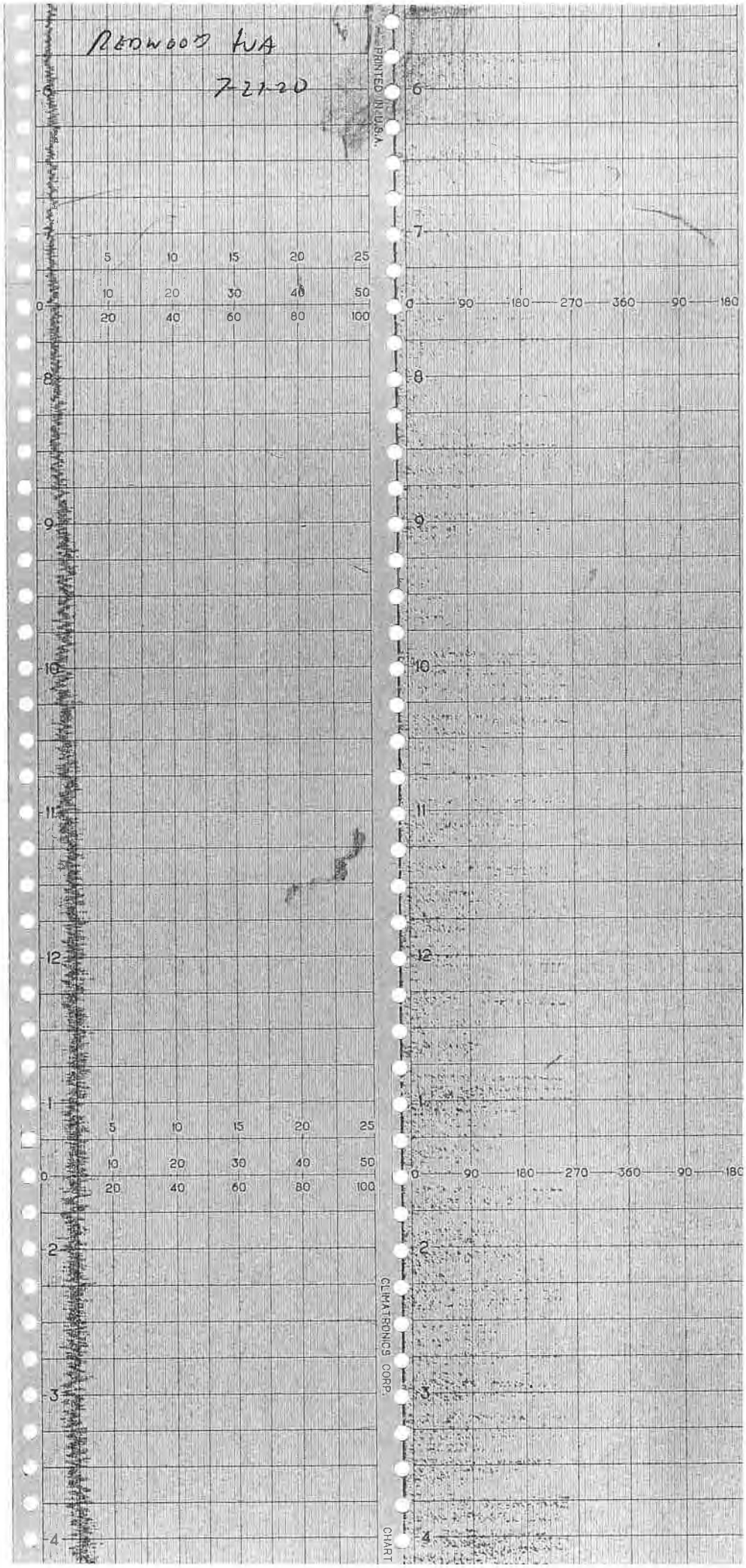
16-POINT WIND DIRECTION INDEX

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

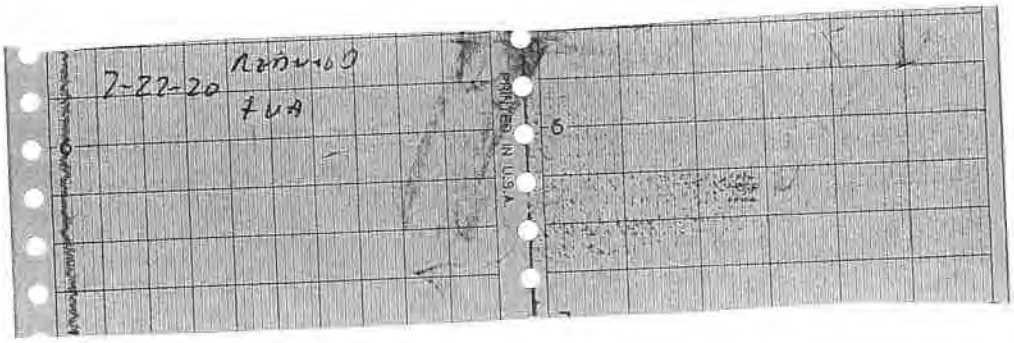
865 Via Lata ▪ Colton, California 92324 ▪ (909) 422-1001 Fax (909) 422-0707

WIND SPEED & DIRECTION CHART ROLL

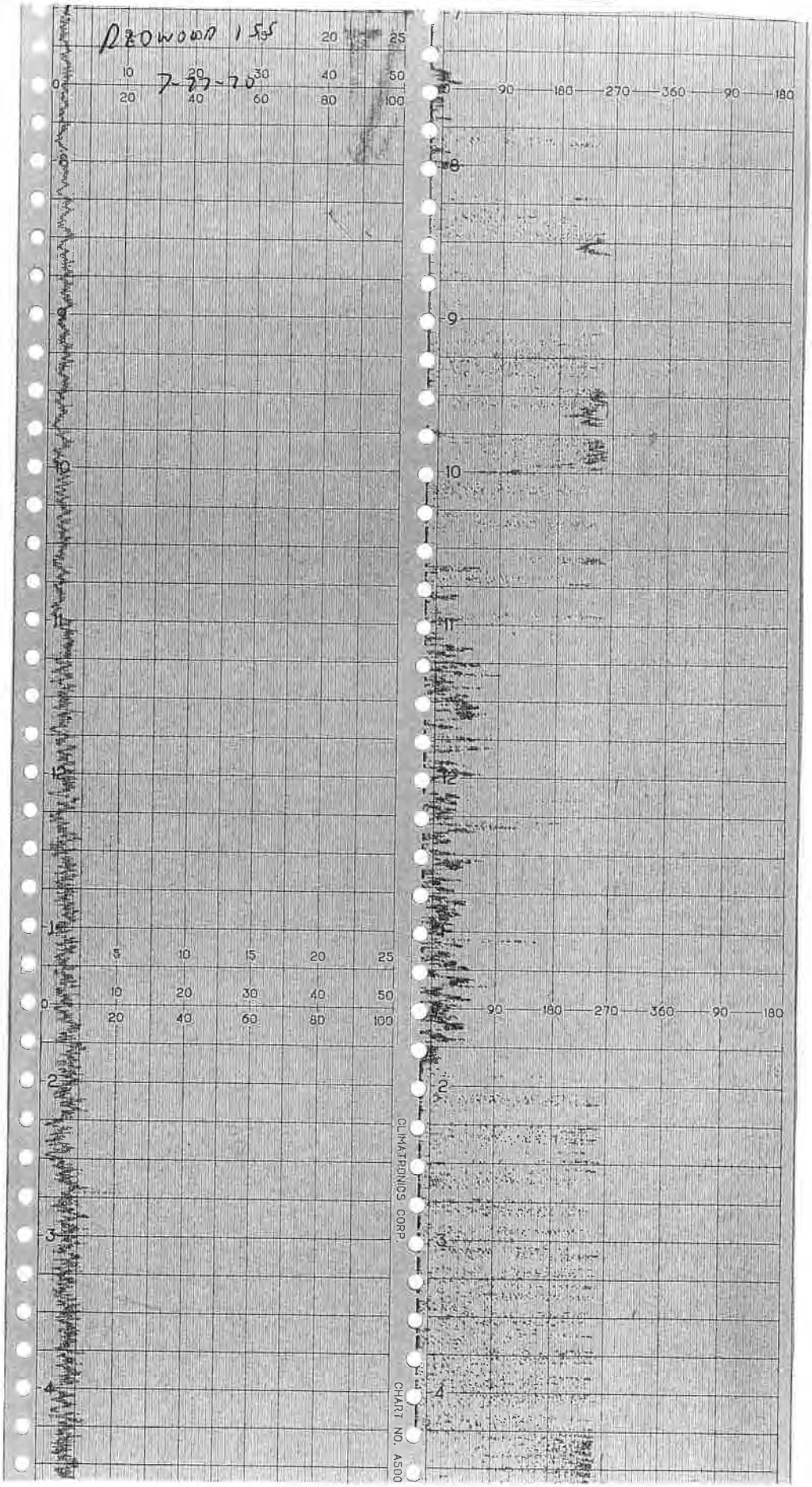



REDWOOD WA
7-27-20
PRINTED IN U.S.A.
CLIMATRONICS CORP.
CHART

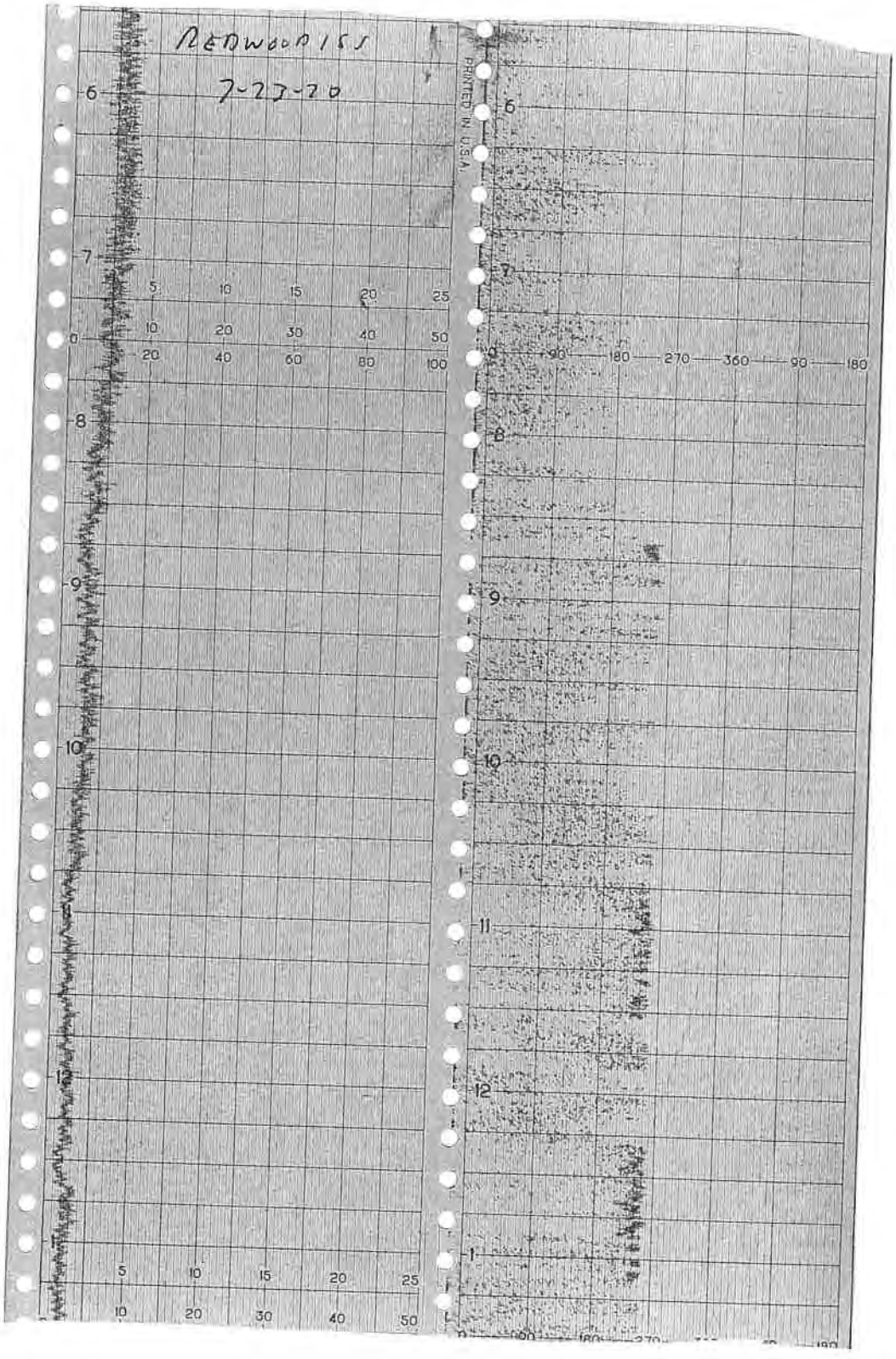
WIND SPEED & DIRECTION CHART ROLL



WIND SPEED & DIRECTION CHART ROLL



WIND SPEED & DIRECTION CHART ROLL



Attachment E

Calibration Records

RESPONSE TIME TEST RECORD

Date: 7/29/20

Expiration Date (3 months): 10/29/20

Time: 1010 AM ___ PM

Instrument Make: Photovac Model: MicroFID S/N: C8MF340

Measurement #1:

Stabilized Reading Using Calibration Gas: 500.6 ppm
90% of the Stabilized Reading: 450.54 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: 489.1 ppm
90% of the Stabilized Reading: 440.19 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: 495.6 ppm
90% of the Stabilized Reading: 446.04 ppm
Time to Reach 90% of Stabilized Reading after switching from Zero Air to Calibration Gas: 2 seconds (c)

Calculate Response Time:

$\frac{(a) + (b) + (c)}{3}$ = 2.33 seconds (must be less than 30 seconds)

Performed By: 

CALIBRATION PRECISION TEST RECORD

Date: 7/29/20

Expiration Date (3 months): 10/29/20

Time: 1010 AM — PM

Instrument Make: Photovac Model: MicroFID S/N: C3MF340

Measurement #1:

Meter Reading for Zero Air: 0.2 ppm (a)

Meter Reading for Calibration Gas: 499.4 ppm (b)

Measurement #2:

Meter Reading for Zero Air: 0.0 ppm (c)

Meter Reading for Calibration Gas: 500.7 ppm (d)

Measurement #3:

Meter Reading for Zero Air: 0.0 ppm (e)

Meter Reading for Calibration Gas: 498.4 ppm (f)

Calculate Precision:

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

0.193 % (must be < than 10%)

Performed By: [signature]

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Landfill Date: 7/29/20

Time: 1010 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 = 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): 0.2 ppm (b)

Calculate Background Value:

$\frac{(a) + (b)}{2}$ Background = 0.1 ppm

Performed By: [signature]

CALIBRATION PROCEDURE AND BACKGROUND DETERMINATION REPORT

Landfill Name: Redwood Landfill Date: 8/18/20

Time: 0935 AM — PM

Instrument Make: Photovac Model: MicroFID S/N: C2MF340

Calibration Procedure

1. Allow instrument to internally zero itself while introducing zero air.
2. Introduce the calibration gas into the probe.

   Stable Reading = 500.4 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): 0.3 ppm (b)

Calculate Background Value:

$\frac{(a) + (b)}{2}$ Background = 0.15 ppm

Performed By: [signature]

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: THERMO

MODEL: TVA 1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 7-21-20 TIME: 0515

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 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	498 ppm	448 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	506 ppm	6
#2	0.17 ppm	498 ppm	2
#3	0.14 ppm	500 ppm	0
Calculate Precision [STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/500 X 100/1			0.53 #DIV/0! Must be less than 10%

Performed By: Leigh WADE Date/Time 7-21-20 - 0515

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 11 SERIAL #: 1036246774

MONITORING DATE: 7-21-20 TIME: 0515

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 **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	503 ppm	453 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	0.15 ppm	490 ppm	10
#2	0.11 ppm	503 ppm	3
#3	0.08 ppm	500 ppm	0
Calculate Precision [STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/500 X 100/1			0.86 #DIV/0! Must be less than 10%

Performed By: OMSANDOVAL Date/Time: 7-21-20 - 0515

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Ultra

MODEL: TVA1000 EQUIPMENT #: 12 SERIAL #: 1636246741

MONITORING DATE: 7-21-20 TIME: 0515

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 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	488 ppm	438 ppm	7
#2	500 ppm	450 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	0.14 ppm	488 ppm	12
#2	0.12 ppm	500 ppm	0
#3	0.10 ppm	500 ppm	0
Calculate Precision [STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/500 X 100/1			0.80 #DIV/0! Must be less than 10%

Performed By: Dwight Anderson Date/Time: 7-21-20 - 0515

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: THermo

MODEL: TVA1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 7-21-20 TIME: 0515

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 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	494 ppm	444 ppm	5
#2	495 ppm	445 ppm	5
#3	500 ppm	450 ppm	5
Calculate Response Time (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	0.16 ppm	494 ppm	6
#2	0.13 ppm	499 ppm	1
#3	0.08 ppm	500 ppm	0
Calculate Precision [STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/500 X 100/1			0.46 #DIV/0! Must be less than 10%

Performed By: Nick Banks Date/Time: 7-21-20 - 0515

RES Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: tHermo

MODEL: tVA 1000 EQUIPMENT #: 10 SERIAL #: 1036346770

MONITORING DATE: 7-22-20 TIME: 0520

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 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	455 ppm	445 ppm	7
#2	501 ppm	451 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	0.13 ppm	455 ppm	5
#2	0.08 ppm	501 ppm	1
#3	0.04 ppm	500 ppm	0
Calculate Precision [STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/500 X 100/1			0.40 #DIV/0! Must be less than 10%

Performed By: Leshawn Date/Time: 7-22-20 - 0520

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 11 SERIAL #: 1036346774

MONITORING DATE: 7-22-20 TIME: 0520

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 **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	5
#2	500 ppm	450 ppm	5
#3	500 ppm	450 ppm	5
Calculate Response Time (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	0.24 ppm	450 ppm	10
#2	0.16 ppm	500 ppm	0
#3	0.11 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: Omar Penaloza Date/Time: 7-22-20 - 0520

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: tva1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 7-27-20 TIME: 0520

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 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	5
#2	503 ppm	453 ppm	5
#3	500 ppm	450 ppm	5
Calculate Response Time (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	489 ppm	11
#2	0.11 ppm	503 ppm	3
#3	0.05 ppm	500 ppm	0
Calculate Precision [STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/500 X 100/1			0.93 #DIV/0! Must be less than 10%

Performed By DWIGHT ANDERSON Date/Time: 7-22-20-0520

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: HEATH

MODEL: TVA 1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 7-22-20 TIME: 0520

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 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	493 ppm	443 ppm	6
#2	497 ppm	447 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	0.19 ppm	493 ppm	7
#2	0.14 ppm	497 ppm	3
#3	0.06 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 NICK RENICK Date/Time: 7-22-20 - 0520

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Ramwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 10 SERIAL #: 1036346773

MONITORING DATE: 7-20-20 TIME: 1150

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 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	0.25 ppm	24 ppm	1
#2	0.18 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: Leichwade Date/Time: 7-20-20 -1150

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE THERMO

MODEL: TVA 1000 EQUIPMENT #: 11 SERIAL #: 1036346774

MONITORING DATE: 7-20-20 TIME: 1150

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 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	0.17 ppm	24 ppm	1
#2	0.14 ppm	24 ppm	1
#3	0.09 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 OMAR PERSCAN Date/Time 7-20-20 -1150

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE Thermo

MODEL: TVA1060 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 7-20-20 TIME: 1150

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 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 (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	0.24 ppm	23 ppm	2
#2	0.16 ppm	24 ppm	1
#3	0.10 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		4.0 #DIV/0! Must be less than 10%

Performed By: Dwight Anderson Date/Time: 7-20-20 -1150

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: RGD WOOD INSTRUMENT MAKE: THERMO

MODEL: TVA1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 7-20-20 TIME: 1150

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 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	0.31 ppm	24 ppm	1
#2	0.18 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: 7-20-20-1150

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Heath

MODEL: TVA1000 EQUIPMENT # 10 SERIAL # 1036746773

MONITORING DATE: 7-22-20 TIME 0705

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 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	0.24 ppm	24 ppm	1
#2	0.16 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			1.0 #DIV/0! Must be less than 10%

Performed By: Cash Wade Date/Time 7-22-20 0705

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE Thermo

MODEL: TVA 1000 EQUIPMENT #: 11 SERIAL #: 1036346774

MONITORING DATE: 7-22-20 TIME 0705

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = ________ 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	0.21 ppm	23 ppm	2
#2	0.14 ppm	25 ppm	0
#3	0.08 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 Omar Peralta Date/Time: 7-22-20 – 0715

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Heath

MODEL: GVA 1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 7-22-20 TIME: 0705

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = _____ 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	0.32 ppm	24 ppm	1
#2	0.20 ppm	24 ppm	1
#3	0.13 ppm	25 ppm	0
Calculate Precision [STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1			.26 #DIV/0! Must be less than 10%

Performed By DWIGHT ANDERSON Date/Time: 7-22-20 - 0705

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 13 SERIAL #: 1162746725

MONITORING DATE: 7-22-20 TIME: 0705

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 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	0.15 ppm	23 ppm	2
#2	0.10 ppm	24 ppm	1
#3	0.06 ppm	25 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1		4.0 #DIV/0! Must be less than 10%

Performed By: Nick Banks Date/Time: 7-22-20-0705

RES
Environmental Inc

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Ramwood INSTRUMENT MAKE Thermo

MODEL: TVA 1000 EQUIPMENT # 10 SERIAL #: 1036346773

MONITORING DATE: 7-23-20 TIME 0520

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 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 (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	0.22 ppm	23 ppm	2
#2	0.16 ppm	24 ppm	1
#3	0.14 ppm	25 ppm	0
Calculate Precision [STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/25 X 100/1			4.0 #DIV/0! Must be less than 10%

Performed By Lois Lynch Date/Time: 7-23-20 -0520

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA1000 EQUIPMENT #: 11 SERIAL #: 1036346774

MONITORING DATE: 7-23-20 TIME: 0520

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 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	0.18 ppm	23 ppm	2
#2	0.12 ppm	25 ppm	0
#3	0.09 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: Omar Penalta Date/Time: 7-23-20 - 0520

RES
Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: REDWOOD INSTRUMENT MAKE: HEATH

MODEL: GVA 1000 EQUIPMENT #: 12 SERIAL #: 1036246711

MONITORING DATE: 7-23-20 TIME: 0520

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 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	0.34 ppm	24 ppm	1
#2	0.20 ppm	24 ppm	1
#3	0.13 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: DWIGHT ANDERSON Date/Time: 7-23-20 - 0520

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INTEGRATED

LANDFILL NAME: Redwood INSTRUMENT MAKE: Horiba

MODEL: Lua 1000 EQUIPMENT #: 13 SERIAL #: 11627467775

MONITORING DATE: 7-23-20 TIME: 0520

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
2.2 ppm	2.6 ppm	2.4 ppm

Background Value = 2.4 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	0.20 ppm	24 ppm	1
#2	0.15 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: Nick Banks Date/Time: 7-23-20 0520

RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: _____

Purpose: _____

Operator: JM JM

Date: 7-3-20 **Time:** 0800

Model # TVA 1000B

Serial # #10103634 6773

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	(Pass) / Fail	CALIBRATION CHECK
Reading following ignition	2.1 ppm	Calibration Gas (ppm): 500 / Actual (ppm): 500 / % Accuracy: 100%
Leak test	(Pass) / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	(Pass) / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	(Pass) / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	7-3-20	Time required to attain 90% of Cal Gas ppm: 1. 6; 2. 7; 3. 6
Factory calibration record w/instrument within 3 months	(Pass) / Fail	Average: 6.3
		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.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: _____

Purpose: _____

Operator: _____

Date: 7-3-20 **Time:** 0815

Model # TVA 1000B

Serial # #11 1036326774

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	(Pass) / Fail	CALIBRATION CHECK
Reading following ignition	2.3 ppm	Calibration Gas (ppm): 500 / Actual (ppm): 500 / % Accuracy: 100%
Leak test	(Pass) / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	(Pass) / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	(Pass) / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	7-3-20	Time required to attain 90% of Cal Gas ppm: 1. 5 / 2. 6 / 3. 6
Factory calibration record w/instrument within 3 months	(Pass) / Fail	Average: 5.6
		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.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: _____

Purpose: _____

Operator: JM JH

Date: 7-3-20 **Time:** 0830

Model # TVA 1000 B

Serial # #12103 62467 41

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	(Pass) / Fail	CALIBRATION CHECK
Reading following ignition	1.9 ppm	Calibration Gas (ppm): 500 / Actual (ppm): 500 / % Accuracy: 100%
Leak test	(Pass) / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	(Pass) / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	(Pass) / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	7-3-20	Time required to attain 90% of Cal Gas ppm
Factory calibration record w/instrument within 3 months	(Pass) / Fail	1. 6
		2. ?
		3. ?
		Average 6.6
		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.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: _____

Purpose: _____

Operator: JM CM

Date: 7-3-20 **Time:** 0845

Model # YVA 1000 B

Serial # #13 1102746775

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	(Pass) / Fail	CALIBRATION CHECK
Reading following ignition	2.6 ppm	Calibration Gas (ppm): 500 / Actual (ppm): 560 / % Accuracy: 100%
Leak test	(Pass) / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	(Pass) / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	(Pass) / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	7-3-20	Time required to attain 90% of Cal Gas ppm: 1. 7 / 2. 7 / 3. 6 / Average 6.6
Factory calibration record w/instrument within 3 months	(Pass) / Fail	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: [signature] DATE: 7-3-20

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	501	+/- 125
10000	10000	10,120	+/- 2500
< 1	ZERO GAS	0.48	< 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.

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 #11

SERIAL NUMBER: 1036346774

TECHNICIAN: [signature] DATE: 7-3-20

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	10,009	+/- 2500
< 1	ZERO GAS	0.79	< 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.

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 Vault #12

SERIAL NUMBER: 1036246741

TECHNICIAN: [signature] DATE: 7-3-20

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	499	+/- 125
10000	10000	10,000	+/- 2500
< 1	ZERO GAS	0.69	< 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.

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 #13

SERIAL NUMBER: 1102746775

TECHNICIAN: [signature] DATE: 7-3-20

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	10,021	+/- 2500
< 1	ZERO GAS	0,158	< 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.

P.O Box 748 ▪ Colton, California 92324
(909) 422-1001 ▪ TOLL FREE (888) 325-1098 ▪ FAX (909) 422-0707 ▪ www.resenvironmental.com

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

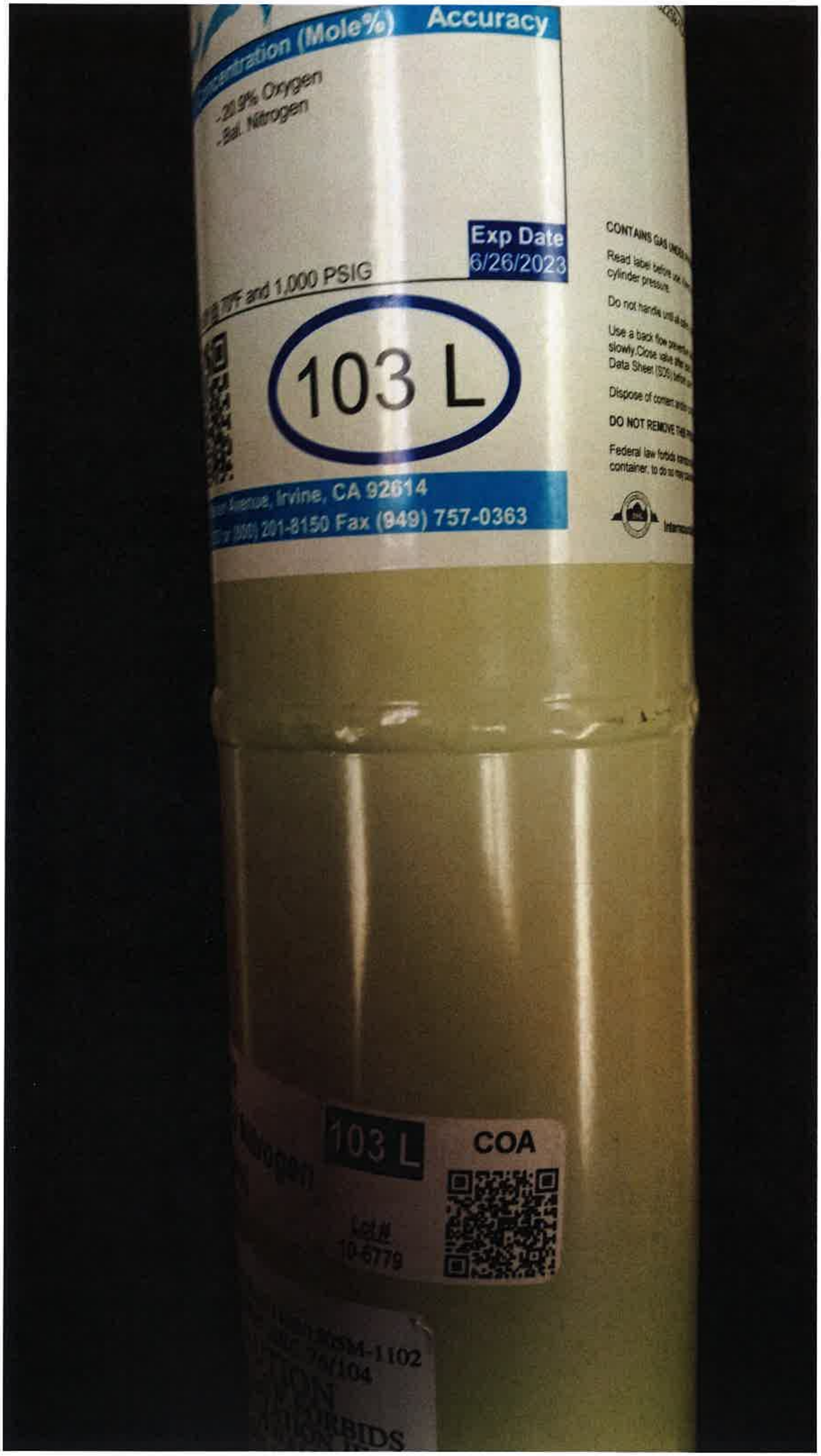
Method of Preparation:

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


Accuracy
Concentration (Mole%)
-20.9% Oxygen
-Bal. Nitrogen
Exp Date
6/26/2023
70°F and 1,000 PSIG
103 L
Irvine, CA 92614
Fax (949) 757-0363
CONTAINS GAS
Read label before use
cylinder pressure.
Do not handle until
DO NOT REMOVE
103 L
COA
Lot#
10-6779
SM-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	25 ppm	± 5%
Air	Balance	

Lot # 17-6074

Mfg. Date: 10/16/2017

Parent Cylinder ID Number: 17161

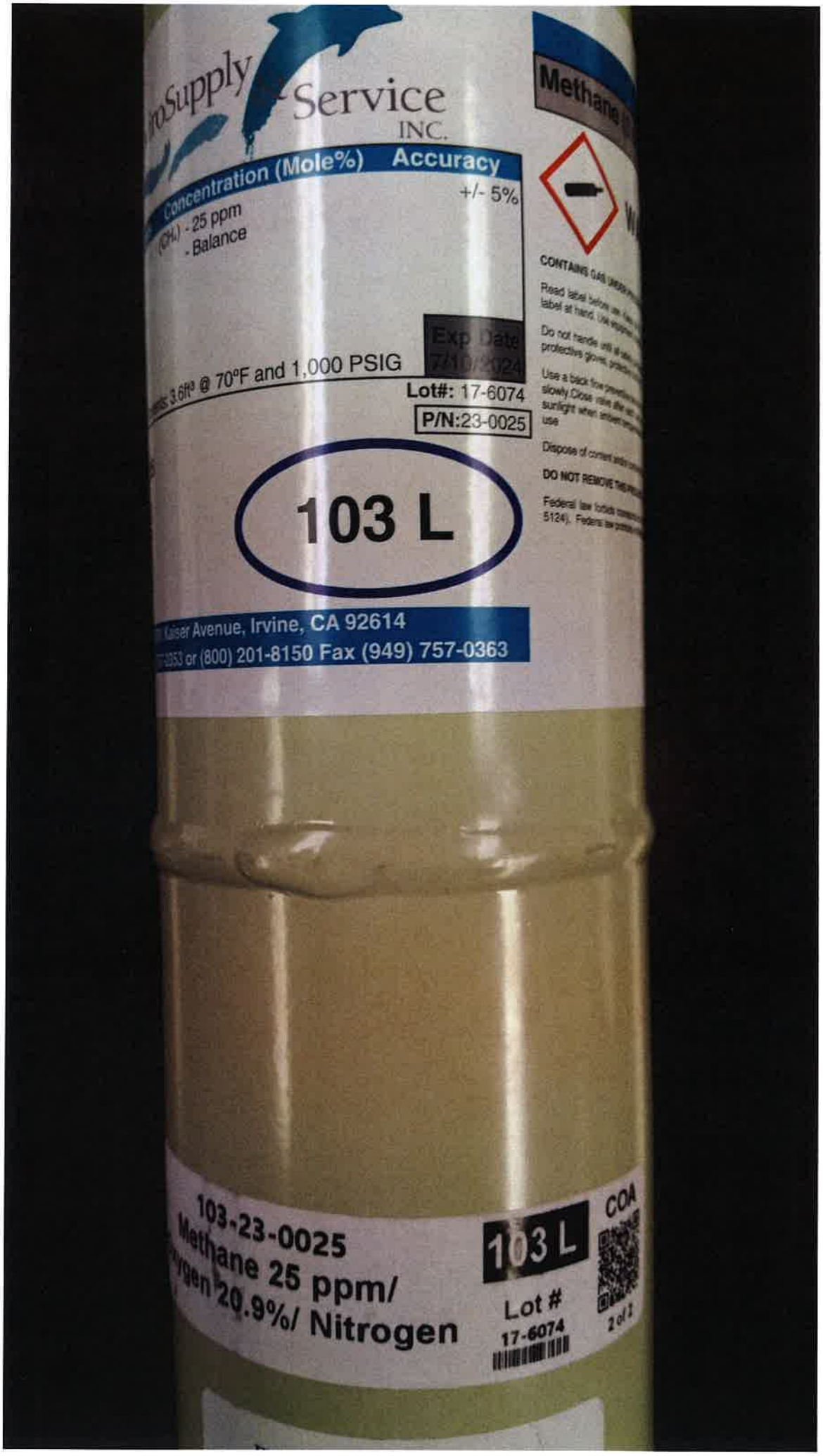
Method of Preparation:

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
Lot#: 17-6074
P/N:23-0025
103 L
Kaiser Avenue, Irvine, CA 92614
or (800) 201-8150 Fax (949) 757-0363
103-23-0025
Methane 25 ppm/
rgen 20.9%/ Nitrogen
103 L
Lot #
17-6074
COA
2 of 2

Intermountain Specialty Gases
520 N. Kings Road
Nampa, ID 83687 (USA)
Phone (800) 552-5003, Fax (208) 466-9143
www.isgases.com

INTERMOUNTAIN SPECIALTY GASES
"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

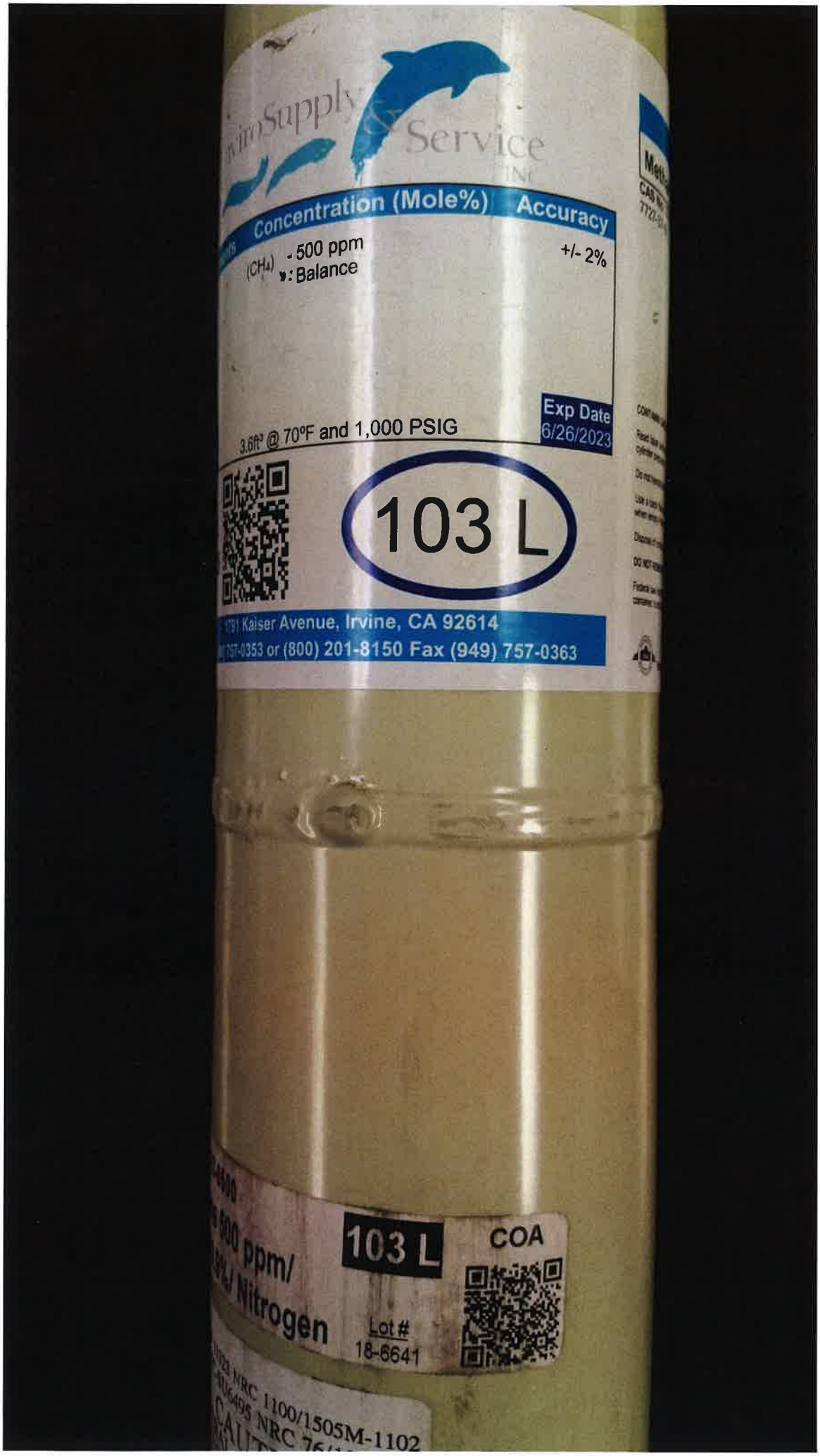
Method of Preparation:

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


Concentration (Mole%)
Accuracy
500 ppm
Balance
+/- 2%
3.6ft³ @ 70°F and 1,000 PSIG
Exp Date
6/26/2023
103 L
Kaiser Avenue, Irvine, CA 92614
757-0353 or (800) 201-8150 Fax (949) 757-0363
103 L
COA
Lot #
18-6641
NRC 1100/1505M-1102

Intermountain Specialty Gases
520 N. Kings Road
Nampa, ID 83687 (USA)
Phone (800) 552-5003, Fax (208) 466-9143
www.isgases.com

INTERMOUNTAIN SPECIALTY GASES
"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 #	**20-7497**
Mfg. Date:	7/10/2020
Expiration Date:	
Transfill Date:	see cylinder
Parent Cylinder ID Number:	TWC001763

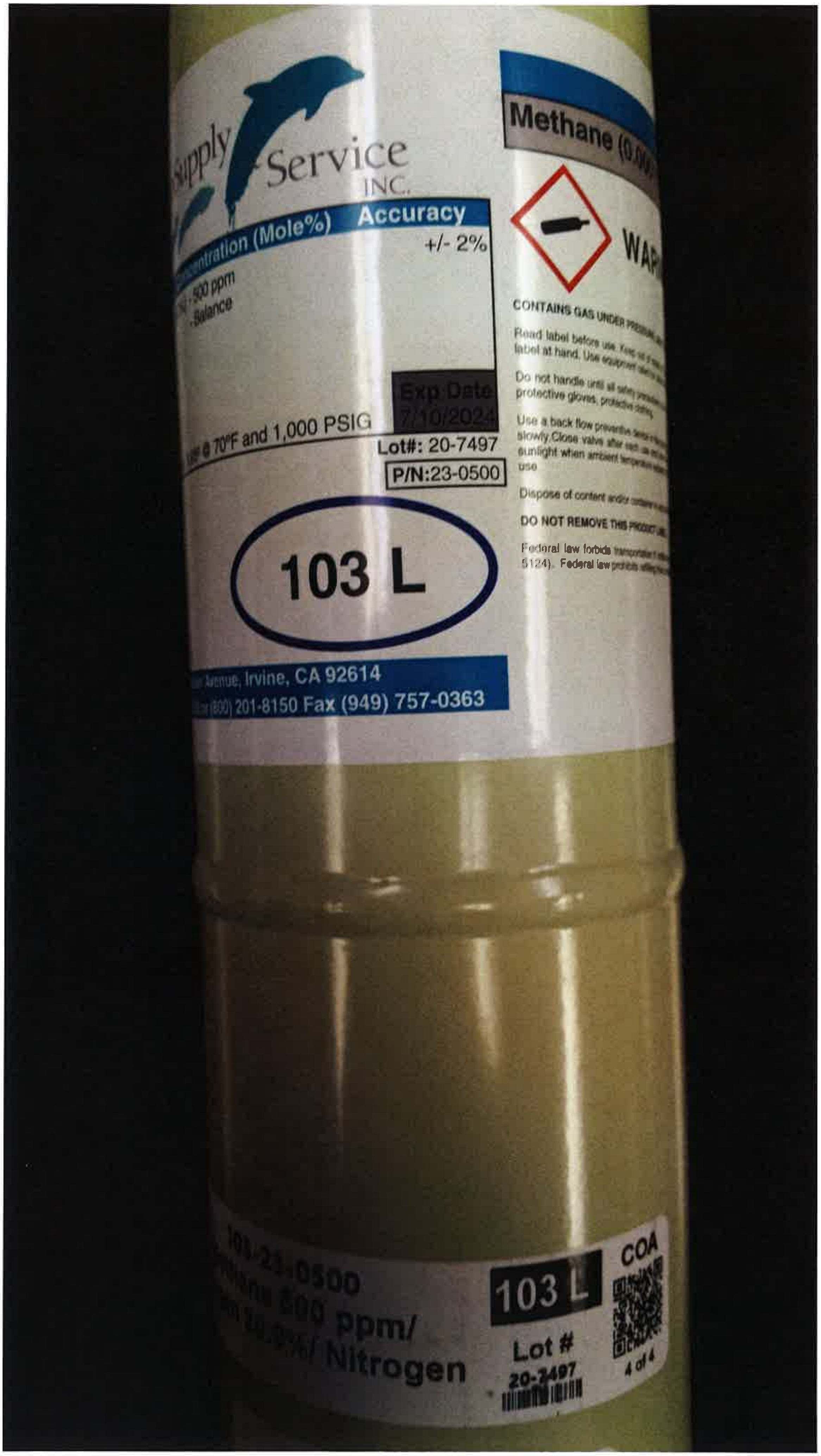
Method of Preparation:

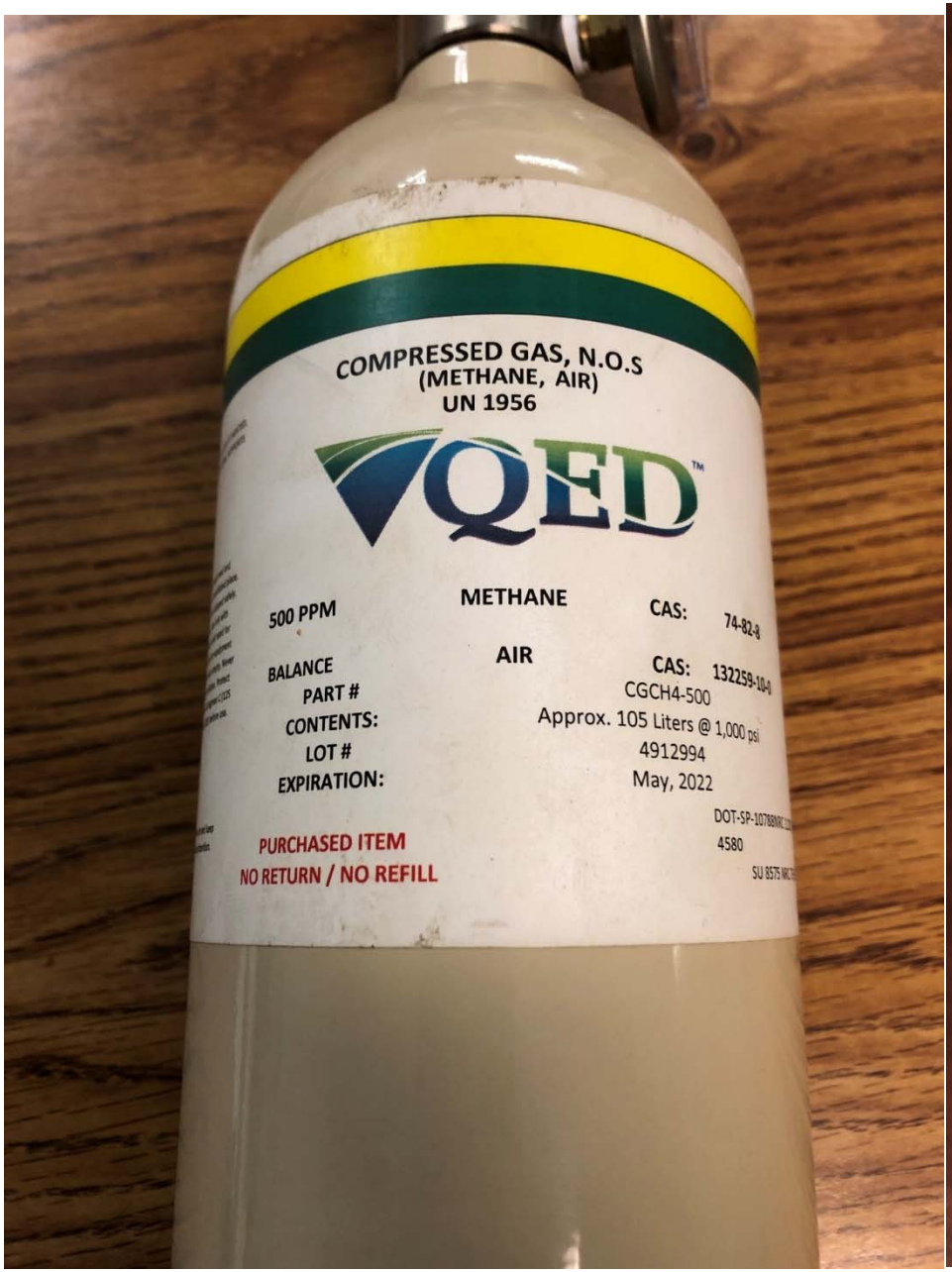
Gravimetric/Pressure Transfilled

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:	7/10/2020


Supply
Service
INC.
Methane
Accuracy
+/- 2%
Exp Date
7/10/2024
@ 70°F and 1,000 PSIG
Lot#: 20-7497
P/N:23-0500
103 L
Avenue, Irvine, CA 92614
(800) 201-8150 Fax (949) 757-0363
Read label before use.
label at hand.
Do not handle until all safety
protective gloves, protective clothing
Use a back flow preventive device
slowly. Close valve after each use
sunlight when ambient temperature
use
Dispose of content and/or container
Federal law forbids transportation
5124). Federal law prohibits refilling
103-23-0500
500 ppm/
Nitrogen
103 L
COA
Lot #
20-7497
4 of 4


COMPRESSED GAS, N.O.S
(METHANE, AIR)
UN 1956
QED
500 PPM
METHANE
CAS: 74-82-8
BALANCE
AIR
CAS: 132259-10-0
PART #
CGCH4-500
CONTENTS:
Approx. 105 Liters @ 1,000 psi
LOT #
4912994
EXPIRATION:
May, 2022
PURCHASED ITEM
NO RETURN / NO REFILL
4580


AIR
COMPRESSED
UN 1002
QED
AIR
ULTRA ZERO AIR
CAS:
132259-10-0
Part #
CGAIR-0
Contents:
Approx. 105 Liters @ 1,000 psi
LOT #
4912991
EXPIRATION:
May, 2022

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

September 28, 2020

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

Re: September 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 September 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.

SEPTEMBER 2020 SEM RESULTS

The Instantaneous surface monitoring was performed on September 1, 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 September 1, 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

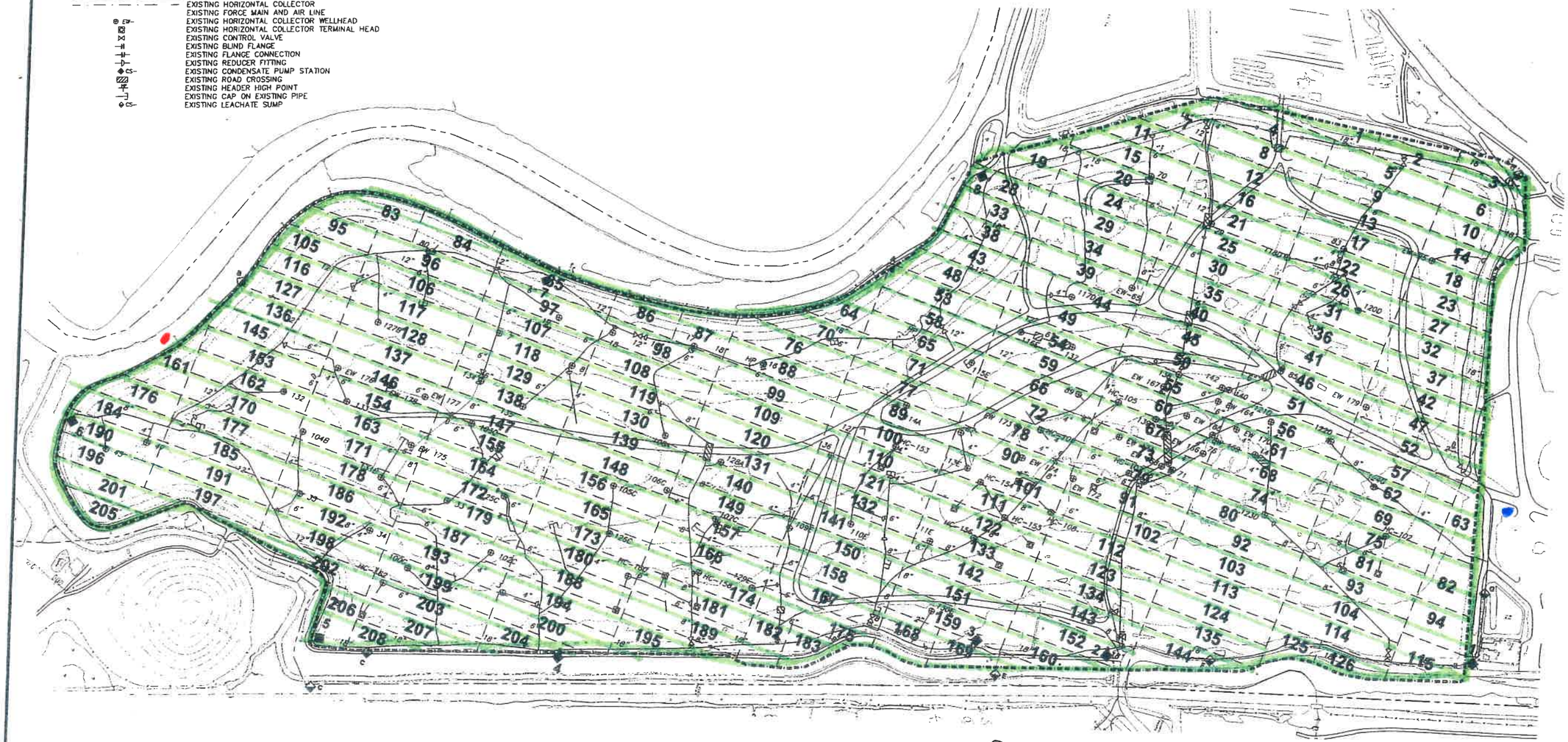
- Instrument and Gas Calibration Records

Attachment A

Surface Emission Monitoring Event Records

LEGEND

- EXISTING 10' CONTOUR
- EXISTING LFG HEADER-ABOVE GROUND
- EXISTING HORIZONTAL COLLECTOR
- EXISTING FORCE MAIN AND AIR LINE
- EXISTING HORIZONTAL COLLECTOR WELLHEAD
- EXISTING HORIZONTAL COLLECTOR TERMINAL HEAD
- EXISTING CONTROL VALVE
- EXISTING BLIND FLANGE
- EXISTING FLANGE CONNECTION
- EXISTING REDUCER FITTING
- EXISTING CONDENSATE PUMP STATION
- EXISTING ROAD CROSSING
- EXISTING HEADER HIGH POINT
- EXISTING CAP ON EXISTING PIPE
- EXISTING LEACHATE SUMP



REDWOOD LANDFILL

NSPS 3RD QUARTER 2020

9-1-20

UPWIND

DOWNWIND

No Exceedances

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 IMPROVEMENTS 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.

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

AS-BUILT GCCS PLAN

REDWOOD LANDFILL
2015 GCCS IMPROVEMENTS
NOVATO
CALIFORNIA
MARIN COUNTY

DESIGN BY:	N/A
DRAWN BY:	STAFF
DATE:	NOV 2015
SCALE:	1"=200'
PAGE OF	1 1
JOB NUMBER:	15341

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

2020 Month: September
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			
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**
No Exceedances											

Orange Flag Landfill Surface Emissions Monitoring
Exceedances and Monitoring Log

Site: REDWOOD

Quarter / Year:	3RD 2020 NSPS			Page 1 of 1 Pages
Technician:	LEISHWADT			
Instrument:	TVA1000			
Calibration Standard:	500ppm			

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-													NO EXCEEDENCES
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													
O-													

Attachment B

Weather Station Data

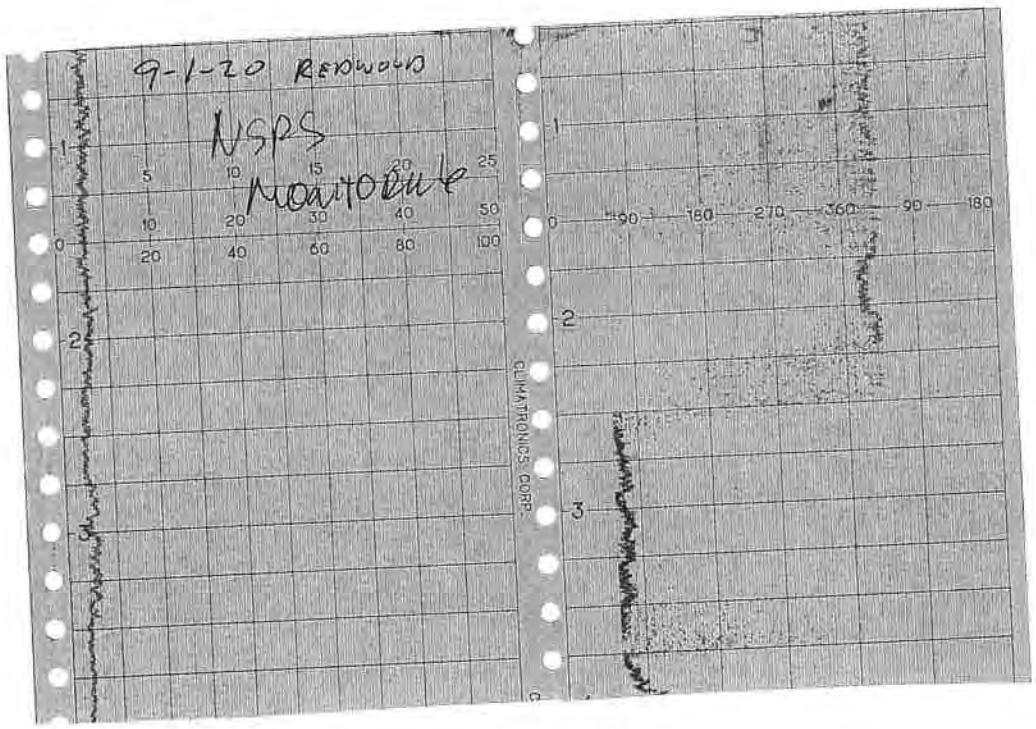
RES Environmental Inc.

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



Attachment C

Calibration Records

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Horiba

MODEL: VA-1000 EQUIPMENT #: 10 SERIAL #: 10363467773

MONITORING DATE: 9-1-20 TIME: 1230

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
2.2 ppm	2.4 ppm	2.3 ppm

Background Value = 2.3 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	7
#2	498 ppm	448 ppm	7
#3	506 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	0.24 ppm	505 ppm	5
#2	0.19 ppm	498 ppm	2
#3	0.10 ppm	500 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/500 X 100/1		0.46 #DIV/0! Must be less than 10%

Performed By: Louis Wood Date/Time: 9-1-20-1230

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: NEOWOOD INSTRUMENT MAKE: LANDTEC

MODEL: GA 1000 EQUIPMENT #: 11 SERIAL #: 1036346774

MONITORING DATE: 9-1-20 TIME: 1230

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
2.2 ppm	2.4 ppm	2.3 ppm

Background Value = 2.3 **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	510 ppm	450 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	0.11 ppm	490 ppm	10
#2	0.09 ppm	500 ppm	0
#3	0.06 ppm	505 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: OMAR PONCE DE LEON Date/Time: 9-1-20 - 1230

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: Thermo

MODEL: TVA 1000 EQUIPMENT #: 12 SERIAL #: 1036246741

MONITORING DATE: 5-1-20 TIME: 1230

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
2.2 ppm	2.4 ppm	2.3 ppm

Background Value = 2.3 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	504 ppm	454 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	0.20 ppm	495 ppm	5
#2	0.14 ppm	504 ppm	4
#3	0.08 ppm	500 ppm	0
Calculate Precision	[STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/500 X 100/1		0.60 #DIV/0! Must be less than 10%

Performed By: Nick Banks Date/Time: 9-1-20-1230

RES Environmental Inc.

CALIBRATION PROCEDURE AND BACKGROUND REPORT – INSTANTANEOUS

LANDFILL NAME: Redwood INSTRUMENT MAKE: THermo

MODEL: TVA1000 EQUIPMENT #: 13 SERIAL #: 1102746775

MONITORING DATE: 9-1-20 TIME: 1230

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
2.2 ppm	2.4 ppm	2.3 ppm

Background Value = 2.3 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	497 ppm	447 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	0.35 ppm	489 ppm	11
#2	0.21 ppm	457 ppm	3
#3	0.16 ppm	500 ppm	0
Calculate Precision [STD-B1] + [STD-B2] + [STD-B3] / 3 X 1/500 X 100/1			0.93 #DIV/0! Must be less than 10%

Performed By: Dwight Anderson Date/Time: 9-1-20 - 1230

RES Environmental Inc.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: _____

Purpose: _____

Operator: JM JM

Date: 9-4-20 **Time:** 0930

Model # TVA 1000B

Serial # #10 1036346773

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	(Pass) / Fail	CALIBRATION CHECK
Reading following ignition	1.9 ppm	Calibration Gas (ppm): 500 / Actual (ppm): 500 / % Accuracy: 100%
Leak test	(Pass) / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	(Pass) / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	(Pass) / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	7-3-20	Time required to attain 90% of Cal Gas ppm: 1. 7 / 2. 7 / 3. 6
Factory calibration record w/instrument within 3 months	(Pass) / Fail	Average: 6.6
		Equal to or less than 30 seconds? (Y) N
		Instrument calibrated to Cal 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.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: _____

Purpose: _____

Operator: _____

Date: 9-4-20 **Time:** 0945

Model # TVA1000B

Serial # #11 1036346774

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	(Pass) / Fail	CALIBRATION CHECK
Reading following ignition	1.5 ppm	Calibration Gas (ppm): 500 / Actual (ppm): 500 / % Accuracy: 100%
Leak test	(Pass) / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	(Pass) / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	(Pass) / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	7-3-20	Time required to attain 90% of Cal Gas ppm: 1. 7 / 2. 7 / 3. 6 / Average 6.6
Factory calibration record w/instrument within 3 months	(Pass) / Fail	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.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: _____

Purpose: _____

Operator: JM CM

Date: 9-4-20 **Time:** 1000

Model # FIA 1000 B

Serial # #12 103B746741

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	(Pass) / Fail	CALIBRATION CHECK
Reading following ignition	23 ppm	Calibration Gas (ppm): 500 — Actual (ppm): 500 — % Accuracy: 100%
Leak test	(Pass) / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	(Pass) / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	(Pass) / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	7-3-20	Time required to attain 90% of Cal Gas ppm: 1. 6; 2. 6; 3. 6
Factory calibration record w/instrument within 3 months	(Pass) / Fail	Average: 6.0
		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.

SURFACE EMISSION MONITORING INSTRUMENT
CALIBRATION LOG

Site: _____

Purpose: _____

Operator: JM JM

Date: 9-9-20 **Time:** 1015

Model # TLA 1000B

Serial # #13 1102746775

INSTRUMENT INTEGRITY CHECKLIST		INSTRUMENT CALIBRATION
Battery test	(Pass) / Fail	CALIBRATION CHECK
Reading following ignition	2.6 ppm	Calibration Gas (ppm): 500 / Actual (ppm): 500 / % Accuracy: 100%
Leak test	(Pass) / Fail / NA	RESPONSE TIME
Clean system check (check valve chatter)	(Pass) / Fail / NA	Calibration Gas, ppm: 500
H_2 supply pressure gauge (acceptable range 9.5 - 12)	(Pass) / Fail / NA	90% of Calibration Gas, ppm: 450
Date of last factory calibration	7-3-20	Time required to attain 90% of Cal Gas ppm
Factory calibration record w/instrument within 3 months	(Pass) / Fail	1. 6 2. 5 3. 6 Average 5.6
		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

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

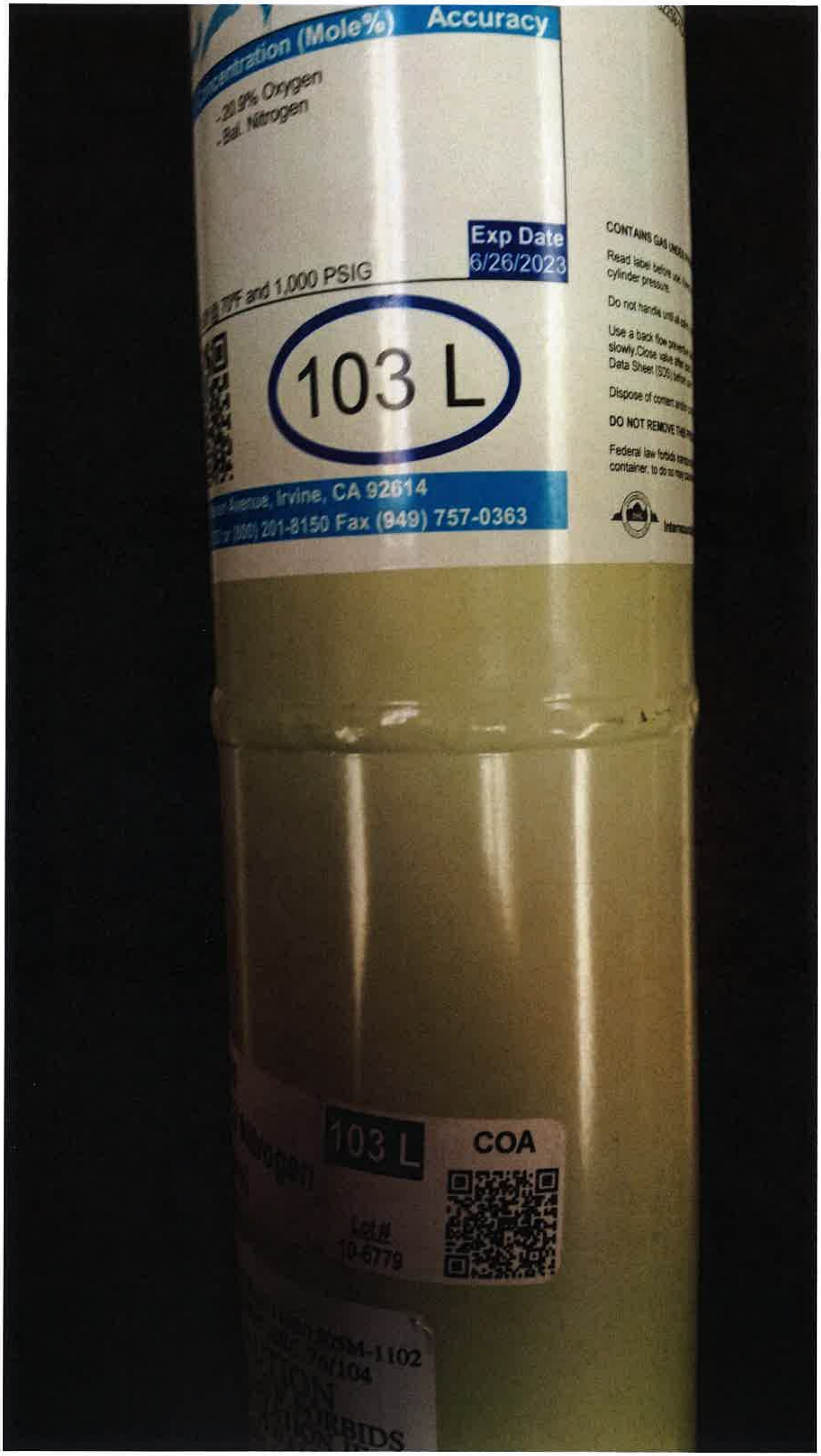
Method of Preparation:

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


Accuracy
(Mole%)
- 20.9% Oxygen
- Bal. Nitrogen
Exp Date
6/26/2023
70°F and 1,000 PSIG
103 L
Irvine, CA 92614
201-8150 Fax (949) 757-0363
CONTAINS GAS
Read label before use
cylinder pressure.
Do not handle
Use a back flow
Data Sheet (SDS)
DO NOT REMOVE
Federal law forbids
container,
103 L
COA
Lot#
10-6779
SM-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	25 ppm	± 5%
Air	Balance	

Lot # 17-6074

Mfg. Date: 10/16/2017

Parent Cylinder ID Number: 17161

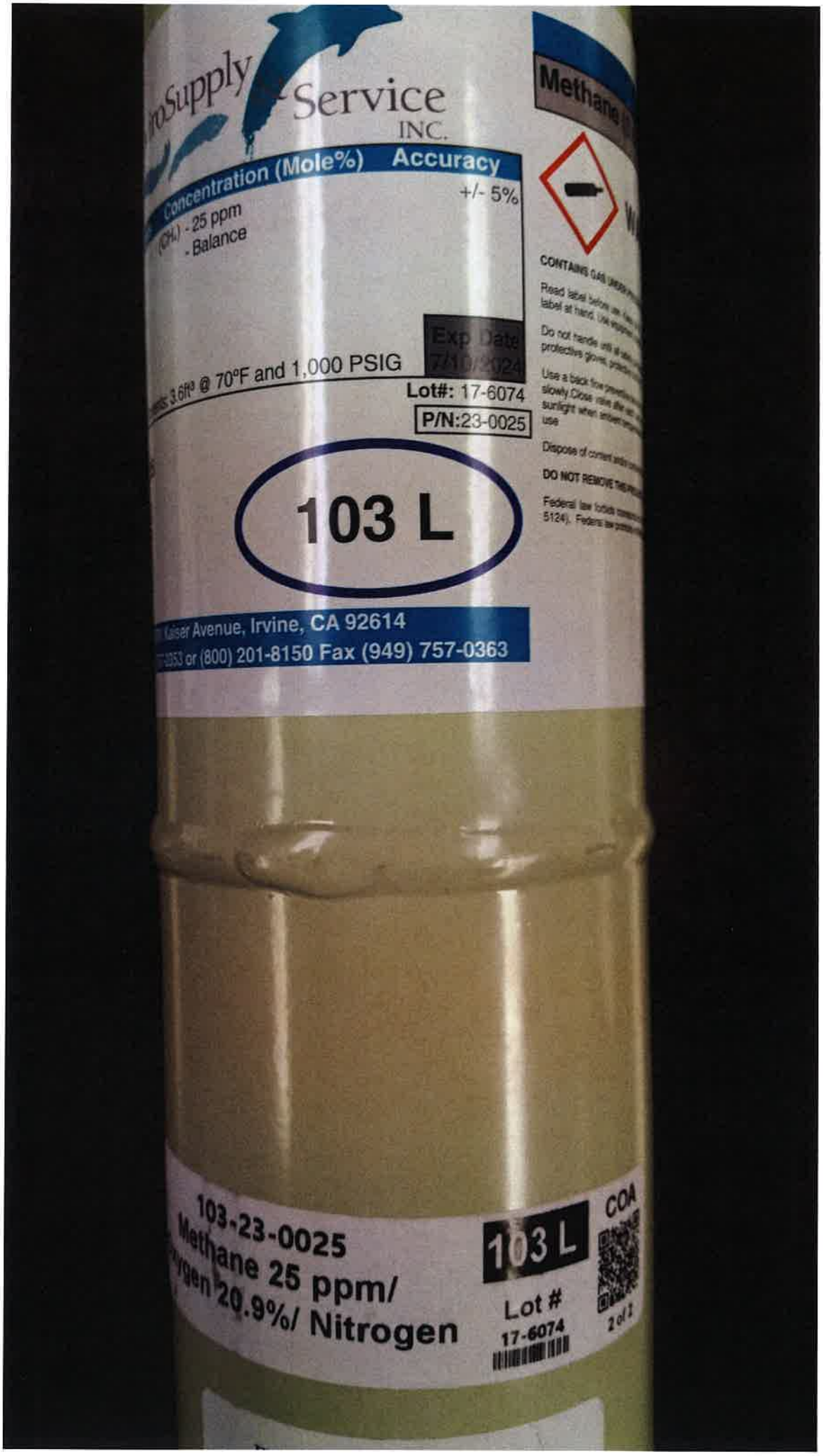
Method of Preparation:

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
Lot#: 17-6074
P/N:23-0025
103 L
Kaiser Avenue, Irvine, CA 92614
or (800) 201-8150 Fax (949) 757-0363
103-23-0025
Methane 25 ppm/
rgen 20.9%/ Nitrogen
103 L
Lot #
17-6074
COA
2 of 2

Intermountain Specialty Gases
520 N. Kings Road
Nampa, ID 83687 (USA)
Phone (800) 552-5003, Fax (208) 466-9143
www.isgases.com

INTERMOUNTAIN SPECIALTY GASES
"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

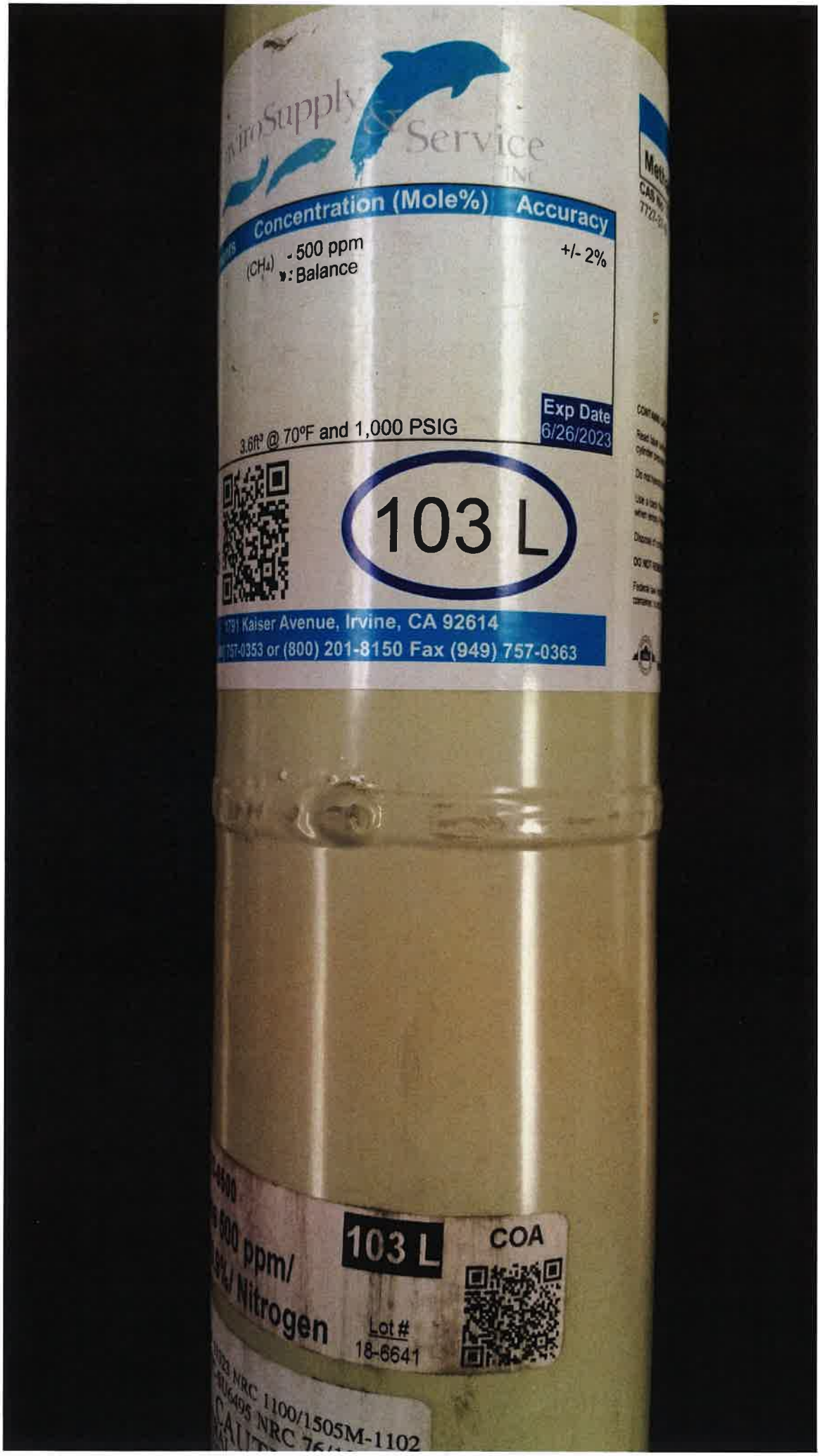
Method of Preparation:

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


Concentration (Mole%)
Accuracy
500 ppm
Balance
+/- 2%
3.6ft³ @ 70°F and 1,000 PSIG
Exp Date
6/26/2023
103 L
Kaiser Avenue, Irvine, CA 92614
757-0353 or (800) 201-8150 Fax (949) 757-0363
103 L
COA
Lot #
18-6641
NRC 1100/1505M-1102

Intermountain Specialty Gases
520 N. Kings Road
Nampa, ID 83687 (USA)
Phone (800) 552-5003, Fax (208) 466-9143
www.isgases.com

INTERMOUNTAIN SPECIALTY GASES
"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 #	**20-7497**
Mfg. Date:	7/10/2020
Expiration Date:	
Transfill Date:	see cylinder
Parent Cylinder ID Number:	TWC001763

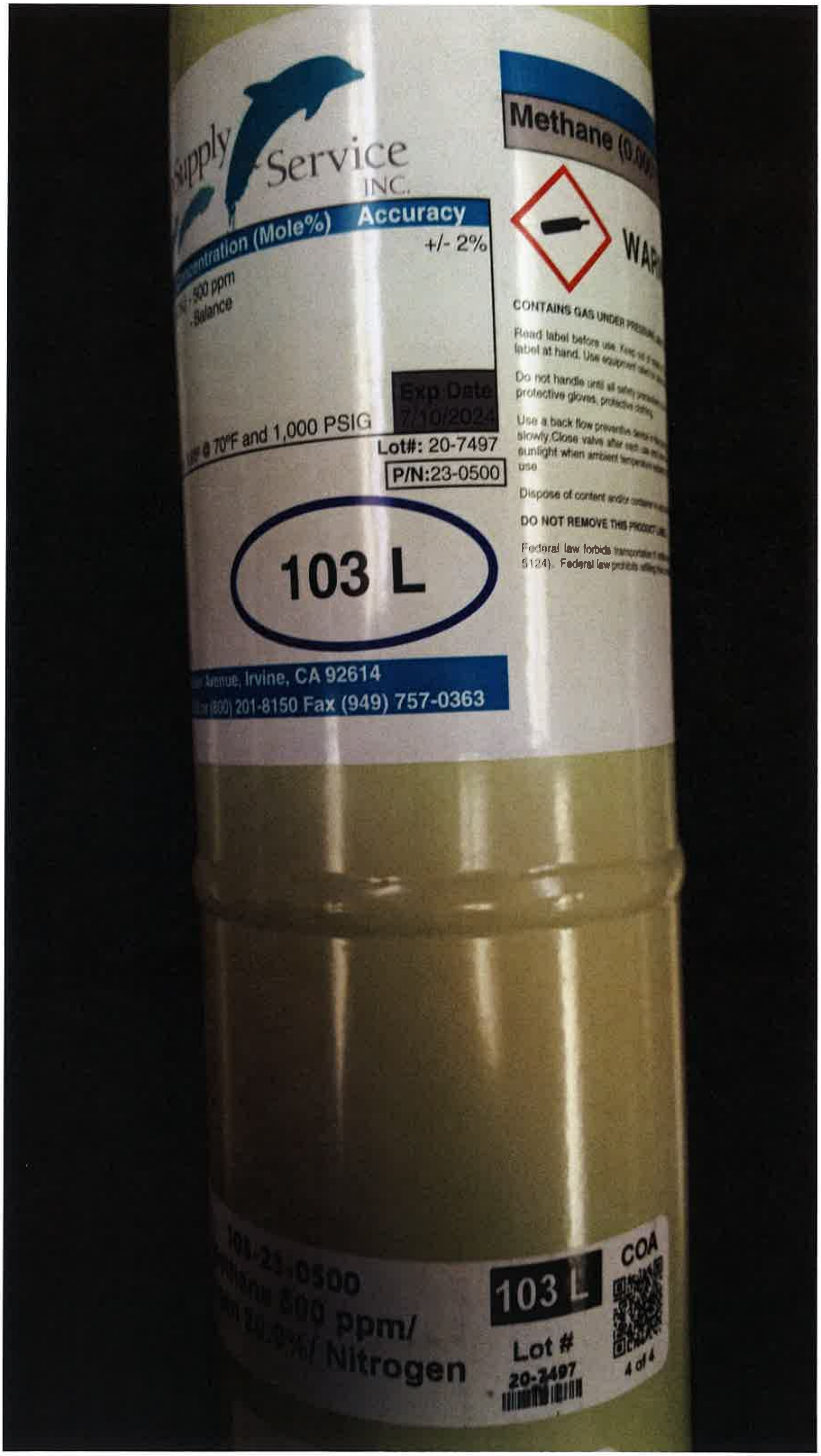
Method of Preparation:

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:	7/10/2020


Supply
Service
INC.
Accuracy
+/- 2%
Exp Date
7/10/2024
Lot#: 20-7497
P/N:23-0500
103 L
Irvine, CA 92614
201-8150 Fax (949) 757-0363
Methane
CONTAINS GAS UNDER
DO NOT REMOVE THIS
COA
103 L
Lot #
20-7497
4 of 4
ppm/
Nitrogen

APPENDIX I

WELLFIELD MONITORING LOGS

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - May 4, 5, 6, 7, 8, 11, 13, and 15, 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	5/7/20 9:13	49.2	38.7	0	12.1	-1.2	101	-1	101
RLHC0156	5/15/20 9:00	62	36.4	0	1.6	-0.1	90	-0.7	93
RLI00003	5/13/20 7:08	49.2	38.6	0	12.2	-47.6	75	-47.8	75
RLI00008	5/15/20 9:57	52.7	33.9	0.7	12.7	-49.5	83	-49.7	84
RLI00016	5/15/20 10:24	32.5	25.1	0.1	42.3	-13.4	74	-13.4	75
RLI00017	5/15/20 10:18	39	30.7	0	30.3	-20.7	74	-20.6	74
RLI00018	5/15/20 10:12	29.4	26.1	1.1	43.4	-33	74	-33	74
RLI00019	5/15/20 10:07	59.2	35.4	0.5	4.9	-47.4	71	-47.4	72
RLI00029	5/4/20 12:07	59.7	40.2	0	0.1	-49.7	91	-49.6	92
RLI00034	5/15/20 9:24	58.4	40.1	0	1.5	-29.9	79	-28.6	79
RLI00035	5/15/20 9:28	52.5	37.2	0	10.3	-30.5	76	-29.9	76
RLI00045	5/15/20 9:32	34.4	29.4	0	36.2	-2.9	75	-2	75
RLI00047	5/15/20 9:35	43.9	32.8	0	23.3	-2	77	-1.9	77
RLI00065	5/4/20 11:59	48.9	40.2	0	10.9	-3.3	98	-3.3	99
RLI00083	5/15/20 8:29	61.4	38.5	0	0.1	-44.7	95	-44.8	95
RLI00089	5/6/20 8:37	50.2	38.4	2	9.4	-2.7	97	-2.7	97
RLI00095	5/4/20 12:55	53.6	35.9	0	10.5	-0.9	96	-1.2	96
RLI00132	5/13/20 11:05	56.3	37.8	0	5.9	-23.8	100	-26.1	101
RLI00134	5/8/20 14:15	53.1	38.5	0	8.4	-27.7	108	-28.7	108
RLI00135	5/8/20 14:10	55.3	38.9	0	5.8	-38.5	105	-41.8	106
RLI00137	5/6/20 9:12	64.3	35.6	0	0.1	-41.7	80	-41.2	80
RLI00140	5/6/20 10:21	60.7	26.8	2.1	10.4	-46.4	82	-46.4	82
RLI00141	5/6/20 10:44	51.3	35.6	0	13.1	-20.8	92	-20.8	92
RLI00142	5/6/20 10:19	60.3	32.7	0.2	6.8	-46.3	91	-46.1	91
RLI00220	5/4/20 11:42	50.7	38.4	0.2	10.7	-0.8	62	-0.8	62
RLI0100C	5/15/20 9:20	60.7	39.2	0	0.1	-31.8	80	-31.8	80
RLI0102C	5/8/20 12:34	59.5	40.4	0	0.1	-44.2	93	-44	93
RLI0102C	5/13/20 7:05	59.8	40.1	0	0.1	-44.9	91	-44.8	91
RLI0105C	5/8/20 12:46	47.5	36.8	0	15.7	-18.6	105	-17.5	105
RLI0106C	5/8/20 12:50	60.3	39.6	0	0.1	-50.2	101	-47	101
RLI0107C	5/8/20 13:02	58.1	39.4	0	2.5	-6.2	102	-10.8	102
RLI0114A	5/6/20 13:42	53.5	31.2	2.6	12.7	-23	94	-25.1	94
RLI0115E	5/6/20 13:31	60.6	39.3	0	0.1	-40.1	93	-41.2	94
RLI0116E	5/6/20 9:18	59.4	39.8	0.1	0.7	-39.7	76	-39.1	77
RLI0117D	5/6/20 9:25	59.6	40.3	0	0.1	-44.4	92	-44.4	92
RLI0120D	5/4/20 14:01	48	32.3	1.9	17.8	-0.2	94	-0.3	94
RLI0124G	5/4/20 13:04	50.7	35.7	0.4	13.2	-6.1	88	-6.1	88
RLI0126C	5/8/20 12:18	58.5	30.4	1.8	9.3	-44.9	88	-45	88
RLI0127B	5/13/20 11:14	51.3	36.7	0	12	-35.5	105	-35.5	105
RLI0128A	5/8/20 12:57	58	41.2	0	0.8	-0.2	103	-0.4	105
RLI0129E	5/15/20 9:09	59.3	34.9	0.1	5.7	-47.4	80	-47.4	80
RLI0130E	5/15/20 9:04	44.8	32.4	0	22.8	-16.8	78	-13.8	78
RLIHC101	5/4/20 13:10	54	37.7	0	8.3	-37.9	95	-37.9	95
RLIHC102	5/4/20 13:07	50	38.3	0	11.7	-7.5	98	-7.3	99
RLIHC105	5/6/20 8:34	45	38.9	0	16.1	-2.8	92	-1.9	92
RLIHC107	5/6/20 8:25	39.7	36	0	24.3	-0.6	123	-0.3	123
RLLC0165	5/6/20 10:29	56.7	37	0	6.3	-44.3	94	-44.7	95
RLLC0166	5/6/20 10:26	59.6	36.1	0	4.3	-46.2	94	-46.1	95
RLLC0169	5/6/20 10:37	45.7	32.1	0	22.2	-44.5	101	-41.9	101
RLLC0170	5/15/20 8:42	51	35.5	0	13.5	-9.8	74	-9.9	73
RLLC0171	5/6/20 8:30	43.6	38.5	0	17.9	-0.9	92	-0.5	93
RLLC0175	5/13/20 10:55	60.3	39.4	0.1	0.2	-29.3	96	-29.1	96
RLLC0176	5/13/20 11:01	38.6	40.7	0	20.7	-0.1	96	-0.1	97
RLLC0177	5/8/20 14:19	54.9	42.8	0	2.3	-37.9	103	-38.1	103
RLLC0178	5/8/20 14:25	58.8	41.1	0	0.1	-40.2	86	-40.3	86
RLLC0179	5/15/20 8:34	42.5	31.5	0	26	-1.7	75	-1.7	75

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - May 4, 5, 6, 7, 8, 11, 13, and 15, 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	5/7/20 9:13	49.2	38.7	0	12.1	-1.2	101	-1	101
RLHC0156	5/15/20 9:00	62	36.4	0	1.6	-0.1	90	-0.7	93
RLLC0180	5/15/20 9:48	44.4	35.3	0	20.3	-3.7	95	-3.2	95
RLLC0181	5/11/20 11:59	51	38	0	11	-11	103	-11	103
RLLC0183	5/13/20 11:10	26.4	28.5	0	45.1	-5.7	83	-4.4	81
RLLC0184	5/15/20 9:54	45.4	34.7	0	19.9	-8.8	96	-8.6	96
RLLC0185	5/13/20 10:47	23.8	33.9	1.5	40.8	-0.4	84	-0.3	84
RLLC0186	5/13/20 6:57	49.4	38.1	0	12.5	-13.8	97	-13.5	97
RLLC0187	5/13/20 7:01	58	39.5	0	2.5	-43.2	101	-44.3	101
RLLC0188	5/13/20 6:53	51.1	39.1	0	9.8	-4.7	104	-4.7	104
RLLC0189	5/13/20 6:50	51.3	38.2	0	10.5	-5.7	110	-5.7	110
RLLC0190	5/15/20 9:45	38.1	33.7	0	28.2	-1.3	96	-1.1	95
RLLC0191	5/5/20 11:29	46.5	34.1	0	19.4	-1.1	90	-1	90
RLLC0193	5/6/20 13:35	50.6	38.2	0	11.2	-14.4	106	-13.2	107
RLLC0194	5/7/20 9:25	49.7	38.6	0	11.7	-26.4	100	-22.7	100
RLLC0195	5/7/20 9:21	47.3	34.8	0	17.9	-23.1	88	-19.7	88
RLLC0196	5/7/20 9:18	60.5	39.1	0	0.4	-19.5	105	-19.6	105
RLLC0198	5/7/20 8:49	55.9	38.2	0	5.9	-6.6	110	-14	112
RLLC0199	5/7/20 8:44	42.2	35.3	0	22.5	-39.9	110	-35.5	109
RLLC0200	5/7/20 8:37	33.2	30	0	36.8	-2.5	95	-2.1	95
RLLC0201	5/7/20 8:29	50.7	38.2	0	11.1	-2.9	107	-4.1	108
RLLC0202	5/7/20 9:43	49.7	36.3	0	14	-2.9	96	-2.6	97
RLLC0203	5/7/20 9:47	56	38.6	0	5.4	-11.1	97	-19.8	99
RLLC0204	5/7/20 9:51	51.3	37.7	0	11	-2.1	103	-2.1	103
RLLC0205	5/8/20 12:06	37.5	33.3	0	29.2	-0.1	88	-0.1	88
RLLC0206	5/8/20 12:14	47.2	33.7	0	19.1	-1	100	-0.9	101
RLLC0207	5/8/20 12:24	35.5	29.9	0	34.6	-0.2	84	-0.1	85
RLLC0208	5/8/20 12:28	59	40.9	0	0.1	-16.9	91	-22.8	92
RLLC0209	5/8/20 12:10	46.4	34.5	0	19.1	-0.5	97	-0.4	97
RLLC0210	5/8/20 12:01	40.1	34.7	0	25.2	-0.2	99	-0.1	99
RLLC0212	5/5/20 13:35	58.4	40.8	0	0.8	-21.2	90	-21.4	91
RLLC0213	5/5/20 13:53	28.6	26.5	0	44.9	-9.2	85	-4.8	85
RLLC0214	5/5/20 13:44	46.6	33.9	0	19.5	-8.6	94	-4.4	94
RLLC0215	5/5/20 13:48	42.8	32	0	25.2	-4.7	95	-3.5	96
RLLC0217	5/5/20 11:35	54.2	39.7	0	6.1	-9.6	95	-11.8	95
RLLC0219	5/6/20 13:45	51.6	39.9	0	8.5	-1.1	104	-1.3	104
RLLC0221	5/7/20 9:41	49.1	36	0	14.9	-17	102	-13.1	102
RLLC0222	5/5/20 13:25	51.4	39.4	0	9.2	-9.7	100	-9.6	100
RLLC0223	5/6/20 13:20	52	40.7	0	7.3	-4.6	100	-4.8	100
RLLC0224	5/6/20 13:23	51.4	39.1	0	9.5	-3.4	104	-3.3	105
RLLC0225	5/7/20 8:25	48.9	35.9	0	15.2	-2.4	98	-2.4	98
RLLC0226	5/5/20 13:31	55.2	39.9	0	4.9	-43.1	90	-43.9	90
RLLC0227	5/4/20 12:48	51.9	35.3	0	12.8	-2.8	83	-3.1	83
RLLC0228	5/7/20 8:53	40.9	33.1	0.2	25.8	-6	107	-3.4	104
RLLC0229	5/7/20 8:41	26.3	28.6	0	45.1	-1.6	108	-1.1	105
RLLC0230	5/6/20 8:21	51	40.6	0	8.4	-2.6	110	-2.6	110
RLLC0231	5/6/20 13:52	52.7	38.3	0	9	-1.3	93	-1.8	93
RLLC0232	5/8/20 13:08	52.5	39.4	0	8.1	-2.4	90	-2.6	90
RLLC0233	5/6/20 8:41	52.1	40.9	0	7	-0.4	99	-0.6	100
RLLC0234	5/6/20 9:43	51.1	41.5	0	7.4	-9.4	93	-9.4	94
RLLC0235	5/6/20 9:40	50.3	40.3	0	9.4	-3.5	91	-3.5	91
RLLC0236	5/6/20 9:36	52.2	39.7	0	8.1	-1.1	88	-1.2	89
RLLC0237	5/6/20 9:09	52.2	40.1	0	7.7	-7.8	91	-8.1	91
RLLC0238	5/6/20 9:05	52.2	41.9	0	5.9	-6.1	95	-6.4	95
RLLC0239	5/6/20 8:50	47.9	37.7	0	14.4	-0.1	94	-0.1	94
RLLC0240	5/6/20 8:47	50.4	38.7	0	10.9	-1.1	99	-1.1	99

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - May 4, 5, 6, 7, 8, 11, 13, and 15, 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	5/7/20 9:13	49.2	38.7	0	12.1	-1.2	101	-1	101
RLHC0156	5/15/20 9:00	62	36.4	0	1.6	-0.1	90	-0.7	93
RLLC0241	5/4/20 12:04	51.2	42	0	6.8	-40.3	101	-40.4	101
RLLC0242	5/4/20 11:55	53.9	46	0	0.1	-5.5	99	-8.3	99
RLLC0243	5/5/20 11:20	52.4	43.5	0	4.1	-0.5	100	-0.6	100
RLLC0244	5/5/20 11:23	54	43	0	3	-0.8	101	-0.9	102
RLLC0245	5/5/20 11:25	43.7	42.5	0	13.8	-0.5	98	-0.3	98

There are 113 total collectors; 104 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 - June 1, 2, 3, 5, 9, 10, 15, and 16, 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	6/10/20 8:29	53.5	40.6	0	5.9	-0.8	100	-0.9	100
RLHC0156	6/15/20 8:55	47.8	33.5	0.5	18.2	-0.1	97	-0.1	97
RLI00003	6/1/20 10:56	47.9	37.7	0	14.4	-45.5	80	-44.6	80
RLI00008	6/15/20 9:22	57.3	35.9	0.2	6.6	-48.8	85	-48.4	85
RLI00016	6/2/20 10:11	55.9	28.3	0	15.8	-4.7	84	-4.8	83
RLI00017	6/2/20 10:15	39.1	30.7	0.3	29.9	-19.8	83	-19.4	83
RLI00018	6/2/20 10:18	26.2	25.3	0.7	47.8	-31.9	86	-31.9	86
RLI00019	6/2/20 10:22	60.3	35.7	0.4	3.6	-45.7	87	-45.6	87
RLI00029	6/3/20 10:53	59.7	40.2	0	0.1	-49.1	92	-49	93
RLI00034	6/15/20 8:22	59	39.4	0	1.6	-30.2	79	-30.8	79
RLI00035	6/15/20 8:28	49.5	36.7	0	13.8	-41.9	76	-40	76
RLI00045	6/15/20 8:35	48.3	30.9	0	20.8	-0.8	73	-0.9	73
RLI00047	6/15/20 8:38	48.3	34	0	17.7	-1.4	77	-1.4	78
RLI00065	6/5/20 9:17	51.1	41.4	0	7.5	-2.9	101	-2.9	101
RLI00083	6/15/20 13:38	61.7	38.2	0	0.1	-43.5	94	-43.5	95
RLI00089	6/9/20 10:41	49.6	37.4	2	11	-3.2	106	-3.2	107
RLI00095	6/1/20 10:23	47.4	35.2	0	17.4	-1.5	94	-1.1	94
RLI00132	6/15/20 9:44	56	37.9	0	6.1	-37.1	100	-38.7	101
RLI00134	6/15/20 10:23	53	37.2	0	9.8	-15.1	107	-18	108
RLI00135	6/15/20 10:19	54.4	38.3	0	7.3	-40.9	106	-42.5	106
RLI00137	6/2/20 10:04	64.4	35.4	0.1	0.1	-45.4	97	-44.9	97
RLI00140	6/2/20 10:46	60.2	26	2.3	11.5	-46.6	91	-46.5	91
RLI00141	6/2/20 10:54	51.6	34.8	0	13.6	-20.3	91	-20.3	91
RLI00142	6/2/20 10:50	59.3	32.1	0.4	8.2	-46.2	92	-46.3	92
RLI00220	6/1/20 9:57	48.8	37.8	0.6	12.8	-0.2	64	-0.3	64
RLI0100C	6/15/20 8:17	60.7	39.2	0	0.1	-32.3	80	-32.4	80
RLI0102C	6/15/20 9:50	60.4	39.4	0	0.2	-42.8	92	-42.5	92
RLI0105C	6/10/20 9:17	53.6	37.3	0	9.1	-13.8	105	-14.1	105
RLI0106C	6/15/20 13:53	60.6	39.3	0	0.1	-45.2	101	-45.2	101
RLI0107C	6/10/20 10:05	58.3	38.9	0	2.8	-6.7	101	-10.1	102
RLI0114A	6/9/20 11:01	48.4	27.2	3.8	20.6	-24.4	94	-22.9	94
RLI0115E	6/1/20 11:24	61.3	38.5	0.1	0.1	-40.4	81	-42	80
RLI0116E	6/9/20 10:13	58.4	39.3	0.5	1.8	-42.1	86	-41.9	80
RLI0117D	6/5/20 9:21	59.9	40	0	0.1	-42.7	93	-42.1	93
RLI0120D	6/16/20 7:01	44.9	29.6	4.3	21.2	-4.4	93	-1.8	93
RLI0124G	6/2/20 13:29	57.6	38	0	4.4	-6.5	92	-7.4	92
RLI0126C	6/10/20 9:11	52.2	28.1	2.9	16.8	-43.6	91	-44.6	91
RLI0127B	6/15/20 9:35	50.9	36	0	13.1	-34.7	105	-35.2	105
RLI0128A	6/10/20 10:01	59.2	40.6	0	0.2	-0.1	101	-0.4	104
RLI0129E	6/1/20 10:45	56.3	33.9	0.1	9.7	-47.5	82	-47.5	82
RLI0130E	6/15/20 8:52	48.4	33	0	18.6	-11.8	79	-9.8	79
RLIHC101	6/2/20 13:35	55.9	38.4	0	5.7	-37.4	96	-37.4	97
RLIHC102	6/2/20 13:32	52	38.5	0	9.5	-6.4	98	-6.4	99
RLIHC105	6/9/20 10:38	53.2	40.9	0	5.9	-2.7	94	-3.4	94
RLIHC107	6/9/20 10:32	39.2	36.3	0	24.5	-0.4	122	-0.5	122
RLLC0165	6/2/20 11:04	51	35.1	0	13.9	-45.3	98	-45.8	99
RLLC0166	6/2/20 11:08	54.1	33.9	0	12	-46.7	96	-47	96
RLLC0169	6/2/20 11:01	46.1	31.7	0	22.2	-43	100	-42.7	100
RLLC0170	6/2/20 10:58	49.9	34.5	0	15.6	-11	94	-11.1	94
RLLC0171	6/9/20 10:35	51.1	41.1	0	7.8	-0.8	107	-0.8	108
RLLC0175	6/15/20 11:09	60.2	39.5	0	0.3	-36.4	98	-32.7	99
RLLC0176	6/15/20 11:05	39	40.5	0	20.5	-0.1	100	-0.1	101
RLLC0177	6/15/20 10:55	53.5	42	0	4.5	-38.1	103	-38.5	103
RLLC0178	6/15/20 11:02	58.4	41	0	0.6	-44.9	80	-45.1	80
RLLC0179	6/15/20 13:47	42	31.7	0	26.3	-1.6	84	-1.6	84
RLLC0180	6/15/20 10:33	45.8	36.4	0	17.8	-3.3	99	-3	99

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - June 1, 2, 3, 5, 9, 10, 15, and 16, 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	6/10/20 8:29	53.5	40.6	0	5.9	-0.8	100	-0.9	100
RLHC0156	6/15/20 8:55	47.8	33.5	0.5	18.2	-0.1	97	-0.1	97
RLLC0181	6/15/20 9:18	52.7	38.3	0	9	-10.7	103	-10.9	103
RLLC0183	6/15/20 9:39	30.3	29.2	0.1	40.4	-4.1	76	-4.1	76
RLLC0184	6/15/20 9:27	44.6	34.2	0	21.2	-7.8	96	-7.7	96
RLLC0185	6/15/20 10:57	26.3	36.1	0	37.6	-0.3	90	-0.3	90
RLLC0186	6/15/20 10:44	45.6	36.6	0	17.8	-11.2	95	-10.5	95
RLLC0187	6/15/20 10:47	55.3	38.9	0	5.8	-42	101	-42.4	101
RLLC0188	6/15/20 10:41	47	37.4	0	15.6	-3.7	103	-3.4	103
RLLC0189	6/15/20 10:36	50.4	37.9	0	11.7	-5.4	110	-5.4	110
RLLC0190	6/15/20 10:30	40.4	34.5	0	25.1	-1.2	97	-1	97
RLLC0191	6/2/20 13:51	50.2	34.2	0	15.6	-0.8	98	-0.8	99
RLLC0193	6/9/20 10:52	48.3	37.1	0	14.6	-13.2	105	-11	105
RLLC0194	6/10/20 7:09	51.7	38.9	0	9.4	-23.1	100	-23.2	100
RLLC0195	6/10/20 8:21	51.8	36	0	12.2	-17.8	87	-17.8	88
RLLC0196	6/10/20 8:26	60.4	39.5	0	0.1	-12.9	103	-13	104
RLLC0198	6/10/20 6:56	44.7	34.6	0	20.7	-14.7	111	-10	111
RLLC0199	6/10/20 6:53	43.5	36.4	0	20.1	-32.8	108	-25.4	108
RLLC0200	6/10/20 6:45	41.1	33.1	0	25.8	-1.5	90	-1.3	90
RLLC0201	6/10/20 6:36	49.2	38	0	12.8	-3.4	106	-3.4	107
RLLC0201	6/10/20 6:38	49.1	38.1	0	12.8	-8.9	107	-9	107
RLLC0201	6/10/20 6:40	49.2	38.2	0	12.6	-3.9	107	-3.5	107
RLLC0202	6/10/20 8:40	59.9	40	0	0.1	-1.1	95	-2.3	96
RLLC0203	6/10/20 8:43	55.2	39.3	0	5.5	-15.1	97	-21.4	99
RLLC0204	6/10/20 8:47	44.7	34.1	1.9	19.3	-1.9	102	-1.5	103
RLLC0205	6/10/20 8:55	39.1	33.9	0	27	-0.1	92	-0.1	91
RLLC0206	6/10/20 9:05	57	35.4	0	7.6	-0.6	100	-1	101
RLLC0209	6/10/20 9:02	54.8	36.6	0	8.6	-0.3	96	-0.4	97
RLLC0210	6/10/20 8:52	38.5	34.3	0	27.2	-0.3	103	-0.2	103
RLLC0212	6/3/20 10:24	59.3	40.3	0	0.4	-19.5	91	-19.6	91
RLLC0213	6/3/20 10:34	42.3	30.1	0	27.6	-3.5	93	-3.5	93
RLLC0214	6/3/20 10:28	51.1	34.1	0	14.8	-3.6	94	-3.5	94
RLLC0215	6/3/20 10:31	51.8	33.5	0	14.7	-3	95	-3.3	96
RLLC0217	6/2/20 11:14	53.1	38.3	0	8.6	-11.9	95	-13.1	96
RLLC0219	6/9/20 11:04	51.1	38.6	0	10.3	-0.8	103	-0.9	103
RLLC0221	6/10/20 7:04	59.6	40.3	0	0.1	-7.3	99	-12.1	101
RLLC0222	6/3/20 9:37	51.4	40.3	0	8.3	-10.1	99	-10.1	99
RLLC0223	6/3/20 9:33	49.1	40.4	0	10.5	-5.1	100	-4.3	100
RLLC0224	6/3/20 9:29	49.5	38.7	0	11.8	-3.4	105	-3	105
RLLC0224	6/9/20 11:21	49	38.1	0	12.9	-2.6	104	-2	104
RLLC0225	6/10/20 6:33	46.7	34.8	0	18.5	-2	96	-1.8	96
RLLC0226	6/3/20 10:21	52.4	37.8	0.2	9.6	-42.7	91	-42.8	91
RLLC0227	6/1/20 10:30	47	34	0.3	18.7	-3	82	-2.6	82
RLLC0228	6/10/20 7:00	60	39.9	0	0.1	-2.5	89	-3.5	93
RLLC0229	6/10/20 6:49	38	33.8	0.1	28.1	-0.9	84	-0.9	85
RLLC0230	6/9/20 10:27	50.8	40.8	0	8.4	-2.4	109	-2.4	109
RLLC0231	6/9/20 11:07	50.8	37.2	0	12	-1.7	94	-1.7	94
RLLC0232	6/9/20 11:14	54.4	38.9	0	6.7	-1.6	91	-2.1	91
RLLC0233	6/9/20 10:24	48.4	39.9	0	11.7	-0.5	99	-0.4	100
RLLC0234	6/3/20 10:57	52.1	42.2	0	5.7	-9.6	95	-9.9	95
RLLC0235	6/3/20 10:59	51.2	39.7	0	9.1	-2.9	93	-3.1	93
RLLC0236	6/5/20 8:50	52.4	39.6	0	8	-1.2	87	-1.6	87
RLLC0237	6/5/20 9:32	53.5	40.2	0	6.3	-7.7	89	-9.4	89
RLLC0237	6/9/20 10:08	53.5	39.4	0	7.1	-9.2	90	-9.9	90
RLLC0238	6/5/20 9:25	52.5	41.8	0	5.7	-2.9	94	-3.5	95
RLLC0239	6/9/20 10:18	45	36.5	0	18.5	-0.1	94	-0.1	95

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - June 1, 2, 3, 5, 9, 10, 15, and 16, 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	6/10/20 8:29	53.5	40.6	0	5.9	-0.8	100	-0.9	100
RLHC0156	6/15/20 8:55	47.8	33.5	0.5	18.2	-0.1	97	-0.1	97
RLLC0240	6/9/20 10:21	48.3	37.9	0	13.8	-1.1	98	-0.7	98
RLLC0241	6/3/20 10:49	48.1	40.7	0	11.2	-37.4	97	-35.1	97
RLLC0242	6/3/20 10:45	54.5	44.5	0	1	-7.7	101	-8.9	101
RLLC0243	6/2/20 13:45	50.4	42.8	0	6.8	-0.5	100	-0.5	101
RLLC0244	6/2/20 13:43	50.6	42	0	7.4	-1	101	-1	101
RLLC0245	6/2/20 13:41	43.1	42.2	0	14.7	-0.4	100	-0.4	101

There are 113 total collectors; 104 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 - July 1, 2, 6, 7, 8, 13, 14, 15, 28, 29, and 31, 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	7/6/20 11:07	48.3	39.4	0	12.3	-0.8	99	-0.6	100
RLHC0153	7/13/20 8:05	50.8	39.5	0.1	9.6	-0.9	99	-0.8	100
RLHC0156	7/15/20 11:12	50.5	34	0.3	15.2	-0.2	99	-0.1	100
RLI00003	7/15/20 10:32	48.1	39.1	0	12.8	-44.4	82	-40.7	82
RLI00008	7/6/20 8:47	55.4	34.6	0.6	9.4	-50.3	84	-50.3	87
RLI00016	7/6/20 8:31	28.4	25.2	0.3	46.1	-22.5	74	-22.1	74
RLI00017	7/6/20 8:35	42.3	32.1	0.4	25.2	-17.9	72	-14.4	72
RLI00018	7/6/20 8:39	23	26	0.5	50.5	-28.2	75	-26.3	75
RLI00019	7/6/20 8:43	60	36	0.4	3.6	-47	69	-47	70
RLI00029	7/1/20 10:19	59.6	40.2	0	0.2	-45.9	90	-46.2	91
RLI00034	7/14/20 13:45	58.3	40.4	0	1.3	-30.4	83	-30.6	82
RLI00035	7/14/20 13:41	47.9	35.8	0	16.3	-37	78	-35.1	78
RLI00045	7/14/20 13:30	53.9	32.3	0	13.8	-0.8	84	-0.9	84
RLI00047	7/14/20 13:34	59.2	36	0	4.8	-0.3	83	-0.4	83
RLI00065	7/15/20 9:18	51.1	42	0	6.9	-2.5	102	-2.5	102
RLI00083	7/15/20 8:32	61.4	38.5	0	0.1	-35.6	95	-35.7	95
RLI00089	7/8/20 13:48	57.1	39.8	0.3	2.8	0	106	0	107
RLI00089	7/8/20 13:49	56.9	39.7	0.3	3.1	0	107	0	107
RLI00089	7/8/20 13:53	Decommissioned 7/8/20							
RLI00095	7/15/20 8:07	57.6	38.4	0	4	-0.9	95	-1.2	95
RLI00132	7/6/20 13:35	54.7	38	0	7.3	-46.1	100	-46.7	100
RLI00134	7/2/20 8:54	55.9	39.1	0	5	-21.3	108	-24.1	109
RLI00134	7/28/20 11:33	59.3	40.6	0	0.1	-20.1	106	-26.4	106
RLI00134	7/29/20 6:54	59.2	40.6	0	0.2	-32.3	97	-37.5	108
RLI00134	7/29/20 13:36	59.2	40.7	0	0.1	-38.1	107	-38.2	107
RLI00134	7/31/20 8:23	59.7	39.9	0	0.4	-39	108	-39	108
RLI00135	7/6/20 10:05	55.2	38.4	0	6.4	-45.3	106	-46.8	107
RLI00137	7/15/20 9:45	65.1	34.7	0	0.2	-44.2	93	-43.1	94
RLI00140	7/13/20 8:46	59.5	27.6	1.8	11.1	-50.7	84	-50.7	84
RLI00141	7/13/20 8:49	55.7	35.2	0	9.1	-9.1	91	-9.7	91
RLI00142	7/13/20 8:35	60.1	32.8	0.4	6.7	-50.3	90	-50.2	90
RLI00220	7/6/20 10:18	49.3	38.1	0.2	12.4	-0.5	66	-0.3	66
RLI0100C	7/15/20 10:26	60.4	39.5	0	0.1	-34.5	84	-34.2	85
RLI0102C	7/14/20 9:48	60.3	39.4	0	0.3	-45.3	93	-45.3	93
RLI0105C	7/14/20 9:58	53.6	38.6	0	7.8	-14.7	106	-14.8	106
RLI0106C	7/14/20 10:04	60.9	38.2	0	0.9	-47.5	102	-47.5	102
RLI0107C	7/15/20 10:53	56.8	39.1	0	4.1	-5	101	-9.1	102
RLI0114A	7/6/20 9:09	49.1	28.9	3.6	18.4	-27.7	87	-29.1	87
RLI0115E	7/6/20 8:59	61.4	38.4	0	0.2	-43.3	77	-43.1	78
RLI0116E	7/15/20 8:50	59.4	40.4	0.1	0.1	-47	77	-47.1	77
RLI0117D	7/15/20 9:11	60.1	39.8	0	0.1	-44.6	93	-44.5	93
RLI0120D	7/15/20 8:21	40.4	27.2	5.6	26.8	-1.3	95	-1.2	95
RLI0120D	7/15/20 8:24	24.2	17.7	10.7	47.4	-0.9	95	-0.9	95
RLI0120D	7/15/20 8:25	25.8	18.6	10.3	45.3	-0.8	95	-0.7	95
RLI0120D	7/15/20 8:27	21.8	16.3	11.5	50.4	-0.6	94	-0.3	93
RLI0120D	7/15/20 11:19	62.7	37.2	0	0.1	-0.1	92	-0.1	93
RLI0124G	7/6/20 10:49	53.1	36.5	0	10.4	-9.1	88	-9.5	89
RLI0126C	7/14/20 9:44	63.9	32.5	0.6	3	-46.6	85	-46.6	86
RLI0127B	7/6/20 13:31	50.2	36.7	0	13.1	-37.4	105	-37.8	105
RLI0128A	7/15/20 10:48	47.1	38	0.3	14.6	-0.3	111	-0.2	111
RLI0129E	7/15/20 11:02	55.3	34.7	0.1	9.9	-48.5	83	-48.4	83
RLI0130E	7/15/20 11:09	51	33.8	0	15.2	-8.8	78	-8.7	78
RLIHC101	7/13/20 11:26	52.9	38.6	0.1	8.4	-39.6	95	-39.6	95
RLIHC102	7/6/20 10:53	48.4	37.4	0	14.2	-6.7	99	-6.3	100
RLIHC105	7/8/20 13:42	57.5	42.4	0	0.1	0.1	89	0.1	91
RLIHC105	7/8/20 13:43	57.8	42.1	0	0.1	0.1	92	0.1	92

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - July 1, 2, 6, 7, 8, 13, 14, 15, 28, 29, and 31, 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	7/6/20 11:07	48.3	39.4	0	12.3	-0.8	99	-0.6	100
RLHC0153	7/13/20 8:05	50.8	39.5	0.1	9.6	-0.9	99	-0.8	100
RLIHC105	7/8/20 13:47	Decommissioned 7/8/20							
RLIHC107	7/15/20 9:37	40	36.8	0	23.2	-0.8	128	-0.3	127
RLLC0165	7/7/20 14:10	Decommissioned 7/7/20							
RLLC0166	7/7/20 14:10	Decommissioned 7/7/20							
RLLC0169	7/8/20 13:28	53.9	30.4	0	15.7	2.3	90	2.3	90
RLLC0169	7/8/20 13:29	54.2	30.4	0	15.4	2.4	89	2.4	89
RLLC0169	7/8/20 13:33	Decommissioned 7/8/20							
RLLC0170	7/8/20 13:22	16.8	12.2	11.8	59.2	-0.3	86	-0.3	87
RLLC0170	7/8/20 13:24	1	1	19.8	78.2	-0.3	87	-0.3	87
RLLC0170	7/8/20 13:27	Decommissioned 7/8/20							
RLLC0171	7/8/20 13:39	57.4	42.5	0	0.1	0	97	0	99
RLLC0171	7/8/20 13:40	57.7	42.2	0	0.1	0	88	0	96
RLLC0171	7/8/20 13:44	Decommissioned 7/8/20							
RLLC0175	7/6/20 9:52	60.7	38.6	0	0.7	-31.9	97	-32	97
RLLC0176	7/7/20 11:39	54.7	45.2	0	0.1	-0.2	100	-0.2	101
RLLC0177	7/2/20 8:01	56.4	41.7	0	1.9	-38.7	103	-38.8	104
RLLC0178	7/2/20 8:40	58.8	40.8	0.2	0.2	-49.6	61	-49.6	61
RLLC0179	7/15/20 8:37	57.3	35.4	0	7.3	-1.2	76	-2.1	77
RLLC0180	7/6/20 10:01	49.5	37.4	0	13.1	-2.6	96	-2.2	96
RLLC0181	7/14/20 10:01	54.7	38.1	0.2	7	-5.7	102	-5.9	103
RLLC0183	7/7/20 11:43	29	29.3	0	41.7	-5.2	87	-5.2	87
RLLC0184	7/6/20 13:24	48.3	35.3	0	16.4	-2.9	96	-2.7	96
RLLC0185	7/2/20 8:45	29.8	37.1	0.4	32.7	-0.6	99	-0.3	98
RLLC0186	7/6/20 9:46	50.2	37.3	0	12.5	-9.8	95	-9.8	95
RLLC0187	7/6/20 9:48	56.4	38.2	0	5.4	-41.6	101	-42.7	101
RLLC0188	7/6/20 9:56	47.1	37.5	0	15.4	-3	102	-2.6	102
RLLC0189	7/6/20 9:58	51.3	38.1	0	10.6	-5.3	110	-5.3	110
RLLC0190	7/6/20 10:09	45.7	36.1	0	18.2	-0.9	96	-0.9	97
RLLC0191	7/15/20 8:40	52.9	35.6	0	11.5	-0.4	82	-0.3	82
RLLC0193	7/6/20 9:04	53	38.4	0	8.6	-6.5	105	-7.3	105
RLLC0194	7/13/20 8:13	50.1	39.3	0	10.6	-23.6	99	-22.5	99
RLLC0195	7/13/20 8:11	52.1	37.1	0	10.8	-13.8	91	-13.8	92
RLLC0196	7/6/20 11:12	60.6	38.6	0	0.8	-11.6	103	-11.5	104
RLLC0196	7/13/20 8:08	60.4	39.5	0	0.1	-12.8	105	-13.1	105
RLLC0198	7/14/20 8:59	57.6	39.3	0	3.1	-5.2	110	-10.9	112
RLLC0199	7/14/20 8:56	46.1	37.1	0	16.8	-21.9	108	-16.3	108
RLLC0200	7/14/20 8:49	48.5	35	0	16.5	-0.9	90	-0.8	90
RLLC0201	7/14/20 8:46	53.8	40	0	6.2	-2.8	106	-3	106
RLLC0202	7/13/20 8:18	51.7	38.2	0	10.1	-3.6	87	-3.7	87
RLLC0203	7/14/20 9:10	55	39.3	0	5.7	-17.2	98	-27.1	100
RLLC0204	7/14/20 9:13	59.2	39.8	0	1	-0.4	102	-1.4	102
RLLC0205	7/14/20 9:36	37.6	33.8	0.1	28.5	-0.1	88	-0.1	89
RLLC0206	7/14/20 9:41	48.1	37.7	0	14.2	-1.8	101	-1.4	101
RLLC0209	7/14/20 9:38	44.3	36.7	0	19	-0.6	93	-0.5	93
RLLC0210	7/15/20 10:43	38.1	33.8	0	28.1	-0.5	99	-0.3	99
RLLC0212	7/13/20 10:50	52.7	38.5	0	8.8	-27.2	90	-27	91
RLLC0213	7/8/20 13:32	68.3	30.6	0	1.1	0.3	89	0.3	91
RLLC0213	7/8/20 13:34	68.1	31.8	0	0.1	0.3	91	0.3	93
RLLC0213	7/8/20 13:38	Decommissioned 7/8/20							
RLLC0214	7/13/20 10:57	45.5	31.6	0	22.9	-3	95	-1.8	95
RLLC0215	7/13/20 11:00	54.5	33	0	12.5	-6.5	94	-3.9	95
RLLC0217	7/15/20 8:12	54.4	38.5	0	7.1	-9.6	94	-10.6	94
RLLC0219	7/6/20 9:11	46.6	37.6	0.4	15.4	-4.6	104	-2.9	104
RLLC0221	7/14/20 9:05	59.3	40.6	0	0.1	-6	99	-10.4	101

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - July 1, 2, 6, 7, 8, 13, 14, 15, 28, 29, and 31, 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	7/6/20 11:07	48.3	39.4	0	12.3	-0.8	99	-0.6	100
RLHC0153	7/13/20 8:05	50.8	39.5	0.1	9.6	-0.9	99	-0.8	100
RLLC0222	7/6/20 13:08	48.1	38.6	0	13.3	-11	101	-9.3	102
RLLC0223	7/6/20 13:11	48.6	40	0	11.4	-4.5	101	-3.8	102
RLLC0224	7/6/20 13:14	52	39.7	0	8.3	-2	106	-2	106
RLLC0225	7/14/20 8:43	54.8	37.3	0	7.9	-0.9	94	-1.4	96
RLLC0226	7/13/20 10:54	44.6	35.3	0.3	19.8	-42	92	-34.8	92
RLLC0227	7/15/20 8:00	52.8	35.8	0.1	11.3	-2.4	84	-2.7	84
RLLC0228	7/14/20 9:02	59	37.8	0.6	2.6	-1.3	90	-2.1	93
RLLC0229	7/14/20 8:53	41.6	34.9	0	23.5	-0.4	81	-0.4	82
RLLC0230	7/15/20 9:33	51.3	41.4	0	7.3	-2.5	109	-2.5	109
RLLC0231	7/15/20 10:10	52.2	37.9	0	9.9	-1.7	91	-1.6	92
RLLC0232	7/15/20 10:14	52.6	39.2	0	8.2	-1.6	91	-1.8	91
RLLC0233	7/15/20 9:29	53	41.7	0	5.3	-0.4	99	-0.6	100
RLLC0234	7/1/20 10:23	48.9	40.8	0	10.3	-10.2	93	-8.8	93
RLLC0235	7/1/20 10:26	46	38.6	0	15.4	-3.4	94	-2.4	94
RLLC0236	7/15/20 9:14	49.6	39.6	0	10.8	-1.4	87	-1.1	88
RLLC0237	7/15/20 8:58	52.3	40.2	0	7.5	-10.2	91	-10.5	91
RLLC0238	7/15/20 9:02	52.6	41.7	0	5.7	-2.7	95	-2.8	95
RLLC0239	7/15/20 9:23	46.5	37.9	0	15.6	-0.2	97	-0.1	97
RLLC0240	7/15/20 9:26	53.3	39.7	0	7	-0.7	98	-0.9	98
RLLC0241	7/1/20 10:12	45.7	38.5	0.5	15.3	-34.7	98	-28	97
RLLC0242	7/1/20 10:15	54.2	44.5	0	1.3	-7.4	98	-8.2	98
RLLC0243	7/13/20 11:22	38.3	40.9	0	20.8	-0.6	96	-0.3	96
RLLC0244	7/13/20 11:19	45.6	40.4	0	14	-0.5	101	-0.3	101
RLLC0245	7/13/20 11:14	47.3	41	0	11.7	-0.1	101	-0.1	101

There are 105 total collectors; 98 vertical wells and 7 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

"H2O = in. w.c.= inches in water column

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - August 4, 12, 13, 14, 17, 18, and 19, 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	8/13/20 14:10	53.3	40.3	0	6.4	-0.9	104	-1.4	105
RLHC0156	8/17/20 10:55	53.2	35.1	0	11.7	-0.3	96	-0.6	96
RLI00003	8/12/20 16:20	49.7	39.5	0	10.8	-41.4	86	-39.7	87
RLI00008	8/17/20 9:40	57.7	35.3	0.3	6.7	-48.6	92	-48.8	89
RLI00016	8/12/20 16:28	36.3	28.4	0.1	35.2	-10.9	88	-10.9	88
RLI00017	8/12/20 16:32	62	36.3	0.1	1.6	-6.7	85	-8.2	84
RLI00018	8/12/20 16:35	24.1	25.6	0.4	49.9	-24.6	86	-22.2	86
RLI00019	8/12/20 16:39	60.2	36.2	0.2	3.4	-44.6	87	-44.6	87
RLI00029	8/12/20 14:42	59.8	40.1	0	0.1	-46.8	89	-46.6	90
RLI00034	8/17/20 10:13	56.6	39.6	0	3.8	-31.3	81	-31.5	81
RLI00035	8/17/20 10:10	49.6	36.3	0	14.1	-28.5	77	-28.5	77
RLI00045	8/17/20 10:19	41.5	31.2	0	27.3	-1.5	79	-1.4	79
RLI00047	8/17/20 10:23	47.6	34.2	0	18.2	-1.1	81	-1.1	80
RLI00065	8/19/20 7:10	50.2	41.6	0	8.2	-1.7	102	-1.7	102
RLI00083	8/12/20 14:18	61.4	38.5	0	0.1	-36.1	95	-36.1	96
RLI00095	8/12/20 14:21	50	37.2	0	12.8	-1.6	95	-1.6	96
RLI00132	8/4/20 12:12	52.6	37.2	0	10.2	-47.7	99	-47.8	97
RLI00134	8/4/20 8:01	53.3	39	0.2	7.5	-38.6	108	-38.6	108
RLI00135	8/4/20 7:58	55.5	40	0.2	4.3	-46.7	107	-43.3	107
RLI00137	8/12/20 16:51	65	34.8	0.1	0.1	-43.3	97	-44.3	98
RLI00140	8/14/20 14:38	62.4	26.6	2	9	-39.1	96	-38.6	97
RLI00141	8/12/20 17:01	63.3	36.6	0	0.1	-8	92	-13.9	91
RLI00142	8/12/20 16:57	62.6	33.4	0	4	-41.2	96	-41.2	96
RLI00220	8/17/20 8:56	46.1	35.8	1.9	16.2	-6.2	62	-3.2	62
RLI0100C	8/18/20 13:51	58.9	41	0	0.1	-30.5	100	-30.5	99
RLI0102C	8/13/20 16:50	59.3	39.4	0	1.3	-46.2	94	-46.2	94
RLI0105C	8/13/20 16:55	51.5	39.2	0	9.3	-15.3	107	-15.5	106
RLI0106C	8/12/20 16:15	60	39.9	0	0.1	-48.2	103	-48.1	103
RLI0107C	8/19/20 7:30	57.6	39.9	0	2.5	-3.4	95	-4.9	97
RLI0114A	8/17/20 9:07	57.5	32.9	1.6	8	-31.1	87	-31.5	87
RLI0115E	8/12/20 16:47	61.7	38.2	0	0.1	-45.9	91	-45.9	92
RLI0116E	8/19/20 7:21	60	39.7	0.2	0.1	-45.1	79	-45.1	79
RLI0117D	8/19/20 7:15	60.1	39.7	0	0.2	-40.3	91	-44.8	91
RLI0120D	8/12/20 14:14	43.6	29.9	4	22.5	-0.1	96	-0.1	97
RLI0124G	8/12/20 13:38	61.1	38.3	0	0.6	-12.4	89	-13	89
RLI0126C	8/13/20 16:42	59.7	30.6	1.5	8.2	-45.4	97	-45.5	97
RLI0127B	8/4/20 10:20	50.5	36.6	0	12.9	-36.1	105	-35.2	105
RLI0128A	8/19/20 7:33	48.4	39.4	0.3	11.9	-0.1	110	-0.1	110
RLI0129E	8/12/20 16:10	54.7	35.4	0.2	9.7	-49.1	85	-49.1	85
RLI0130E	8/17/20 10:49	49.8	33.3	0	16.9	-7.7	80	-7.1	80
RLIHC101	8/12/20 13:45	59.3	39.5	0	1.2	-37	96	-37	96
RLIHC102	8/12/20 13:41	54.1	38.9	0	7	-5.7	99	-6.1	99
RLIHC107	8/13/20 12:06	43	37.6	0	19.4	-0.4	127	-0.2	127
RLLC0175	8/4/20 10:09	61.1	38.8	0	0.1	-30.6	101	-30.4	102
RLLC0176	8/4/20 12:09	46.6	45.8	0	7.6	-0.1	100	-0.1	100
RLLC0177	8/4/20 8:05	56.4	42.6	0.1	0.9	-39.9	103	-40	104
RLLC0178	8/4/20 10:11	59	40.8	0	0.2	-48.8	74	-48.5	74
RLLC0179	8/12/20 14:10	57.7	36.1	0	6.2	-2.8	84	-3.7	85
RLLC0180	8/18/20 13:38	53.1	40.8	0.1	6	-2.4	101	-2.7	101
RLLC0181	8/18/20 13:41	59.2	40.7	0	0.1	-6.2	103	-7.3	103
RLLC0183	8/17/20 9:49	28.8	29	0	42.2	-5.1	88	-4.3	87
RLLC0184	8/17/20 9:44	38.2	31.5	0	30.3	-7.8	92	-7.7	93
RLLC0185	8/4/20 10:16	43.7	45.7	0	10.6	-0.3	90	-0.3	91
RLLC0186	8/14/20 11:59	58.1	38.1	0.8	3	-14.8	98	-19.5	99
RLLC0186	8/17/20 13:25	58.5	39.1	0.2	2.2	-22.9	99	-28.7	99
RLLC0187	8/14/20 11:56	61.4	38.5	0	0.1	-8.6	100	-23.7	103

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - August 4, 12, 13, 14, 17, 18, and 19, 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	8/13/20 14:10	53.3	40.3	0	6.4	-0.9	104	-1.4	105
RLHC0156	8/17/20 10:55	53.2	35.1	0	11.7	-0.3	96	-0.6	96
RLLC0187	8/17/20 13:28	60.1	39.8	0	0.1	-39.5	100	-45.2	101
RLLC0188	8/4/20 7:43	58.5	38.9	0.2	2.4	-1.8	101	-2	102
RLLC0189	8/4/20 7:49	56.3	39.5	0	4.2	-5.7	110	-6.3	111
RLLC0190	8/4/20 7:53	50	44.3	0	5.7	-1.4	100	-1.4	101
RLLC0191	8/12/20 14:06	59.5	36.1	0	4.4	-0.4	92	-0.5	93
RLLC0193	8/17/20 9:03	52.3	38.7	0	9	-7.9	107	-8.1	107
RLLC0194	8/13/20 14:26	49.7	38.8	0	11.5	-22.5	101	-21.6	101
RLLC0195	8/13/20 14:29	52	36.8	0	11.2	-16.4	95	-16.5	95
RLLC0196	8/13/20 14:16	60.4	37.9	0.4	1.3	-9.5	104	-9.5	104
RLLC0196	8/13/20 14:58	61.4	36.1	0.1	2.4	-44.4	105	-45.4	106
RLLC0198	8/13/20 12:58	45	35.2	0.1	19.7	-12.9	113	-8.7	112
RLLC0199	8/13/20 12:42	49.7	38.3	0	12	-15.2	111	-13.7	112
RLLC0200	8/13/20 12:34	54.9	36.6	0	8.5	-0.5	92	-1.1	96
RLLC0201	8/13/20 12:29	48.9	38.7	0	12.4	-3.4	107	-2.8	107
RLLC0202	8/13/20 13:09	52	38.3	0	9.7	-3.1	100	-3.1	100
RLLC0203	8/13/20 13:13	46.3	36.6	0	17.1	-24.4	101	-12.2	100
RLLC0204	8/13/20 16:25	53.9	38.5	0	7.6	-1.1	103	-1.8	103
RLLC0205	8/13/20 16:32	38.4	34.4	0	27.2	-0.1	95	-0.1	91
RLLC0206	8/13/20 16:39	53.8	39.3	0	6.9	-1	102	-1.3	102
RLLC0209	8/13/20 16:35	51	39	0	10	-0.5	98	-0.5	98
RLLC0210	8/13/20 16:29	38.4	33.8	0	27.8	-0.3	101	-0.2	101
RLLC0212	8/17/20 11:05	51.1	38.5	0	10.4	-26.6	90	-26.5	91
RLLC0214	8/14/20 14:47	49.8	34.3	0	15.9	-1.8	99	-1.4	100
RLLC0215	8/14/20 14:44	51.2	35.2	0	13.6	-4.3	99	-4.3	100
RLLC0217	8/19/20 7:40	56.3	39.1	0	4.6	-12.4	92	-14.4	93
RLLC0219	8/17/20 8:22	47.7	38.5	0.5	13.3	-2.1	103	-1.4	103
RLLC0221	8/13/20 13:06	57.5	39.7	0	2.8	-8	101	-13.6	101
RLLC0222	8/13/20 12:10	49.3	39	0	11.7	-9.2	103	-8.3	103
RLLC0223	8/13/20 12:14	51.3	40.8	0	7.9	-3.2	107	-3.3	107
RLLC0224	8/13/20 12:17	53.2	40.4	0	6.4	-2.2	108	-3	109
RLLC0225	8/13/20 12:22	44.2	35	0	20.8	-1.7	98	-1.3	98
RLLC0226	8/14/20 14:50	38.7	33.4	0.1	27.8	-28.8	96	-9.8	96
RLLC0227	8/12/20 14:27	50.4	36.2	0	13.4	-2.8	87	-2.7	82
RLLC0228	8/13/20 13:02	60.4	39.1	0	0.5	-1	93	-1.9	96
RLLC0229	8/13/20 12:39	44.2	36	0	19.8	-0.4	85	-0.4	86
RLLC0230	8/13/20 12:03	52.7	40.7	0	6.6	-2.5	109	-2.9	109
RLLC0231	8/17/20 9:13	50.4	37.7	0	11.9	-1.7	92	-1.7	92
RLLC0232	8/17/20 9:19	52.2	39.1	0	8.7	-1.8	95	-1.9	95
RLLC0233	8/17/20 13:50	46.8	40.1	0	13.1	-0.6	99	-0.5	100
RLLC0234	8/12/20 14:45	52.3	42.3	0	5.4	-9.7	98	-10.4	98
RLLC0235	8/12/20 14:48	48.2	39.4	0	12.4	-3.5	95	-2.9	95
RLLC0236	8/12/20 14:51	52.6	40.3	0	7.1	-1.2	88	-1.4	88
RLLC0237	8/17/20 13:42	51.4	40.1	0	8.5	-10.9	93	-10.9	94
RLLC0238	8/17/20 13:45	50.4	40.7	0	8.9	-3	95	-3	95
RLLC0239	8/17/20 13:39	41.8	36.1	0	22.1	-0.2	97	-0.1	91
RLLC0240	8/17/20 13:37	47.7	37.9	0	14.4	-1	101	-0.8	101
RLLC0241	8/12/20 14:39	48.9	40.1	0.1	10.9	-23.8	99	-20.8	99
RLLC0242	8/12/20 14:35	54.4	44.4	0	1.2	-9.6	103	-10.8	103
RLLC0243	8/12/20 13:57	44.4	40.6	0	15	-0.6	103	-0.4	103
RLLC0244	8/12/20 13:52	46	40.7	0	13.3	-0.7	102	-0.6	102
RLLC0245	8/12/20 13:49	35.5	39.2	0	25.3	-0.5	99	-0.5	99

There are 102 total collectors; 95 vertical wells and 7 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - August 4, 12, 13, 14, 17, 18, and 19, 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	8/13/20 14:10	53.3	40.3	0	6.4	-0.9	104	-1.4	105
RLHC0156	8/17/20 10:55	53.2	35.1	0	11.7	-0.3	96	-0.6	96

"H2O = in. w.c.= inches in water column

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - September 1, 2, 3, 4, 9, 10, 11, 14, 15, and 16, 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	9/14/20 13:49	41.6	36.6	0	21.8	-1.8	101	-1.5	102
RLHC0156	9/16/20 10:42	49.1	34	0.4	16.5	-0.2	96	-0.1	96
RLI00003	9/15/20 9:44	48.8	39.2	0.2	11.8	-37.3	77	-33.9	77
RLI00008	9/16/20 9:16	61.1	36.9	0	2	-49.9	92	-49.9	84
RLI00016	9/15/20 8:48	43.1	29.2	0.8	26.9	-6.4	65	-6.4	65
RLI00017	9/15/20 8:52	50.2	35.3	0	14.5	-11.8	69	-11.8	69
RLI00018	9/15/20 8:58	38.1	30.4	0.3	31.2	-5.7	66	-5.7	67
RLI00019	9/15/20 9:03	60.9	36.8	0.2	2.1	-45.2	62	-45.2	62
RLI00034	9/15/20 9:26	57.1	39.8	0	3.1	-33.4	78	-33.8	79
RLI00035	9/15/20 9:21	50.5	36.1	0	13.4	-28.1	75	-28.1	75
RLI00045	9/15/20 9:11	46.8	32.2	0	21	-1.1	69	-1.1	69
RLI00047	9/15/20 9:18	51	35.3	0	13.7	-1.1	76	-1.1	76
RLI00065	9/3/20 13:50	52.1	41.5	0	6.4	-1.4	99	-1.6	99
RLI00083	9/10/20 9:38	61.7	38.2	0	0.1	-35.5	94	-35.5	94
RLI00095	9/10/20 9:34	48.2	36.7	0	15.1	-1.6	94	-1.3	94
RLI00132	9/3/20 14:18	57.4	38.2	0	4.4	-28.8	91	-33.7	91
RLI00134	9/2/20 8:51	53.7	38.6	0	7.7	-33.2	108	-33.3	108
RLI00135	9/2/20 8:39	57.5	40.3	0	2.2	-38.7	106	-41.2	107
RLI00137	9/16/20 10:17	60.5	33.5	1.2	4.8	-45.9	93	-46.9	93
RLI00140	9/10/20 10:35	68.8	29.1	0.7	1.4	-48	81	-48	81
RLI00141	9/10/20 10:51	52.2	36	0.1	11.7	-23.3	90	-23.3	90
RLI00142	9/10/20 10:41	66.1	33.4	0.2	0.3	-44.6	90	-44.6	91
RLI00220	9/10/20 9:20	49	38.3	0.8	11.9	-1.8	56	-0.5	57
RLI0100C	9/15/20 9:32	60	39.9	0	0.1	-36.2	79	-36.2	79
RLI0102C	9/15/20 9:53	60.3	39.6	0	0.1	-44.2	92	-44.1	92
RLI0105C	9/15/20 9:59	53.8	39.2	0	7	-15.8	105	-16.7	106
RLI0106C	9/15/20 10:17	60.1	39.2	0	0.7	-46.5	101	-46.5	101
RLI0107C	9/15/20 10:30	56.7	39.4	0	3.9	-3.6	98	-7.5	101
RLI0114A	9/16/20 9:27	49.1	28.4	4.1	18.4	-16.9	85	-16.9	85
RLI0115E	9/16/20 9:34	61	38.9	0	0.1	-45.8	75	-43.7	75
RLI0116E	9/16/20 9:47	59.2	39.3	0.3	1.2	-40.3	80	-41.1	76
RLI0117D	9/16/20 9:51	61	38.7	0.2	0.1	-47.6	92	-47.5	92
RLI0120D	9/16/20 11:08	62.8	37.1	0	0.1	-0.1	87	-0.2	91
RLI0124G	9/4/20 8:40	54.2	38	0	7.8	-14.1	88	-14.5	88
RLI0126C	9/15/20 10:04	56.7	30.7	1.4	11.2	-44.8	80	-44.7	80
RLI0127B	9/3/20 14:07	53.7	37.1	0	9.2	-22	94	-23.5	94
RLI0128A	9/15/20 10:25	57.5	39.9	0.2	2.4	-0.1	91	-0.3	102
RLI0129E	9/15/20 11:11	52.1	33.8	0.1	14	-46.8	81	-46.8	81
RLI0130E	9/15/20 10:51	50.4	33.8	0	15.8	-5.8	80	-5.9	80
RLIHC101	9/4/20 8:49	55.5	39.1	0	5.4	-35.2	95	-35.3	95
RLIHC102	9/4/20 8:43	50.4	38.2	0	11.4	-6.9	99	-6.8	99
RLIHC107	9/16/20 10:04	41.9	37	0	21.1	-0.2	120	-0.3	120
RLLC0176	9/3/20 14:15	34.6	39	0	26.4	-0.3	93	-0.2	95
RLLC0177	9/1/20 9:03	56.7	43.2	0	0.1	-35.9	102	-35.9	102
RLLC0177	9/3/20 14:29	55.9	42.8	0	1.3	-30.2	103	-28	103
RLLC0179	9/10/20 10:01	43.9	33.9	0	22.2	-3.9	80	-3.2	80
RLLC0180	9/2/20 8:45	53.9	40.1	0	6	-3.2	95	-3.6	95
RLLC0181	9/16/20 9:12	56.5	39	0.1	4.4	-9	102	-10.1	103
RLLC0183	9/3/20 14:11	38.6	31.9	0	29.5	-2.5	71	-2.5	71
RLLC0184	9/3/20 14:03	47.5	33.4	0	19.1	-3.6	82	-3.6	82
RLLC0185	9/2/20 8:54	37.9	44.9	0	17.2	-0.3	63	-0.3	63
RLLC0186	9/2/20 8:34	55.9	44	0	0.1	-31.5	97	-35.3	97
RLLC0187	9/2/20 8:31	58.6	41.3	0	0.1	-43.5	100	-44.4	100
RLLC0188	9/3/20 9:57	60	39.8	0.1	0.1	-5.6	100	-6.6	100
RLLC0188	9/3/20 14:36	60.1	39.8	0	0.1	-7.6	104	-9.4	104
RLLC0190	9/2/20 8:42	58.3	41.6	0	0.1	-0.9	97	-1.3	101

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - September 1, 2, 3, 4, 9, 10, 11, 14, 15, and 16, 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	9/14/20 13:49	41.6	36.6	0	21.8	-1.8	101	-1.5	102
RLHC0156	9/16/20 10:42	49.1	34	0.4	16.5	-0.2	96	-0.1	96
RLLC0191	9/10/20 9:56	45.7	33.8	0.7	19.8	-1.2	85	-1.2	85
RLLC0193	9/16/20 9:31	55.4	39.4	0	5.2	-7.5	107	-8.5	107
RLLC0194	9/14/20 14:11	49.2	39.6	0	11.2	-20.8	99	-18.6	100
RLLC0195	9/14/20 14:08	51.5	36.9	0.2	11.4	-13.4	94	-13.3	94
RLLC0196	9/14/20 13:53	55.8	39.2	0	5	-44.9	102	-45.2	103
RLLC0198	9/14/20 9:14	51.9	37.9	0	10.2	-5.8	109	-5.8	110
RLLC0199	9/14/20 9:10	45.3	37.2	0	17.5	-13.1	107	-10.3	107
RLLC0200	9/14/20 9:04	47.5	34.9	0	17.6	-0.9	93	-0.8	94
RLLC0201	9/14/20 8:55	49.6	38.3	0.1	12	-2.6	105	-2.2	105
RLLC0202	9/14/20 9:56	46	34.1	1.7	18.2	-2.2	97	-1.6	97
RLLC0203	9/14/20 10:02	43.8	35.6	0	20.6	-16.7	97	-13.9	97
RLLC0204	9/14/20 10:05	47.4	36.5	0.1	16	-1.8	102	-0.9	101
RLLC0205	9/14/20 10:11	36.2	33.3	0	30.5	-0.1	88	-0.1	87
RLLC0206	9/15/20 10:10	55.1	39.2	0	5.7	-1.4	100	-1.6	100
RLLC0209	9/16/20 10:56	49.6	37.3	0	13.1	-0.4	93	-0.4	93
RLLC0210	9/15/20 10:13	36.2	33.3	0	30.5	-0.2	97	-0.2	97
RLLC0212	9/16/20 11:47	50.6	37.9	0	11.5	-25.5	91	-24.4	91
RLLC0214	9/10/20 11:04	53.3	34.9	0	11.8	-1.3	91	-1.8	92
RLLC0215	9/10/20 11:01	49.9	34.2	0	15.9	-4.1	94	-3.8	94
RLLC0217	9/10/20 9:53	51.7	37.5	0.4	10.4	-10.8	93	-10.8	93
RLLC0219	9/15/20 14:08	53.6	40.5	0	5.9	-0.8	106	-1	106
RLLC0221	9/16/20 10:48	50.7	37.3	0	12	-14.4	100	-14.4	101
RLLC0222	9/14/20 8:21	45.8	37.6	0	16.6	-7.9	102	-5.7	102
RLLC0223	9/14/20 8:38	38.9	35.8	0	25.3	-3.3	107	-2.3	108
RLLC0224	9/14/20 8:41	50	39.6	0	10.4	-2.9	107	-2.7	107
RLLC0225	9/14/20 9:00	55.7	37.3	0	7	-0.4	86	-0.8	90
RLLC0226	9/10/20 11:09	48	36.6	0	15.4	-7.5	95	-6.2	95
RLLC0227	9/10/20 9:26	47.4	34.6	0.1	17.9	-2.7	86	-2.2	86
RLLC0228	9/14/20 9:17	55.9	37.4	0.5	6.2	-0.7	83	-1.1	85
RLLC0228	9/14/20 9:51	56	38.7	0	5.3	-9.3	99	-13.3	100
RLLC0229	9/14/20 9:08	41.3	34.3	0.7	23.7	-0.1	66	-0.1	67
RLLC0230	9/16/20 10:01	48.9	40.3	0	10.8	-3.1	108	-2.8	108
RLLC0231	9/15/20 13:54	52.7	38.2	0	9.1	-1.6	94	-1.6	94
RLLC0232	9/15/20 13:44	53.5	39.2	0	7.3	-1.9	96	-2.2	96
RLLC0233	9/16/20 9:56	49.8	40.1	0	10.1	-0.5	98	-0.5	99
RLLC0234	9/3/20 13:38	50.3	41.5	0	8.2	-9.6	94	-9.1	94
RLLC0235	9/3/20 13:42	39.3	36	0	24.7	-7	92	-3.7	92
RLLC0236	9/3/20 13:45	52.6	40.4	0	7	-1.1	86	-1.1	86
RLLC0237	9/15/20 11:37	52.3	40.1	0	7.6	-11.2	97	-11.1	97
RLLC0238	9/15/20 11:41	48.9	39.5	0	11.6	-3.1	95	-2.4	95
RLLC0239	9/15/20 11:32	44.8	37	0	18.2	-0.1	92	-0.1	92
RLLC0240	9/15/20 11:29	51	38.7	0	10.3	-0.6	97	-0.6	98
RLLC0241	9/3/20 13:32	49.3	40.5	0.1	10.1	-20.6	98	-18.4	98
RLLC0242	9/3/20 13:29	54.8	43.5	0	1.7	-8.7	97	-9.4	97
RLLC0243	9/4/20 8:59	44.3	40.5	0	15.2	-0.3	102	-0.2	101
RLLC0244	9/4/20 8:55	45.6	40.2	0	14.2	-0.6	100	-0.5	100
RLLC0245	9/4/20 8:51	34.5	38.5	0	27	-0.5	96	-0.4	97
RLLC0246	9/1/20 14:12	61.4	38.5	0	0.1	-11.5	98	-20.3	99
RLLC0246	9/10/20 10:45	58.3	35.8	0	5.9	-24.1	100	-28.8	100
RLLC0247	9/1/20 9:16	58.6	41.3	0	0.1	-0.6	91	-0.8	92
RLLC0247	9/1/20 13:58	59.1	40.8	0	0.1	-0.7	96	-1.5	95
RLLC0247	9/2/20 7:02	58.6	41.3	0	0.1	-1.7	98	-2.5	98
RLLC0247	9/2/20 11:58	58.8	41.1	0	0.1	-2.5	98	-3.2	98
RLLC0247	9/3/20 10:42	58.2	41.7	0	0.1	-3.3	96	-3.9	96

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - September 1, 2, 3, 4, 9, 10, 11, 14, 15, and 16, 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	9/14/20 13:49	41.6	36.6	0	21.8	-1.8	101	-1.5	102
RLHC0156	9/16/20 10:42	49.1	34	0.4	16.5	-0.2	96	-0.1	96
RLLC0247	9/9/20 9:35	44.9	41.2	0	13.9	-4.3	96	-2.8	96
RLLC0247	9/11/20 14:24	41.5	39.4	0	19.1	-6.1	95	-0.8	95
RLLC0247	9/16/20 8:42	42.9	39.2	0	17.9	-0.8	94	-0.5	94
RLLC0248	9/1/20 9:20	58.9	41	0	0.1	-0.4	92	-0.7	93
RLLC0248	9/1/20 13:55	59.3	40.6	0	0.1	-0.6	95	-1.1	95
RLLC0248	9/2/20 6:59	58.4	41.5	0	0.1	-1.4	98	-2.4	98
RLLC0248	9/2/20 11:55	58.4	41.5	0	0.1	-2.3	96	-3.2	96
RLLC0248	9/3/20 10:38	58.1	41.7	0.1	0.1	-3.4	99	-4.1	99
RLLC0248	9/9/20 9:31	56.6	43.2	0	0.2	-4.5	97	-4.9	97
RLLC0248	9/11/20 14:22	52.6	42.6	0	4.8	-4.5	100	-2.1	100
RLLC0248	9/16/20 8:39	52.9	42.6	0	4.5	-2.1	96	-2.2	97
RLLC0249	9/1/20 9:01	57.1	42.8	0	0.1	-0.3	95	-0.8	97
RLLC0249	9/1/20 13:50	57	42.9	0	0.1	-0.7	99	-1.3	100
RLLC0249	9/2/20 6:53	55.2	44.7	0	0.1	-1.4	99	-1.9	99
RLLC0249	9/2/20 11:42	55.3	44.6	0	0.1	-2	100	-2.5	100
RLLC0249	9/3/20 10:52	53.1	44.8	0	2.1	-2.3	102	-2.3	103
RLLC0249	9/3/20 14:32	52.3	44.9	0	2.8	-2.5	102	-2.5	102
RLLC0249	9/9/20 8:11	42.6	43.8	0	13.6	-2.6	91	-1	91
RLLC0249	9/11/20 14:32	43.8	43.1	0	13.1	-0.4	102	-0.3	102
RLLC0249	9/16/20 8:50	46.4	43.4	0	10.2	-0.3	97	-0.2	96
RLLC0250	9/1/20 8:56	56.6	43.3	0	0.1	-0.6	99	-0.7	100
RLLC0250	9/1/20 13:45	56.1	43.8	0	0.1	-0.7	102	-1.2	103
RLLC0250	9/2/20 6:46	54.2	45.7	0	0.1	-1.4	106	-1.8	107
RLLC0250	9/2/20 11:45	54	45.9	0	0.1	-1.8	106	-2.2	107
RLLC0250	9/3/20 10:57	53.2	46	0	0.8	-1.8	107	-2	107
RLLC0250	9/3/20 14:22	52.9	46	0	1.1	-2.4	107	-2.4	107
RLLC0250	9/9/20 8:16	42.7	42.6	0.3	14.4	-2.7	104	-1.3	104
RLLC0250	9/16/20 8:56	47.3	43.9	0	8.8	-0.5	107	-0.4	107
RLLC0251	9/1/20 8:52	58.4	41.5	0	0.1	-0.4	96	-0.7	98
RLLC0251	9/1/20 13:42	57.1	42.8	0	0.1	-0.6	101	-1.4	102
RLLC0251	9/2/20 6:49	54.7	45.2	0	0.1	-1.4	101	-2	102
RLLC0251	9/2/20 11:48	54.5	45.4	0	0.1	-2.2	102	-2.3	102
RLLC0251	9/3/20 11:00	52.4	45.9	0	1.7	-2.2	103	-2.1	103
RLLC0251	9/3/20 14:25	51.8	46	0	2.2	-2.5	102	-2.4	103
RLLC0251	9/9/20 8:19	37.4	42.2	0	20.4	-2.7	103	-0.9	102
RLLC0251	9/16/20 9:00	41.1	42.4	0	16.5	-0.3	101	-0.2	101
RLLC0252	9/10/20 8:49	51.2	48.7	0	0.1	-0.7	100	-0.7	100
RLLC0252	9/10/20 11:48	52.2	47.6	0	0.2	-0.7	100	-0.9	100
RLLC0252	9/11/20 14:16	53.9	46	0	0.1	-0.5	100	-0.5	100
RLLC0252	9/16/20 8:32	53.7	46.2	0	0.1	-0.6	99	-1	99
RLLC0253	9/10/20 8:51	58.5	41.4	0	0.1	-1.2	93	-1.5	93
RLLC0253	9/10/20 11:52	56.4	43.5	0	0.1	-1.5	94	-2	94
RLLC0253	9/11/20 14:12	53.8	46.1	0	0.1	-1.7	95	-1.4	95
RLLC0253	9/16/20 8:29	52.6	47.3	0	0.1	-1.3	94	-1.4	95
RLLC0254	9/10/20 8:54	56.4	43.5	0	0.1	-0.8	93	-0.9	93
RLLC0254	9/10/20 11:57	54.7	45.2	0	0.1	-0.9	94	-1.1	94
RLLC0254	9/11/20 14:08	53.9	46	0	0.1	-0.9	94	-0.7	94
RLLC0254	9/16/20 8:25	53.3	46.6	0	0.1	-0.7	94	-0.9	94
RLLC0255	9/1/20 11:32	56.3	43.6	0	0.1	-0.5	92	-0.9	93
RLLC0255	9/1/20 14:03	56.1	43.8	0	0.1	-0.9	99	-1.6	99
RLLC0255	9/2/20 6:33	55.7	44.2	0	0.1	-1.9	99	-2.8	99
RLLC0255	9/2/20 12:03	55.6	44.3	0	0.1	-2.6	97	-3.4	96
RLLC0255	9/3/20 10:30	55.7	44.1	0	0.2	-3.7	100	-4.3	100
RLLC0255	9/9/20 8:03	48.5	41.8	0	9.7	-4.7	88	-3.2	88

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - September 1, 2, 3, 4, 9, 10, 11, 14, 15, and 16, 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	9/14/20 13:49	41.6	36.6	0	21.8	-1.8	101	-1.5	102
RLHC0156	9/16/20 10:42	49.1	34	0.4	16.5	-0.2	96	-0.1	96
RLLC0255	9/11/20 13:53	51.1	42.2	0	6.7	-2.5	97	-1.7	97
RLLC0255	9/16/20 8:19	56.4	43.5	0	0.1	-1.5	100	-1.8	100
RLLC0256	9/1/20 11:28	53.4	46.5	0	0.1	-0.8	91	-0.8	92
RLLC0256	9/1/20 14:06	54.6	45.3	0	0.1	-0.7	91	-1.5	91
RLLC0256	9/2/20 6:36	54.3	45.6	0	0.1	-1.7	91	-2.5	91
RLLC0256	9/2/20 12:06	54.7	45.2	0	0.1	-2.4	91	-2.8	91
RLLC0256	9/3/20 10:33	54.5	45.4	0	0.1	-3	91	-3.9	92
RLLC0256	9/9/20 8:00	39.4	40.2	0	20.4	-4.2	83	-1.6	83
RLLC0256	9/11/20 14:05	47.4	42.4	0	10.2	-0.6	92	-0.5	92
RLLC0256	9/16/20 8:22	54.6	44.7	0	0.7	-0.6	91	-0.7	91

There are 113 total collectors; 106 vertical wells and 7 horizontal collectors at RLI.

%= percent

°F= degrees Fahrenheit

"H2O = in. w.c.= inches in water column

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - October 2, 5, 6, 7, 8, 28, and 30, 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	10/6/20 10:27	43.1	35.9	0.1	20.9	-1.44	104.5	-1.25	104.2
RLHC0156	10/7/20 12:19	62.3	34.3	0.1	3.3	-0.06	102.8	-0.15	103.2
RLI00003	10/7/20 9:43	46.3	37.5	0.5	15.7	-31.59	78	-31.68	78.1
RLI00008	10/6/20 12:21	60.7	34.7	0.1	4.5	-49.01	98.6	-49	98.5
RLI00016	10/7/20 10:54	46.9	29.6	0.2	23.3	-5.39	75	-5.38	75.1
RLI00017	10/7/20 10:49	52.8	33.9	0.2	13.1	-10.53	76.8	-10.53	76.8
RLI00018	10/7/20 10:44	20.4	25	0.3	54.3	-14.69	75.9	-14.78	75.9
RLI00019	10/7/20 10:38	60.6	35.5	0.3	3.6	-46.43	75.1	-46.5	75
RLI00034	10/7/20 10:07	58.5	38.3	0	3.2	-31.17	80.8	-29.76	81
RLI00035	10/7/20 10:14	48.5	34.3	0.4	16.8	-29.94	77.9	-29.94	77.9
RLI00045	10/7/20 10:27	52.6	31.8	0	15.6	-0.81	75.9	-0.88	76.4
RLI00047	10/7/20 10:20	53.2	34.2	0	12.6	-1.16	81.3	-1.24	81.7
RLI00065	10/7/20 8:16	54.7	40.5	0.1	4.7	-2.12	104	-2.13	104
RLI00065	10/7/20 12:44	54.7	39.9	0	5.4	-2.04	104.4	-2.47	104.4
RLI00083	10/2/20 9:22	61.9	38	0	0.1	-34.3	95	-34.3	95
RLI00095	10/2/20 9:27	59	37.6	0	3.4	-0.2	92	-0.5	94
RLI00132	10/7/20 9:11	56.4	37	0	6.6	-46.96	101.1	-47.16	101.1
RLI00134	10/6/20 12:12	56.8	37.1	0.1	6	-39.81	111.2	-39.23	111.2
RLI00135	10/6/20 11:16	45.4	49	0.1	5.5	-27.32	105	-23.73	104.9
RLI00137	10/5/20 10:45	64.4	35.4	0	0.2	-49	96	-47	96
RLI00140	10/2/20 10:08	64.9	27.3	1.5	6.3	-36.6	81	-36.7	82
RLI00141	10/2/20 10:24	51.7	35.8	0	12.5	-19	91	-19	91
RLI00142	10/2/20 10:15	46	27.1	3.8	23.1	-37.3	90	-35.2	90
RLI00220	10/2/20 11:01	51.6	38.8	0.3	9.3	-4.7	68	-0.9	66
RLI0100C	10/7/20 9:52	55	35.2	1.8	8	-32.8	80.4	-32.84	80.3
RLI0102C	10/7/20 9:30	59.1	37.7	0.6	2.6	-44.69	93	-44.71	93
RLI0103C	10/28/20 14:55	44.3	31.8	4.3	19.6	-37.3	102	-33.7	103
RLI0105C	10/6/20 9:16	52.2	38	0.1	9.7	-21.28	107.9	-21.27	108
RLI0106C	10/6/20 9:24	61.5	38.5	0.1	-0.1	-46.8	103	-46.99	103
RLI0107C	10/6/20 8:38	53.3	37.3	0.3	9.1	-5.09	101.6	-5.25	101.3
RLI0114A	10/5/20 14:06	53.5	29.8	2.6	14.1	-11.7	102	-20.8	102
RLI0115E	10/5/20 13:43	60.2	39.7	0	0.1	-45.7	93	-42.7	94
RLI0116E	10/5/20 11:07	60.1	39.4	0.3	0.2	-36.7	90	-36.7	91
RLI0117D	10/5/20 10:37	61.1	38.1	0.2	0.6	-47	94	-49	94
RLI0120D	10/5/20 9:51	62.3	37.6	0	0.1	-0.1	80	-0.1	83
RLI0124G	10/2/20 9:10	46.7	34.9	0.7	17.7	-12.7	89	-11.8	89
RLI0126C	10/6/20 9:06	57.5	28.1	3.2	11.2	-44.71	69.4	-44.66	69.4
RLI0127B	10/7/20 8:54	53.6	36.5	0	9.9	-32.8	106.5	-31.07	105.6
RLI0128A	10/6/20 9:50	53.1	37.7	0.8	8.4	-0.02	106	-0.01	105.9
RLI0129E	10/7/20 12:36	45.5	29.4	1.5	23.6	-47.31	83.2	-47.34	83.2
RLI0130E	10/7/20 12:27	51.6	32.3	0	16.1	-5.99	82.8	-6	82.9
RLIHC101	10/2/20 8:58	54.7	38.9	0	6.4	-37.9	96	-38	96
RLIHC102	10/2/20 9:06	49.9	37.8	0	12.3	-6.9	100	-6.3	100
RLIHC107	10/5/20 11:45	44.3	38.3	0	17.4	-0.4	126	-0.4	126
RLLC0176	10/7/20 9:20	41.2	40.9	0	17.9	-0.04	109.6	-0.04	109.5
RLLC0177	10/6/20 11:50	57.1	40.9	0	2	-40.98	105.7	-41.08	105.7
RLLC0177	10/7/20 15:41	56.7	41.5	0.1	1.7	-39.83	105.2	-39.82	105.4
RLLC0179	10/2/20 9:14	44.3	33.4	0	22.3	-2.4	82	-2.4	82
RLLC0180	10/30/20 12:14	56	40.2	0.9	2.9	-3.7	95	-3.7	96
RLLC0181	10/6/20 10:46	52.1	37.2	0.1	10.6	-11.61	108.6	-11.6	108.6
RLLC0183	10/7/20 9:01	39.7	32.8	0	27.5	-3.99	63.3	-3.98	63.4
RLLC0184	10/7/20 8:35	54.6	34.1	0	11.3	-5.81	83.7	-5.9	85.9
RLLC0185	10/6/20 12:06	42.6	42.2	0	15.2	-0.96	97.6	-0.4	97.7
RLLC0186	10/6/20 11:39	55.6	42.5	0.1	1.8	-41.02	100.5	-41.73	100.5
RLLC0187	10/6/20 11:26	60.4	39.3	0	0.3	-43.71	103.9	-43.71	103.9
RLLC0188	10/8/20 11:34	60.9	39	0	0.1	-5.5	105	-6.6	105

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - October 2, 5, 6, 7, 8, 28, and 30, 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	10/6/20 10:27	43.1	35.9	0.1	20.9	-1.44	104.5	-1.25	104.2
RLHC0156	10/7/20 12:19	62.3	34.3	0.1	3.3	-0.06	102.8	-0.15	103.2
RLLC0190	10/30/20 12:22	58.3	38.9	0.7	2.1	-1.6	105	-1.4	105
RLLC0191	10/7/20 8:01	47.5	33.4	0.1	19	-1.06	87.1	-1.03	87
RLLC0193	10/5/20 13:46	53.2	39.6	0	7.2	-9.9	108	-9.8	109
RLLC0194	10/6/20 9:41	48	37.3	0.1	14.6	-18.87	102.6	-16.95	102.6
RLLC0195	10/6/20 10:16	50.3	35	0	14.7	-14.32	96.7	-12.51	96.3
RLLC0196	10/6/20 10:20	56.6	37.6	0	5.8	-45.55	106.4	-46.04	106.4
RLLC0198	10/5/20 14:57	48.8	34.8	0	16.4	-4.5	115.1	-4.47	115.1
RLLC0199	10/5/20 14:44	49.7	36.4	0	13.9	-9.41	114.4	-9.42	114.4
RLLC0200	10/5/20 14:24	50.3	34	0	15.7	-0.73	101.7	-0.73	101.8
RLLC0201	10/5/20 14:11	52	37.3	0	10.7	-2.21	109.7	-2.22	109.7
RLLC0202	10/5/20 15:29	59	37.2	0.1	3.7	-0.47	103.3	-0.49	103.3
RLLC0203	10/6/20 8:10	47.6	35.1	0.1	17.2	-23.86	102	-19.72	101.6
RLLC0204	10/6/20 8:16	57.9	37.6	0.1	4.4	-0.81	102.9	-1.33	103.7
RLLC0205	10/6/20 8:45	37	32.7	0.1	30.2	-0.14	92.5	-0.12	92.4
RLLC0206	10/6/20 8:58	52.9	37.6	0	9.5	-1.98	102.5	-1.97	102.5
RLLC0209	10/6/20 8:53	51.7	36.7	0.1	11.5	-0.46	95.2	-0.46	95.2
RLLC0210	10/6/20 8:26	39.2	33.1	0	27.7	-0.26	102.2	-0.18	101.4
RLLC0212	10/2/20 10:44	52.6	38.1	0	9.3	-23.8	92	-23.7	92
RLLC0214	10/2/20 10:50	53.9	34.2	0	11.9	-1.8	97	-2.7	98
RLLC0215	10/2/20 10:53	60.7	35.1	0	4.2	-2.5	95	-3.7	96
RLLC0217	10/2/20 10:19	53	38.1	0	8.9	-8	96	-8.2	97
RLLC0219	10/5/20 14:09	45.7	36.6	1	16.7	-1.4	109	-1.3	108
RLLC0221	10/5/20 15:16	51.8	35.5	0.1	12.6	-9.66	102.2	-9.75	102.1
RLLC0222	10/5/20 11:43	54.9	40.4	0	4.7	-4.9	104	-5.2	104
RLLC0223	10/5/20 11:49	56.8	41	0	2.2	-0.6	110	-0.9	111
RLLC0224	10/5/20 14:03	53.8	38.6	0	7.6	-2.66	111.9	-2.95	111.9
RLLC0225	10/5/20 14:19	44.8	33	0	22.2	-1.79	102.3	-1.63	102.3
RLLC0226	10/2/20 10:46	52.3	36.8	0	10.9	-4.8	101	-4.8	101
RLLC0227	10/2/20 9:32	50.5	35.4	0	14.1	-2.2	89	-2.2	81
RLLC0228	10/5/20 15:06	48.7	34.3	0.1	16.9	-1.33	110.3	-1.31	110.2
RLLC0229	10/5/20 14:35	50.1	35.6	0	14.3	-0.28	101.7	-0.28	101.7
RLLC0230	10/5/20 11:20	53.8	41.6	0	4.6	-2.5	109	-2.8	109
RLLC0231	10/5/20 14:13	54.2	38.3	0	7.5	-1	95	-1.4	95
RLLC0232	10/5/20 14:16	50.8	37.9	0	11.3	-2.4	95	-2.4	95
RLLC0233	10/5/20 11:17	56.3	41.5	0	2.2	-0.4	100	-0.6	101
RLLC0234	10/5/20 9:17	50	40.3	0.5	9.2	-7.4	100	-6.9	100
RLLC0235	10/5/20 9:35	48.2	38.5	0.2	13.1	-2.5	95	-2	95
RLLC0236	10/5/20 9:38	54.4	41	0	4.6	-1.5	88	-1.7	88
RLLC0237	10/5/20 10:48	60.6	39.3	0	0.1	-1	93	-4.3	96
RLLC0238	10/5/20 10:51	57.5	41.2	0	1.3	-2	96	-2.2	96
RLLC0239	10/5/20 11:11	56.7	40.2	0	3.1	-0.1	95	-0.1	95
RLLC0240	10/5/20 11:14	54.9	39.5	0	5.6	-0.6	99	-0.7	99
RLLC0241	10/5/20 9:12	51.8	40.5	0.1	7.6	-15.1	103	-15.1	103
RLLC0241	10/7/20 15:33	52.4	39.7	0.4	7.5	-15.41	106.2	-15.43	106.4
RLLC0242	10/5/20 9:08	53.8	42.6	0	3.6	-8.4	104	-8.7	104
RLLC0243	10/2/20 8:47	47.7	40.8	0	11.5	-0.3	106	-0.3	107
RLLC0244	10/2/20 8:51	47.1	40.6	0	12.3	-0.5	101	-0.4	101
RLLC0245	10/2/20 8:54	35	38.6	0	26.4	-0.5	98	-0.3	98
RLLC0246	10/2/20 10:28	57	34.3	0	8.7	-23.7	101	-25.6	101
RLLC0247	10/5/20 14:52	52.6	39.4	0	8	-0.1	100	-0.1	99
RLLC0248	10/5/20 14:48	56	41.7	0	2.3	-1.1	102	-1.3	102
RLLC0249	10/6/20 11:44	52.5	42.6	0	4.9	-0.42	105.5	-0.42	105.5
RLLC0250	10/6/20 11:56	52.3	43.5	0	4.2	-0.53	111.8	-0.53	111.8
RLLC0251	10/6/20 12:01	49.2	42.6	0	8.2	-0.38	109.4	-0.36	109.4

REDWOOD LANDFILL, Novato, CA

Wellfield Monitoring Report - October 2, 5, 6, 7, 8, 28, and 30, 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	10/6/20 10:27	43.1	35.9	0.1	20.9	-1.44	104.5	-1.25	104.2
RLHC0156	10/7/20 12:19	62.3	34.3	0.1	3.3	-0.06	102.8	-0.15	103.2
RLLC0252	10/2/20 11:43	54.5	45.4	0	0.1	-1.3	100	-1.5	100
RLLC0253	10/2/20 11:40	50.1	45.6	0	4.3	-1.4	97	-1.4	97
RLLC0254	10/2/20 11:37	52.7	45.6	0	1.7	-1.3	97	-1.3	97
RLLC0255	10/2/20 11:31	57.1	42.8	0	0.1	-2.6	100	-2.8	100
RLLC0256	10/2/20 11:34	55.1	44.4	0	0.5	-0.9	94	-1	94

There are 113 total collectors; 106 vertical wells and 7 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, Sean Johnson, and Rick Reed
UPDATED DATE: 11/25/20
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)
No well exceedances in May 2020.											
No well exceedances in June 2020.											
RLI00089	7/8/20 13:48	57.1	39.8	0.3	2.8	0	106	0	107	NSPS/EG CAI	
RLI00089	7/8/20 13:49	56.9	39.7	0.3	3.1	0	107	0	107	NSPS/EG CAI	
RLI00089 was monitored on 7/8/2020 and was found to be in exceedance for static pressure. Corrective actions were initiated. Well RLI00089 was decommissioned pursuant to AN #30065 on 7/8/2020.											
RLI0120D	7/15/20 8:21	40.4	27.2	5.6	26.8	-1.3	95	-1.2	95	NSPS/EG CAI	
RLI0120D	7/15/20 8:24	24.2	17.7	10.7	47.4	-0.9	95	-0.9	95	NSPS/EG CAI;Dec. Flow/Vac.	
RLI0120D	7/15/20 8:25	25.8	18.6	10.3	45.3	-0.8	95	-0.7	95	NSPS/EG CAI;Dec. Flow/Vac.	
RLI0120D	7/15/20 8:27	21.8	16.3	11.5	50.4	-0.6	94	-0.3	93	NSPS/EG CAI;Dec. Flow/Vac.	
RLI0120D	7/15/20 11:19	62.7	37.2	0	0.1	-0.1	92	-0.1	93	No Adj. Made	0
RLI0120D was monitored on 7/15/2020 and was found to be in exceedance for oxygen. Corrective actions were initiated. The well was re-monitored on 7/15/2020. The exceedance was cleared on 7/15/2020.											
RLIHC105	7/8/20 13:42	57.5	42.4	0	0.1	0.1	89	0.1	91	NSPS/EG CAI	
RLIHC105	7/8/20 13:43	57.8	42.1	0	0.1	0.1	92	0.1	92	NSPS/EG CAI	
RLIHC105 was monitored on 7/8/2020 and was found to be in exceedance for static pressure. Corrective actions were initiated. Well RLIHC105 was decommissioned pursuant to AN #30065 on 7/8/2020.											
RLLC0169	7/8/20 13:28	53.9	30.4	0	15.7	2.3	90	2.3	90	NSPS/EG CAI	
RLLC0169	7/8/20 13:29	54.2	30.4	0	15.4	2.4	89	2.4	89	NSPS/EG CAI	
RLLC0169 was monitored on 7/8/2020 and was found to be in exceedance for static pressure. Corrective actions were initiated. Well RLLC0169 was decommissioned pursuant to AN #30065 on 7/8/2020.											
RLLC0170	7/8/20 13:22	16.8	12.2	11.8	59.2	-0.3	86	-0.3	87	NSPS/EG CAI	
RLLC0170	7/8/20 13:24	1	1	19.8	78.2	-0.3	87	-0.3	87	NSPS/EG CAI	
RLLC0170 was monitored on 7/8/2020 and was found to be in exceedance for oxygen. Corrective actions were initiated. Well RLLC0170 was decommissioned pursuant to AN #30065 on 7/8/2020.											
RLLC0171	7/8/20 13:39	57.4	42.5	0	0.1	0	97	0	99	NSPS/EG CAI	
RLLC0171	7/8/20 13:40	57.7	42.2	0	0.1	0	88	0	96	NSPS/EG CAI	
RLLC0171 was monitored on 7/8/2020 and was found to be in exceedance for static pressure. Corrective actions were initiated. Well RLLC0171 was decommissioned pursuant to AN #30065 on 7/8/2020.											
RLLC0213	7/8/20 13:32	68.3	30.6	0	1.1	0.3	89	0.3	91	NSPS/EG CAI	
RLLC0213	7/8/20 13:34	68.1	31.8	0	0.1	0.3	91	0.3	93	NSPS/EG CAI	
RLLC0213 was monitored on 7/8/2020 and was found to be in exceedance for static pressure. Corrective actions were initiated. Well RLLC0213 was decommissioned pursuant to AN #30065 on 7/8/2020.											
No well exceedances in August 2020.											
No well exceedances in September 2020.											
No well exceedances in October 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]
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
May-20	0	60,797,112	20,327,032	25,172,506	106,296,649	33,928,306	811,006,449	282,121,529	300,729,032	1,427,785,316
Jun-20	0	68,753,096	10,818,920	20,230,871	99,802,888	31,975,226	805,257,053	267,120,496	291,748,897	1,396,101,672
Jul-20	656,227	57,828,250	14,968,282	21,201,239	94,653,997	32,631,452	787,930,889	249,782,071	281,640,959	1,351,985,371
Aug-20	0	49,727,417	20,892,533	24,148,878	94,768,828	19,902,369	756,272,155	250,151,381	280,255,665	1,306,581,570
Sep-20	0	71,190,422	19,744,736	8,171,766	99,106,924	15,379,227	756,703,314	245,158,705	262,077,531	1,279,318,777
Oct-20	328,018	58,202,619	30,773,163	14,845,969	104,149,769	12,266,523	754,650,263	254,452,413	254,420,805	1,275,790,004

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]
May-20	744.00	744.00	0.00	0		0	0	0	0	0.020	0.00	112.88	0.00
June-20	720.00	720.00	0.00	0		0	0	0	0	0.020	0.00	112.88	0.00
July-20	744.00	730.73	13.27	834	48.8	664,188	656,227	323,903	328	0.020	0.00	128.80	0.04
August-20	744.00	744.00	0.00	0		0	0	0	0	0.020	0.00	128.80	0.00
September-20	720.00	720.00	0.00	0		0	0	0	0	0.020	0.00	128.80	0.00
October-20	744.00	740.03	3.97	1,395	48.8	331,998	328,018	161,904	164	0.020	0.00	TBD	TBD
TOTAL/ AVG:	**4,416.00**	**4,398.77**	**17.23**	**963**	**48.8**	**996,186**	**984,245**	**485,807**	**492.12**	**--**	**--**	**--**	**--**

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: May-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
5/1/2020	0.00	48.8	0	0	0	1,013	0	0
5/2/2020	0.00	48.8	0	0	0	1,013	0	0
5/3/2020	0.00	48.8	0	0	0	1,013	0	0
5/4/2020	0.00	48.8	0	0	0	1,013	0	0
5/5/2020	0.00	48.8	0	0	0	1,013	0	0
5/6/2020	0.00	48.8	0	0	0	1,013	0	0
5/7/2020	0.00	48.8	0	0	0	1,013	0	0
5/8/2020	0.00	48.8	0	0	0	1,013	0	0
5/9/2020	0.00	48.8	0	0	0	1,013	0	0
5/10/2020	0.00	48.8	0	0	0	1,013	0	0
5/11/2020	0.00	48.8	0	0	0	1,013	0	0
5/12/2020	0.00	48.8	0	0	0	1,013	0	0
5/13/2020	0.00	48.8	0	0	0	1,013	0	0
5/14/2020	0.00	48.8	0	0	0	1,013	0	0
5/15/2020	0.00	48.8	0	0	0	1,013	0	0
5/16/2020	0.00	48.8	0	0	0	1,013	0	0
5/17/2020	0.00	48.8	0	0	0	1,013	0	0
5/18/2020	0.00	48.8	0	0	0	1,013	0	0
5/19/2020	0.00	48.8	0	0	0	1,013	0	0
5/20/2020	0.00	48.8	0	0	0	1,013	0	0
5/21/2020	0.00	48.8	0	0	0	1,013	0	0
5/22/2020	0.00	48.8	0	0	0	1,013	0	0
5/23/2020	0.00	48.8	0	0	0	1,013	0	0
5/24/2020	0.00	48.8	0	0	0	1,013	0	0
5/25/2020	0.00	48.8	0	0	0	1,013	0	0
5/26/2020	0.00	48.8	0	0	0	1,013	0	0
5/27/2020	0.00	48.8	0	0	0	1,013	0	0
5/28/2020	0.00	48.8	0	0	0	1,013	0	0
5/29/2020	0.00	48.8	0	0	0	1,013	0	0
5/30/2020	0.00	48.8	0	0	0	1,013	0	0
5/31/2020	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: Jun-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
6/1/2020	0.00	48.8	0	0	0	1,013	0	0
6/2/2020	0.00	48.8	0	0	0	1,013	0	0
6/3/2020	0.00	48.8	0	0	0	1,013	0	0
6/4/2020	0.00	48.8	0	0	0	1,013	0	0
6/5/2020	0.00	48.8	0	0	0	1,013	0	0
6/6/2020	0.00	48.8	0	0	0	1,013	0	0
6/7/2020	0.00	48.8	0	0	0	1,013	0	0
6/8/2020	0.00	48.8	0	0	0	1,013	0	0
6/9/2020	0.00	48.8	0	0	0	1,013	0	0
6/10/2020	0.00	48.8	0	0	0	1,013	0	0
6/11/2020	0.00	48.8	0	0	0	1,013	0	0
6/12/2020	0.00	48.8	0	0	0	1,013	0	0
6/13/2020	0.00	48.8	0	0	0	1,013	0	0
6/14/2020	0.00	48.8	0	0	0	1,013	0	0
6/15/2020	0.00	48.8	0	0	0	1,013	0	0
6/16/2020	0.00	48.8	0	0	0	1,013	0	0
6/17/2020	0.00	48.8	0	0	0	1,013	0	0
6/18/2020	0.00	48.8	0	0	0	1,013	0	0
6/19/2020	0.00	48.8	0	0	0	1,013	0	0
6/20/2020	0.00	48.8	0	0	0	1,013	0	0
6/21/2020	0.00	48.8	0	0	0	1,013	0	0
6/22/2020	0.00	48.8	0	0	0	1,013	0	0
6/23/2020	0.00	48.8	0	0	0	1,013	0	0
6/24/2020	0.00	48.8	0	0	0	1,013	0	0
6/25/2020	0.00	48.8	0	0	0	1,013	0	0
6/26/2020	0.00	48.8	0	0	0	1,013	0	0
6/27/2020	0.00	48.8	0	0	0	1,013	0	0
6/28/2020	0.00	48.8	0	0	0	1,013	0	0
6/29/2020	0.00	48.8	0	0	0	1,013	0	0
6/30/2020	0.00	48.8	0	0	0	1,013	0	0
Totals/ Average:	**0.00**		**0**	**0.0**	**0**	**1,013**	**0**	**0**
Notes:						**Maximum:**	**0**	**0**

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: Jul-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
7/1/2020	0.00	48.8	0	0	0	1,013	0	0
7/2/2020	0.00	48.8	0	0	0	1,013	0	0
7/3/2020	0.00	48.8	0	0	0	1,013	0	0
7/4/2020	0.00	48.8	0	0	0	1,013	0	0
7/5/2020	0.00	48.8	0	0	0	1,013	0	0
7/6/2020	0.00	48.8	0	0	0	1,013	0	0
7/7/2020	0.00	48.8	0	0	0	1,013	0	0
7/8/2020	3.73	48.8	872	195,293	95,238	1,013	96	192,952
7/9/2020	9.53	48.8	820	468,895	228,665	1,013	232	463,275
7/10/2020	0.00	48.8	0	0	0	1,013	0	0
7/11/2020	0.00	48.8	0	0	0	1,013	0	0
7/12/2020	0.00	48.8	0	0	0	1,013	0	0
7/13/2020	0.00	48.8	0	0	0	1,013	0	0
7/14/2020	0.00	48.8	0	0	0	1,013	0	0
7/15/2020	0.00	48.8	0	0	0	1,013	0	0
7/16/2020	0.00	48.8	0	0	0	1,013	0	0
7/17/2020	0.00	48.8	0	0	0	1,013	0	0
7/18/2020	0.00	48.8	0	0	0	1,013	0	0
7/19/2020	0.00	48.8	0	0	0	1,013	0	0
7/20/2020	0.00	48.8	0	0	0	1,013	0	0
7/21/2020	0.00	48.8	0	0	0	1,013	0	0
7/22/2020	0.00	48.8	0	0	0	1,013	0	0
7/23/2020	0.00	48.8	0	0	0	1,013	0	0
7/24/2020	0.00	48.8	0	0	0	1,013	0	0
7/25/2020	0.00	48.8	0	0	0	1,013	0	0
7/26/2020	0.00	48.8	0	0	0	1,013	0	0
7/27/2020	0.00	48.8	0	0	0	1,013	0	0
7/28/2020	0.00	48.8	0	0	0	1,013	0	0
7/29/2020	0.00	48.8	0	0	0	1,013	0	0
7/30/2020	0.00	48.8	0	0	0	1,013	0	0
7/31/2020	0.00	48.8	0	0	0	1,013	0	0
Totals/ Average:	**13.27**	**48.8**	**834**	**664,188.0**	**323,903**	**1,013**	**328**	**656,227**
						Maximum:	**232**	**463,275**

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: Aug-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
8/1/2020	0.00	48.8	0	0	0	1,013	0	0
8/2/2020	0.00	48.8	0	0	0	1,013	0	0
8/3/2020	0.00	48.8	0	0	0	1,013	0	0
8/4/2020	0.00	48.8	0	0	0	1,013	0	0
8/5/2020	0.00	48.8	0	0	0	1,013	0	0
8/6/2020	0.00	48.8	0	0	0	1,013	0	0
8/7/2020	0.00	48.8	0	0	0	1,013	0	0
8/8/2020	0.00	48.8	0	0	0	1,013	0	0
8/9/2020	0.00	48.8	0	0	0	1,013	0	0
8/10/2020	0.00	48.8	0	0	0	1,013	0	0
8/11/2020	0.00	48.8	0	0	0	1,013	0	0
8/12/2020	0.00	48.8	0	0	0	1,013	0	0
8/13/2020	0.00	48.8	0	0	0	1,013	0	0
8/14/2020	0.00	48.8	0	0	0	1,013	0	0
8/15/2020	0.00	48.8	0	0	0	1,013	0	0
8/16/2020	0.00	48.8	0	0	0	1,013	0	0
8/17/2020	0.00	48.8	0	0	0	1,013	0	0
8/18/2020	0.00	48.8	0	0	0	1,013	0	0
8/19/2020	0.00	48.8	0	0	0	1,013	0	0
8/20/2020	0.00	48.8	0	0	0	1,013	0	0
8/21/2020	0.00	48.8	0	0	0	1,013	0	0
8/22/2020	0.00	48.8	0	0	0	1,013	0	0
8/23/2020	0.00	48.8	0	0	0	1,013	0	0
8/24/2020	0.00	48.8	0	0	0	1,013	0	0
8/25/2020	0.00	48.8	0	0	0	1,013	0	0
8/26/2020	0.00	48.8	0	0	0	1,013	0	0
8/27/2020	0.00	48.8	0	0	0	1,013	0	0
8/28/2020	0.00	48.8	0	0	0	1,013	0	0
8/29/2020	0.00	48.8	0	0	0	1,013	0	0
8/30/2020	0.00	48.8	0	0	0	1,013	0	0
8/31/2020	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: Sep-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
9/1/2020	0.00	48.8	0	0	0	1,013	0	0
9/2/2020	0.00	48.8	0	0	0	1,013	0	0
9/3/2020	0.00	48.8	0	0	0	1,013	0	0
9/4/2020	0.00	48.8	0	0	0	1,013	0	0
9/5/2020	0.00	48.8	0	0	0	1,013	0	0
9/6/2020	0.00	48.8	0	0	0	1,013	0	0
9/7/2020	0.00	48.8	0	0	0	1,013	0	0
9/8/2020	0.00	48.8	0	0	0	1,013	0	0
9/9/2020	0.00	48.8	0	0	0	1,013	0	0
9/10/2020	0.00	48.8	0	0	0	1,013	0	0
9/11/2020	0.00	48.8	0	0	0	1,013	0	0
9/12/2020	0.00	48.8	0	0	0	1,013	0	0
9/13/2020	0.00	48.8	0	0	0	1,013	0	0
9/14/2020	0.00	48.8	0	0	0	1,013	0	0
9/15/2020	0.00	48.8	0	0	0	1,013	0	0
9/16/2020	0.00	48.8	0	0	0	1,013	0	0
9/17/2020	0.00	48.8	0	0	0	1,013	0	0
9/18/2020	0.00	48.8	0	0	0	1,013	0	0
9/19/2020	0.00	48.8	0	0	0	1,013	0	0
9/20/2020	0.00	48.8	0	0	0	1,013	0	0
9/21/2020	0.00	48.8	0	0	0	1,013	0	0
9/22/2020	0.00	48.8	0	0	0	1,013	0	0
9/23/2020	0.00	48.8	0	0	0	1,013	0	0
9/24/2020	0.00	48.8	0	0	0	1,013	0	0
9/25/2020	0.00	48.8	0	0	0	1,013	0	0
9/26/2020	0.00	48.8	0	0	0	1,013	0	0
9/27/2020	0.00	48.8	0	0	0	1,013	0	0
9/28/2020	0.00	48.8	0	0	0	1,013	0	0
9/29/2020	0.00	48.8	0	0	0	1,013	0	0
9/30/2020	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: Oct-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
10/1/2020	3.97	48.8	1,395	331,998	161,904	1,013	164	328,018
10/2/2020	0.00	48.8	0	0	0	1,013	0	0
10/3/2020	0.00	48.8	0	0	0	1,013	0	0
10/4/2020	0.00	48.8	0	0	0	1,013	0	0
10/5/2020	0.00	48.8	0	0	0	1,013	0	0
10/6/2020	0.00	48.8	0	0	0	1,013	0	0
10/7/2020	0.00	48.8	0	0	0	1,013	0	0
10/8/2020	0.00	48.8	0	0	0	1,013	0	0
10/9/2020	0.00	48.8	0	0	0	1,013	0	0
10/10/2020	0.00	48.8	0	0	0	1,013	0	0
10/11/2020	0.00	48.8	0	0	0	1,013	0	0
10/12/2020	0.00	48.8	0	0	0	1,013	0	0
10/13/2020	0.00	48.8	0	0	0	1,013	0	0
10/14/2020	0.00	48.8	0	0	0	1,013	0	0
10/15/2020	0.00	48.8	0	0	0	1,013	0	0
10/16/2020	0.00	48.8	0	0	0	1,013	0	0
10/17/2020	0.00	48.8	0	0	0	1,013	0	0
10/18/2020	0.00	48.8	0	0	0	1,013	0	0
10/19/2020	0.00	48.8	0	0	0	1,013	0	0
10/20/2020	0.00	48.8	0	0	0	1,013	0	0
10/21/2020	0.00	48.8	0	0	0	1,013	0	0
10/22/2020	0.00	48.8	0	0	0	1,013	0	0
10/23/2020	0.00	48.8	0	0	0	1,013	0	0
10/24/2020	0.00	48.8	0	0	0	1,013	0	0
10/25/2020	0.00	48.8	0	0	0	1,013	0	0
10/26/2020	0.00	48.8	0	0	0	1,013	0	0
10/27/2020	0.00	48.8	0	0	0	1,013	0	0
10/28/2020	0.00	48.8	0	0	0	1,013	0	0
10/29/2020	0.00	48.8	0	0	0	1,013	0	0
10/30/2020	0.00	48.8	0	0	0	1,013	0	0
10/31/2020	0.00	48.8	0	0	0	1,013	0	0
Totals/ Average:	**3.97**	**48.8**	**1,395**	**331,998.0**	**161,904**	**1,013**	**164**	**328,018**
						Maximum:	**164**	**328,018**

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]
May-20	744.00	0.00	744.00	1,422	47.3	63,487,500	60,797,112	30,008,446	30,399	0.100	1.52	112.88	3.58
June-20	720.00	0.40	719.60	1,663	47.3	71,795,552	68,753,096	33,935,388	34,377	0.100	1.72	112.88	4.05
July-20	744.00	19.10	724.90	1,388	47.3	60,387,260	57,828,250	28,543,065	28,914	0.100	1.45	128.80	3.89
August-20	744.00	1.80	742.20	1,166	47.3	51,927,950	49,727,417	24,544,628	24,864	0.100	1.24	128.80	3.34
September-20	720.00	1.57	718.43	1,666	48.9	71,796,022	71,190,422	35,138,412	35,595	0.100	1.78	128.80	4.62
October-20	744.00	4.27	739.73	1,267	51.1	56,255,539	58,202,619	28,727,847	29,101	0.100	1.46	TBD	TBD
TOTAL/ AVG:	**4,416.00**	**27.13**	**4,388.87**	**1,427**	**48.2**	**375,649,823**	**366,498,916**	**180,897,787**	**183,249.46**	**--**	**--**	**--**	**--**

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 9/14/20) and July 22 & 23, 2020 (9/15/20 - current) 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-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: May-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
5/1/2020	24.00	47.3	1,562	2,248,857	1,062,960	1,013	1,077	2,153,558
5/2/2020	24.00	47.3	1,317	1,896,836	896,572	1,013	908	1,816,454
5/3/2020	24.00	47.3	1,292	1,861,080	879,671	1,013	891	1,782,214
5/4/2020	24.00	47.3	1,307	1,882,066	889,590	1,013	901	1,802,310
5/5/2020	24.00	47.3	1,379	1,985,587	938,521	1,013	951	1,901,444
5/6/2020	24.00	47.3	1,399	2,014,817	952,338	1,013	965	1,929,436
5/7/2020	24.00	47.3	1,283	1,847,179	873,101	1,013	884	1,768,902
5/8/2020	24.00	47.3	1,382	1,989,607	940,422	1,013	953	1,905,294
5/9/2020	24.00	47.3	1,225	1,764,344	833,947	1,013	845	1,689,577
5/10/2020	24.00	47.3	1,219	1,754,791	829,432	1,013	840	1,680,429
5/11/2020	24.00	47.3	1,197	1,723,589	814,684	1,013	825	1,650,549
5/12/2020	24.00	47.3	1,328	1,911,721	903,607	1,013	915	1,830,709
5/13/2020	24.00	47.3	1,187	1,709,710	808,123	1,013	819	1,637,258
5/14/2020	24.00	47.3	1,236	1,779,683	841,197	1,013	852	1,704,266
5/15/2020	24.00	47.3	1,236	1,780,553	841,609	1,013	853	1,705,099
5/16/2020	24.00	47.3	1,226	1,765,509	834,498	1,013	845	1,690,693
5/17/2020	24.00	47.3	1,231	1,772,005	837,568	1,013	848	1,696,913
5/18/2020	24.00	47.3	1,431	2,060,557	973,957	1,013	987	1,973,237
5/19/2020	24.00	47.3	1,359	1,956,470	924,759	1,013	937	1,873,561
5/20/2020	24.00	47.3	1,632	2,349,366	1,110,468	1,013	1,125	2,249,808
5/21/2020	24.00	47.3	1,607	2,314,200	1,093,846	1,013	1,108	2,216,132
5/22/2020	24.00	47.3	1,618	2,330,520	1,101,560	1,013	1,116	2,231,760
5/23/2020	24.00	47.3	1,256	1,808,670	854,899	1,013	866	1,732,025
5/24/2020	24.00	47.3	1,232	1,773,520	838,284	1,013	849	1,698,364
5/25/2020	24.00	47.3	1,498	2,157,253	1,019,662	1,013	1,033	2,065,836
5/26/2020	24.00	47.3	1,541	2,219,588	1,049,126	1,013	1,063	2,125,529
5/27/2020	24.00	47.3	1,484	2,136,431	1,009,820	1,013	1,023	2,045,896
5/28/2020	24.00	47.3	1,654	2,381,426	1,125,621	1,013	1,140	2,280,509
5/29/2020	24.00	47.3	2,406	3,464,659	1,637,630	1,013	1,659	3,317,838
5/30/2020	24.00	47.3	1,914	2,756,314	1,302,819	1,013	1,320	2,639,511
5/31/2020	24.00	47.3	1,452	2,090,592	988,154	1,013	1,001	2,002,000
Totals/ Average:	**744.00**	**47.3**	**1,422**	**63,487,500.0**	**30,008,446**	**1,013**	**30,399**	**60,797,112**
						Maximum:	**1,659**	**3,317,838**

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 2,625 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: Jun-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
6/1/2020	24.00	47.3	1,420	2,044,794	966,507	1,013	979	1,958,142
6/2/2020	24.00	47.3	1,730	2,490,881	1,177,357	1,013	1,193	2,385,326
6/3/2020	24.00	47.3	2,019	2,907,697	1,374,372	1,013	1,392	2,784,479
6/4/2020	24.00	47.3	1,888	2,718,613	1,284,999	1,013	1,302	2,603,407
6/5/2020	24.00	47.3	1,409	2,029,011	959,047	1,013	972	1,943,028
6/6/2020	24.00	47.3	1,675	2,412,364	1,140,245	1,013	1,155	2,310,136
6/7/2020	24.00	47.3	2,406	3,465,036	1,637,808	1,013	1,659	3,318,199
6/8/2020	23.90	47.3	2,033	2,915,893	1,378,246	1,013	1,396	2,792,327
6/9/2020	24.00	47.3	1,477	2,127,345	1,005,526	1,013	1,019	2,037,195
6/10/2020	24.00	47.3	1,802	2,594,637	1,226,399	1,013	1,242	2,484,685
6/11/2020	24.00	47.3	2,354	3,389,857	1,602,274	1,013	1,623	3,246,206
6/12/2020	24.00	47.3	1,666	2,399,158	1,134,003	1,013	1,149	2,297,490
6/13/2020	24.00	47.3	1,671	2,405,882	1,137,181	1,013	1,152	2,303,929
6/14/2020	24.00	47.3	1,790	2,577,169	1,218,143	1,013	1,234	2,467,957
6/15/2020	24.00	47.3	1,784	2,568,432	1,214,013	1,013	1,230	2,459,590
6/16/2020	24.00	47.3	1,512	2,177,936	1,029,438	1,013	1,043	2,085,642
6/17/2020	23.70	47.3	1,405	1,998,618	944,681	1,013	957	1,913,923
6/18/2020	24.00	47.3	1,940	2,792,981	1,320,150	1,013	1,337	2,674,624
6/19/2020	24.00	47.3	1,734	2,497,222	1,180,354	1,013	1,196	2,391,398
6/20/2020	24.00	47.3	1,340	1,930,017	912,255	1,013	924	1,848,229
6/21/2020	24.00	47.3	1,348	1,940,843	917,372	1,013	929	1,858,597
6/22/2020	24.00	47.3	1,336	1,923,232	909,048	1,013	921	1,841,732
6/23/2020	24.00	47.3	1,325	1,908,627	902,145	1,013	914	1,827,746
6/24/2020	24.00	47.3	1,312	1,889,202	892,963	1,013	905	1,809,144
6/25/2020	24.00	47.3	1,623	2,336,598	1,104,433	1,013	1,119	2,237,581
6/26/2020	24.00	47.3	1,765	2,541,589	1,201,325	1,013	1,217	2,433,885
6/27/2020	24.00	47.3	1,753	2,524,283	1,193,145	1,013	1,209	2,417,312
6/28/2020	24.00	47.3	1,599	2,301,911	1,088,037	1,013	1,102	2,204,364
6/29/2020	24.00	47.3	1,222	1,759,711	831,757	1,013	843	1,685,140
6/30/2020	24.00	47.3	1,546	2,226,013	1,052,163	1,013	1,066	2,131,682
Totals/ Average:	**719.60**	**47.3**	**1,663**	**71,795,552.0**	**33,935,388**	**1,013**	**34,377**	**68,753,096**
						Maximum:	**1,659**	**3,318,199**

Notes:

The A-60 Flare commenced operation on April 1, 2009.

*CH4 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 2,625 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: Jul-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
7/1/2020	24.00	47.3	1,155	1,662,827	785,963	1,013	796	1,592,362
7/2/2020	23.90	47.3	1,211	1,736,630	820,848	1,013	832	1,663,037
7/3/2020	24.00	47.3	1,093	1,573,489	743,736	1,013	753	1,506,810
7/4/2020	24.00	47.3	1,320	1,900,967	898,524	1,013	910	1,820,410
7/5/2020	24.00	47.3	1,400	2,015,500	952,660	1,013	965	1,930,090
7/6/2020	24.00	47.3	1,097	1,579,940	746,785	1,013	756	1,512,987
7/7/2020	20.37	47.3	1,372	1,676,828	792,581	1,013	803	1,605,770
7/8/2020	18.60	47.3	1,896	2,116,195	1,000,256	1,013	1,013	2,026,518
7/9/2020	14.13	47.3	1,327	1,125,586	532,027	1,013	539	1,077,887
7/10/2020	24.00	47.3	1,309	1,884,558	890,768	1,013	902	1,804,697
7/11/2020	24.00	47.3	1,592	2,292,008	1,083,357	1,013	1,097	2,194,880
7/12/2020	24.00	47.3	1,122	1,615,416	763,554	1,013	773	1,546,960
7/13/2020	24.00	47.3	1,099	1,581,918	747,720	1,013	757	1,514,882
7/14/2020	24.00	47.3	1,470	2,116,752	1,000,519	1,013	1,014	2,027,051
7/15/2020	24.00	47.3	1,888	2,719,265	1,285,307	1,013	1,302	2,604,032
7/16/2020	24.00	47.3	2,091	3,011,327	1,423,355	1,013	1,442	2,883,717
7/17/2020	23.90	47.3	1,888	2,706,731	1,279,382	1,013	1,296	2,592,029
7/18/2020	24.00	47.3	1,662	2,392,800	1,130,998	1,013	1,146	2,291,401
7/19/2020	24.00	47.3	1,524	2,194,891	1,037,453	1,013	1,051	2,101,879
7/20/2020	24.00	47.3	1,547	2,227,848	1,053,030	1,013	1,067	2,133,439
7/21/2020	24.00	47.3	1,615	2,325,931	1,099,391	1,013	1,114	2,227,366
7/22/2020	24.00	47.3	1,453	2,093,029	989,306	1,013	1,002	2,004,333
7/23/2020	24.00	47.3	1,140	1,641,179	775,731	1,013	786	1,571,631
7/24/2020	24.00	47.3	976	1,406,011	664,575	1,013	673	1,346,429
7/25/2020	24.00	47.3	1,100	1,583,700	748,563	1,013	758	1,516,588
7/26/2020	24.00	47.3	1,563	2,250,379	1,063,680	1,013	1,078	2,155,015
7/27/2020	24.00	47.3	1,558	2,243,068	1,060,224	1,013	1,074	2,148,014
7/28/2020	24.00	47.3	1,321	1,902,065	899,043	1,013	911	1,821,462
7/29/2020	24.00	47.3	990	1,425,464	673,770	1,013	683	1,365,058
7/30/2020	24.00	47.3	1,203	1,732,220	818,763	1,013	829	1,658,814
7/31/2020	24.00	47.3	1,148	1,652,738	781,195	1,013	791	1,582,700
Totals/ Average:	**724.90**	**47.3**	**1,388**	**60,387,260.0**	**28,543,065**	**1,013**	**28,914**	**57,828,250**
						Maximum:	**1,442**	**2,883,717**

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 2,625 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: Aug-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
8/1/2020	24.00	47.3	1,088	1,566,302	740,339	1,013	750	1,499,927
8/2/2020	23.87	47.3	1,221	1,747,823	826,138	1,013	837	1,673,756
8/3/2020	24.00	47.3	1,029	1,482,015	700,500	1,013	710	1,419,212
8/4/2020	24.00	47.3	957	1,377,896	651,286	1,013	660	1,319,505
8/5/2020	24.00	47.3	1,080	1,555,301	735,139	1,013	745	1,489,393
8/6/2020	24.00	47.3	1,113	1,602,059	757,240	1,013	767	1,534,169
8/7/2020	24.00	47.3	995	1,432,099	676,906	1,013	686	1,371,411
8/8/2020	24.00	47.3	1,173	1,688,611	798,151	1,013	809	1,617,053
8/9/2020	24.00	47.3	996	1,434,104	677,854	1,013	687	1,373,331
8/10/2020	24.00	47.3	1,020	1,469,180	694,433	1,013	703	1,406,921
8/11/2020	24.00	47.3	984	1,416,985	669,762	1,013	678	1,356,938
8/12/2020	24.00	47.3	1,077	1,550,814	733,019	1,013	743	1,485,096
8/13/2020	24.00	47.3	1,047	1,507,611	712,598	1,013	722	1,443,723
8/14/2020	24.00	47.3	1,125	1,619,969	765,706	1,013	776	1,551,320
8/15/2020	24.00	47.3	1,082	1,558,025	736,427	1,013	746	1,492,001
8/16/2020	24.00	47.3	1,134	1,633,088	771,907	1,013	782	1,563,883
8/17/2020	24.00	47.3	1,225	1,763,715	833,650	1,013	844	1,688,975
8/18/2020	24.00	47.3	1,308	1,883,771	890,396	1,013	902	1,803,943
8/19/2020	24.00	47.3	1,052	1,515,384	716,272	1,013	726	1,451,167
8/20/2020	24.00	47.3	981	1,411,998	667,405	1,013	676	1,352,162
8/21/2020	24.00	47.3	971	1,397,886	660,735	1,013	669	1,338,648
8/22/2020	24.00	47.3	965	1,389,477	656,760	1,013	665	1,330,596
8/23/2020	24.00	47.3	960	1,382,559	653,490	1,013	662	1,323,971
8/24/2020	24.00	47.3	964	1,387,567	655,857	1,013	664	1,328,767
8/25/2020	22.57	47.3	1,234	1,671,168	789,906	1,013	800	1,600,349
8/26/2020	24.00	47.3	1,513	2,178,568	1,029,737	1,013	1,043	2,086,248
8/27/2020	24.00	47.3	1,079	1,553,230	734,161	1,013	744	1,487,409
8/28/2020	23.77	47.3	1,035	1,476,612	697,946	1,013	707	1,414,038
8/29/2020	24.00	47.3	1,819	2,619,682	1,238,237	1,013	1,254	2,508,669
8/30/2020	24.00	47.3	1,936	2,787,891	1,317,744	1,013	1,335	2,669,749
8/31/2020	24.00	47.3	1,991	2,866,560	1,354,928	1,013	1,373	2,745,085
Totals/ Average:	**742.20**	**47.3**	**1,166**	**51,927,950.0**	**24,544,628**	**1,013**	**24,864**	**49,727,417**
						Maximum:	**1,373**	**2,745,085**

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 2,625 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: Sep-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
9/1/2020	24.00	47.3	2,151	3,097,837	1,464,245	1,013	1,483	2,966,561
9/2/2020	24.00	47.3	2,412	3,472,621	1,641,393	1,013	1,663	3,325,463
9/3/2020	24.00	47.3	2,438	3,511,377	1,659,712	1,013	1,681	3,362,577
9/4/2020	24.00	47.3	2,287	3,293,280	1,556,625	1,013	1,577	3,153,722
9/5/2020	23.90	47.3	2,017	2,892,769	1,367,316	1,013	1,385	2,770,183
9/6/2020	24.00	47.3	2,086	3,003,712	1,419,756	1,013	1,438	2,876,425
9/7/2020	24.00	47.3	1,884	2,712,600	1,282,157	1,013	1,299	2,597,649
9/8/2020	23.90	47.3	1,894	2,716,307	1,283,909	1,013	1,301	2,601,199
9/9/2020	23.20	47.3	1,764	2,455,793	1,160,772	1,013	1,176	2,351,725
9/10/2020	23.67	47.3	1,814	2,576,453	1,217,804	1,013	1,234	2,467,272
9/11/2020	23.83	47.3	2,043	2,921,784	1,381,031	1,013	1,399	2,797,969
9/12/2020	24.00	47.3	1,738	2,502,492	1,182,845	1,013	1,198	2,396,445
9/13/2020	24.00	47.3	1,785	2,570,928	1,215,193	1,013	1,231	2,461,981
9/14/2020	24.00	47.3	1,677	2,415,400	1,141,680	1,013	1,157	2,313,043
9/15/2020	24.00	51.1	1,493	2,149,780	1,097,822	1,013	1,112	2,224,187
9/16/2020	24.00	51.1	1,187	1,708,661	872,557	1,013	884	1,767,800
9/17/2020	24.00	51.1	1,194	1,718,688	877,677	1,013	889	1,778,174
9/18/2020	24.00	51.1	1,167	1,680,568	858,211	1,013	869	1,738,735
9/19/2020	24.00	51.1	1,094	1,575,774	804,696	1,013	815	1,630,314
9/20/2020	23.93	51.1	1,104	1,585,665	809,747	1,013	820	1,640,547
9/21/2020	24.00	51.1	1,259	1,812,448	925,557	1,013	938	1,875,179
9/22/2020	24.00	51.1	1,513	2,178,045	1,112,256	1,013	1,127	2,253,430
9/23/2020	24.00	51.1	1,498	2,157,246	1,101,634	1,013	1,116	2,231,911
9/24/2020	24.00	51.1	1,483	2,136,197	1,090,885	1,013	1,105	2,210,134
9/25/2020	24.00	51.1	1,479	2,129,403	1,087,416	1,013	1,102	2,203,104
9/26/2020	24.00	51.1	1,485	2,138,876	1,092,253	1,013	1,106	2,212,905
9/27/2020	24.00	51.1	1,491	2,146,503	1,096,148	1,013	1,110	2,220,796
9/28/2020	24.00	51.1	1,508	2,172,219	1,109,281	1,013	1,124	2,247,402
9/29/2020	24.00	51.1	1,509	2,172,540	1,109,444	1,013	1,124	2,247,735
9/30/2020	24.00	51.1	1,521	2,190,056	1,118,389	1,013	1,133	2,265,857
Totals/ Average:	**718.43**	**48.9**	**1,666**	**71,796,022.0**	**35,138,412**	**1,013**	**35,595**	**71,190,422**
						Maximum:	**1,681**	**3,362,577**

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 9/14/20) and July 22 & 23, 2020 (9/15/20 - current) source tests.

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 2,625 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: Oct-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
10/1/2020	19.83	51.1	1,525	1,814,193	926,448	1,013	938	1,876,985
10/2/2020	24.00	51.1	1,517	2,184,095	1,115,345	1,013	1,130	2,259,689
10/3/2020	24.00	51.1	1,522	2,191,505	1,119,129	1,013	1,134	2,267,356
10/4/2020	24.00	51.1	1,512	2,176,850	1,111,645	1,013	1,126	2,252,194
10/5/2020	24.00	51.1	1,552	2,234,891	1,141,285	1,013	1,156	2,312,244
10/6/2020	24.00	51.1	1,377	1,982,304	1,012,297	1,013	1,025	2,050,914
10/7/2020	24.00	51.1	1,065	1,533,755	783,238	1,013	793	1,586,840
10/8/2020	24.00	51.1	1,025	1,475,398	753,437	1,013	763	1,526,464
10/9/2020	24.00	51.1	992	1,428,916	729,700	1,013	739	1,478,373
10/10/2020	24.00	51.1	972	1,399,866	714,865	1,013	724	1,448,317
10/11/2020	24.00	51.1	976	1,405,373	717,678	1,013	727	1,454,015
10/12/2020	24.00	51.1	983	1,416,180	723,196	1,013	733	1,465,196
10/13/2020	24.00	51.1	981	1,412,032	721,078	1,013	730	1,460,904
10/14/2020	24.00	51.1	1,199	1,726,437	881,634	1,013	893	1,786,191
10/15/2020	24.00	51.1	1,291	1,859,703	949,689	1,013	962	1,924,070
10/16/2020	24.00	51.1	1,195	1,720,417	878,560	1,013	890	1,779,963
10/17/2020	24.00	51.1	1,406	2,024,919	1,034,059	1,013	1,048	2,095,004
10/18/2020	24.00	51.1	1,091	1,571,315	802,419	1,013	813	1,625,700
10/19/2020	24.00	51.1	1,127	1,623,562	829,100	1,013	840	1,679,756
10/20/2020	24.00	51.1	1,268	1,826,550	932,759	1,013	945	1,889,769
10/21/2020	24.00	51.1	1,110	1,599,081	816,598	1,013	827	1,654,427
10/22/2020	24.00	51.1	989	1,423,655	727,014	1,013	736	1,472,930
10/23/2020	23.90	51.1	1,190	1,706,703	871,557	1,013	883	1,765,774
10/24/2020	24.00	51.1	1,008	1,452,138	741,559	1,013	751	1,502,398
10/25/2020	24.00	51.1	1,408	2,026,810	1,035,025	1,013	1,048	2,096,961
10/26/2020	24.00	51.1	1,481	2,133,266	1,089,389	1,013	1,104	2,207,101
10/27/2020	24.00	51.1	1,480	2,131,903	1,088,693	1,013	1,103	2,205,691
10/28/2020	24.00	51.1	1,573	2,264,752	1,156,534	1,013	1,172	2,343,138
10/29/2020	24.00	51.1	1,556	2,240,804	1,144,305	1,013	1,159	2,318,361
10/30/2020	24.00	51.1	1,550	2,232,138	1,139,879	1,013	1,155	2,309,395
10/31/2020	24.00	51.1	1,414	2,036,028	1,039,732	1,013	1,053	2,106,498
Totals/ Average:	**739.73**	**51.1**	**1,267**	**56,255,539.0**	**28,727,847**	**1,013**	**29,101**	**58,202,619**
						Maximum:	**1,172**	**2,343,138**

Notes:

The A-60 Flare commenced operation on April 1, 2009.

*CH_4 content was determined from the July 22 & 23, 2020 (9/15/20 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 2,625 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

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]
May-20	744.00	159.08	584.92	599	47.7	21,033,723	20,327,032	10,033,086	10,164	0.093	0.47	1.50	1.58E-02
June-20	720.00	351.42	368.58	506	47.7	11,195,052	10,818,920	5,340,040	5,409	0.093	0.25	1.50	8.42E-03
July-20	744.00	307.08	436.92	591	47.7	15,488,670	14,968,282	7,388,096	7,484	0.093	0.35	1.50	1.16E-02
August-20	744.00	156.82	587.18	614	47.7	21,618,884	20,892,533	10,312,208	10,446	0.093	0.49	1.50	1.63E-02
September-20	720.00	220.67	499.33	637	51.1	19,088,467	19,744,736	9,745,674	9,872	0.083	0.41	1.54	1.47E-02
October-20	744.00	11.25	732.75	651	53.0	28,640,727	30,773,163	15,189,123	15,387	0.083	0.64	1.54	2.20E-02
TOTAL/ AVG:	**4,416.00**	**1,206.32**	**3,209.68**	**608**	**49.1**	**117,065,522**	**117,524,666**	**58,008,226**	**58,762**	**--**	**--**	**--**	**--**

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 10 & 11, 2019 (9/6/19 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: May-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
5/01/2020	13.00	47.7	293	421,660	201,132	1,013	204	407,493
5/02/2020	22.42	47.7	551	793,501	378,500	1,013	383	766,841
5/03/2020	24.00	47.7	583	839,873	400,619	1,013	406	811,655
5/04/2020	24.00	47.7	583	839,797	400,583	1,013	406	811,582
5/05/2020	21.42	47.7	516	743,058	354,439	1,013	359	718,093
5/06/2020	21.58	47.7	511	735,971	351,058	1,013	356	711,244
5/07/2020	24.00	47.7	634	912,450	435,239	1,013	441	881,794
5/08/2020	21.75	47.7	550	792,290	377,922	1,013	383	765,670
5/09/2020	24.00	47.7	640	920,994	439,314	1,013	445	890,051
5/10/2020	24.00	47.7	642	924,579	441,024	1,013	447	893,515
5/11/2020	24.00	47.7	635	915,011	436,460	1,013	442	884,269
5/12/2020	20.08	47.7	585	833,421	397,542	1,013	403	805,420
5/13/2020	23.67	47.7	632	910,471	434,295	1,013	440	879,881
5/14/2020	22.08	47.7	562	809,097	385,939	1,013	391	781,913
5/15/2020	23.83	47.7	639	919,848	438,768	1,013	444	888,943
5/16/2020	23.00	47.7	607	873,567	416,692	1,013	422	844,217
5/17/2020	23.08	47.7	589	848,541	404,754	1,013	410	820,032
5/18/2020	23.58	47.7	574	826,791	394,379	1,013	400	799,012
5/19/2020	19.58	47.7	486	700,218	334,004	1,013	338	676,692
5/20/2020	12.58	47.7	246	353,757	168,742	1,013	171	341,872
5/21/2020	14.00	47.7	231	332,194	158,456	1,013	161	321,033
5/22/2020	8.67	47.7	205	295,306	140,861	1,013	143	285,384
5/23/2020	22.92	47.7	567	815,866	389,168	1,013	394	788,454
5/24/2020	24.00	47.7	598	861,176	410,781	1,013	416	832,242
5/25/2020	12.83	47.7	318	457,718	218,331	1,013	221	442,339
5/26/2020	10.58	47.7	227	327,499	156,217	1,013	158	316,495
5/27/2020	13.00	47.7	296	426,214	203,304	1,013	206	411,894
5/28/2020	15.08	47.7	372	536,400	255,863	1,013	259	518,378
5/29/2020	0.00							
5/30/2020	9.58	47.7	253	364,085	173,668	1,013	176	351,852
5/31/2020	18.58	47.7	488	702,368	335,029	1,013	339	678,770
Totals/ Average:	**584.92**	**47.7**	**599**	**21,033,722.8**	**10,033,086**	**1,013**	**10,164**	**20,327,032**
Notes:						**Maximum:**	**447**	**893,515**

The A-60 Flare commenced operation on April 1, 2009.
*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: Jun-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
6/01/2020	12.17	47.7	371	534,884	255,140	1,013	258	516,913
6/02/2020	2.58	47.7	52	74,749	35,655	1,013	36	72,237
6/03/2020	2.33	47.7	62	88,791	42,353	1,013	43	85,808
6/04/2020	5.42	47.7	117	167,886	80,082	1,013	81	162,246
6/05/2020	14.25	47.7	372	535,089	255,238	1,013	259	517,111
6/06/2020	14.00	47.7	389	560,676	267,443	1,013	271	541,839
6/07/2020	0.00							
6/08/2020	7.42	47.7	201	288,867	137,790	1,013	140	279,162
6/09/2020	15.33	47.7	404	581,393	277,325	1,013	281	561,860
6/10/2020	18.00	47.7	475	684,368	326,443	1,013	331	661,374
6/11/2020	14.67	47.7	146	210,815	100,559	1,013	102	203,732
6/12/2020	3.67	47.7	97	139,119	66,360	1,013	67	134,445
6/13/2020	6.00	47.7	133	190,889	91,054	1,013	92	184,475
6/14/2020	0.50	47.7	20	28,840	13,757	1,013	14	27,871
6/15/2020	1.25	47.7	14	19,745	9,418	1,013	10	19,081
6/16/2020	15.25	47.7	301	434,037	207,035	1,013	210	419,454
6/17/2020	20.00	47.7	398	573,421	273,522	1,013	277	554,155
6/18/2020	23.00	47.7	426	614,137	292,943	1,013	297	593,503
6/19/2020	23.00	47.7	441	635,574	303,169	1,013	307	614,220
6/20/2020	24.00	47.7	464	667,656	318,472	1,013	323	645,224
6/21/2020	24.00	47.7	464	668,327	318,792	1,013	323	645,873
6/22/2020	24.00	47.7	464	668,429	318,840	1,013	323	645,971
6/23/2020	24.00	47.7	464	667,557	318,425	1,013	323	645,128
6/24/2020	24.00	47.7	464	667,626	318,458	1,013	323	645,195
6/25/2020	7.33	47.7	138	198,275	94,577	1,013	96	191,613
6/26/2020	0.00							
6/27/2020	0.00							
6/28/2020	8.42	47.7	160	230,396	109,899	1,013	111	222,655
6/29/2020	23.08	47.7	555	798,480	380,875	1,013	386	771,653
6/30/2020	10.92	47.7	203	265,026	126,417	1,013	128	256,121
Totals/ Average:	**368.58**	**47.7**	**506**	**11,195,051.5**	**5,340,040**	**1,013**	**5,409**	**10,818,920**
						Maximum:	**386**	**771,653**

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: Jul-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
7/01/2020	23.83	47.7	615	885,842	422,547	1,013	428	856,080
7/02/2020	22.00	47.7	586	817,318	389,861	1,013	395	789,858
7/03/2020	24.00	47.7	633	911,674	434,868	1,013	441	881,043
7/04/2020	16.25	47.7	407	586,596	279,806	1,013	283	566,888
7/05/2020	13.42	47.7	320	460,834	219,818	1,013	223	445,351
7/06/2020	23.25	47.7	605	870,490	415,224	1,013	421	841,243
7/07/2020	12.00	47.7	336	483,203	230,488	1,013	233	466,968
7/08/2020	9.08	47.7	201	288,762	137,739	1,013	140	279,060
7/09/2020	21.25	47.7	477	687,519	327,947	1,013	332	664,420
7/10/2020	20.83	47.7	460	662,542	316,032	1,013	320	640,281
7/11/2020	15.83	47.7	374	538,561	256,894	1,013	260	520,466
7/12/2020	24.00	47.7	527	758,642	361,872	1,013	367	733,153
7/13/2020	24.00	47.7	529	761,709	363,335	1,013	368	736,117
7/14/2020	22.00	47.7	535	770,908	367,723	1,013	373	745,007
7/15/2020	11.92	47.7	306	440,619	210,175	1,013	213	425,815
7/16/2020	0.00							
7/17/2020	0.00							
7/18/2020	0.00							
7/19/2020	0.00							
7/20/2020	0.00							
7/21/2020	0.00							
7/22/2020	13.92	47.7	338	487,338	232,460	1,013	235	470,964
7/23/2020	24.00	47.7	550	792,427	377,988	1,013	383	765,803
7/24/2020	24.00	47.7	637	917,455	437,626	1,013	443	886,631
7/25/2020	19.25	47.7	500	720,503	343,680	1,013	348	696,296
7/26/2020	0.83	47.7	3	4,827	2,302	1,013	2	4,665
7/27/2020	0.83	47.7	3	4,827	2,302	1,013	2	4,664
7/28/2020	10.83	47.7	279	402,319	191,906	1,013	194	388,802
7/29/2020	24.00	47.7	649	934,958	445,975	1,013	452	903,546
7/30/2020	16.50	47.7	420	605,067	288,617	1,013	292	584,738
7/31/2020	19.08	47.7	482	693,729	330,909	1,013	335	670,421
Totals/ Average:	**436.92**	**47.7**	**591**	**15,488,670.2**	**7,388,096**	**1,013**	**7,484**	**14,968,282**
Notes:						**Maximum:**	**452**	**903,546**

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: Aug-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
8/01/2020	21.67	47.7	548	789,589	376,634	1,013	382	763,060
8/02/2020	20.42	47.7	552	745,218	355,469	1,013	360	720,180
8/03/2020	24.00	47.7	618	889,991	424,526	1,013	430	860,089
8/04/2020	24.00	47.7	621	893,679	426,285	1,013	432	863,653
8/05/2020	20.00	47.7	488	702,784	335,228	1,013	340	679,172
8/06/2020	20.00	47.7	503	723,957	345,327	1,013	350	699,633
8/07/2020	24.00	47.7	623	897,830	428,265	1,013	434	867,665
8/08/2020	18.00	47.7	451	649,160	309,649	1,013	314	627,349
8/09/2020	24.00	47.7	620	893,294	426,101	1,013	432	863,281
8/10/2020	22.83	47.7	587	845,538	403,322	1,013	409	817,129
8/11/2020	24.00	47.7	622	895,021	426,925	1,013	432	864,950
8/12/2020	21.83	47.7	537	773,973	369,185	1,013	374	747,969
8/13/2020	24.00	47.7	617	887,855	423,507	1,013	429	858,025
8/14/2020	21.75	47.7	548	789,392	376,540	1,013	381	762,870
8/15/2020	22.75	47.7	584	841,512	401,401	1,013	407	813,239
8/16/2020	20.08	47.7	509	732,604	349,452	1,013	354	707,990
8/17/2020	17.92	47.7	403	580,034	276,676	1,013	280	560,546
8/18/2020	15.08	47.7	327	470,302	224,334	1,013	227	454,501
8/19/2020	24.00	47.7	585	842,186	401,723	1,013	407	813,891
8/20/2020	24.00	47.7	646	930,754	443,969	1,013	450	899,482
8/21/2020	24.00	47.7	649	934,215	445,620	1,013	451	902,827
8/22/2020	24.00	47.7	651	936,814	446,860	1,013	453	905,339
8/23/2020	24.00	47.7	652	939,013	447,909	1,013	454	907,464
8/24/2020	24.00	47.7	652	939,296	448,044	1,013	454	907,738
8/25/2020	18.58	47.7	496	714,832	340,975	1,013	345	690,815
8/26/2020	0.17	47.7	3	4,024	1,919	1,013	2	3,889
8/27/2020	15.92	47.7	395	568,860	271,346	1,013	275	549,748
8/28/2020	22.17	47.7	561	807,157	385,014	1,013	390	780,038
8/29/2020	0.00							
8/30/2020	0.00							
8/31/2020	0.02	47.7	0	0	0	1,013	0	0
Totals/ Average:	**587.18**	**47.7**	**614**	**21,618,883.8**	**10,312,208**	**1,013**	**10,446**	**20,892,533**
						Maximum:	**454**	**907,738**

Notes:

The S-64 Engine (#1) commenced operation on April 27, 2017.

*Methane (CH4) 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: Sep-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
9/01/2020	0.00							
9/02/2020	0.00							
9/03/2020	0.00							
9/04/2020	6.00	47.7	116	167,334	79,818	1,013	81	161,712
9/05/2020	19.17	47.7	458	659,677	314,666	1,013	319	637,513
9/06/2020	10.17	47.7	240	344,990	164,560	1,013	167	333,399
9/07/2020	24.00	47.7	647	931,947	444,539	1,013	450	900,636
9/08/2020	21.50	47.7	575	828,423	395,158	1,013	400	800,589
9/09/2020	22.83	47.7	641	913,539	435,758	1,013	441	882,846
9/10/2020	22.58	47.7	619	891,955	425,463	1,013	431	861,987
9/11/2020	0.50	47.7	23	32,765	15,629	1,013	16	31,664
9/12/2020	0.00							
9/13/2020	0.00							
9/14/2020	0.00							
9/15/2020	12.83	47.7	316	454,692	216,888	1,013	220	439,416
9/16/2020	24.00	47.7	638	918,052	437,911	1,013	444	887,207
9/17/2020	24.00	47.7	650	936,098	446,519	1,013	452	904,647
9/18/2020	24.00	53.0	658	946,970	502,209	1,013	509	1,017,476
9/19/2020	24.00	53.0	658	947,611	502,549	1,013	509	1,018,165
9/20/2020	23.75	53.0	633	912,067	483,699	1,013	490	979,974
9/21/2020	24.00	53.0	659	948,965	503,268	1,013	510	1,019,620
9/22/2020	24.00	53.0	646	930,638	493,548	1,013	500	999,928
9/23/2020	24.00	53.0	645	928,102	492,203	1,013	499	997,204
9/24/2020	24.00	53.0	637	917,843	486,763	1,013	493	986,181
9/25/2020	24.00	53.0	636	915,464	485,501	1,013	492	983,624
9/26/2020	24.00	53.0	633	911,213	483,246	1,013	490	979,057
9/27/2020	24.00	53.0	631	908,254	481,677	1,013	488	975,878
9/28/2020	24.00	53.0	632	909,845	482,521	1,013	489	977,588
9/29/2020	24.00	53.0	636	915,946	485,757	1,013	492	984,143
9/30/2020	24.00	53.0	636	916,075	485,825	1,013	492	984,281
Totals/ Average:	**499.33**	**51.1**	**637**	**19,088,466.6**	**9,745,674**	**1,013**	**9,872**	**19,744,736**
						Maximum:	**510**	**1,019,620**

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 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-64 Engine (#1) Heat Input Rate

MONTH: Oct-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
10/01/2020	24.00	53.0	634	913,435	484,425	1,013	491	981,445
10/02/2020	24.00	53.0	634	913,546	484,484	1,013	491	981,564
10/03/2020	24.00	53.0	635	913,775	484,605	1,013	491	981,810
10/04/2020	24.00	53.0	636	915,382	485,457	1,013	492	983,536
10/05/2020	24.00	53.0	633	911,514	483,406	1,013	490	979,380
10/06/2020	24.00	53.0	640	921,946	488,938	1,013	495	990,589
10/07/2020	24.00	53.0	651	937,407	497,138	1,013	504	1,007,201
10/08/2020	24.00	53.0	654	941,776	499,455	1,013	506	1,011,895
10/09/2020	24.00	53.0	657	946,288	501,848	1,013	508	1,016,744
10/10/2020	24.00	53.0	660	950,548	504,107	1,013	511	1,021,321
10/11/2020	24.00	53.0	662	952,959	505,386	1,013	512	1,023,911
10/12/2020	24.00	53.0	666	958,890	508,531	1,013	515	1,030,284
10/13/2020	24.00	53.0	665	958,309	508,223	1,013	515	1,029,660
10/14/2020	24.00	53.0	661	951,470	504,596	1,013	511	1,022,311
10/15/2020	23.50	53.0	655	943,721	500,486	1,013	507	1,013,985
10/16/2020	20.83	53.0	520	748,232	396,812	1,013	402	803,941
10/17/2020	20.92	53.0	558	803,359	426,048	1,013	432	863,173
10/18/2020	24.00	53.0	658	946,998	502,225	1,013	509	1,017,507
10/19/2020	24.00	53.0	662	952,736	505,267	1,013	512	1,023,671
10/20/2020	24.00	53.0	657	946,710	502,072	1,013	509	1,017,197
10/21/2020	24.00	53.0	661	952,002	504,878	1,013	511	1,022,883
10/22/2020	24.00	53.0	664	956,046	507,023	1,013	514	1,027,228
10/23/2020	19.50	53.0	585	781,623	414,521	1,013	420	839,819
10/24/2020	24.00	53.0	659	949,313	503,452	1,013	510	1,019,994
10/25/2020	24.00	53.0	652	938,874	497,916	1,013	504	1,008,778
10/26/2020	24.00	53.0	652	938,476	497,705	1,013	504	1,008,350
10/27/2020	24.00	53.0	646	930,470	493,459	1,013	500	999,748
10/28/2020	24.00	53.0	648	932,975	494,787	1,013	501	1,002,439
10/29/2020	24.00	53.0	655	942,715	499,953	1,013	506	1,012,904
10/30/2020	24.00	53.0	658	946,971	502,210	1,013	509	1,017,477
10/31/2020	24.00	53.0	654	942,260	499,712	1,013	506	1,012,416
Totals/ Average:	**732.75**	**53.0**	**651**	**28,640,727.5**	**15,189,123**	**1,013**	**15,387**	**30,773,163**
						Maximum:	**515**	**1,030,284**

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 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - current) source tests.

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]
May-20	744.00	66.17	677.83	639	47.8	25,975,066	25,172,506	12,424,731	12,586	0.093	0.58	1.5895	2.06E-02
June-20	720.00	140.25	579.75	600	47.8	20,875,880	20,230,871	9,985,622	10,115	0.093	0.47	1.5895	1.66E-02
July-20	744.00	129.58	614.42	593	47.8	21,877,185	21,201,239	10,464,580	10,601	0.093	0.49	1.5895	1.74E-02
August-20	744.00	49.67	694.33	598	47.8	24,918,803	24,148,878	11,919,486	12,074	0.093	0.56	1.5895	1.98E-02
September-20	720.00	469.08	250.92	541	49.6	8,138,285	8,171,766	4,033,448	4,086	0.090	0.18	1.5267	6.21E-03
October-20	744.00	337.50	406.50	567	53.0	13,825,894	14,845,969	7,327,724	7,423	0.090	0.33	1.5267	1.06E-02
TOTAL/ AVG:	**4,416.00**	**1,192.25**	**3,223.75**	**598**	**49.0**	**115,611,114**	**113,771,227**	**56,155,591**	**56,886**	**--**	**--**	**--**	**--**

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 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: May-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
5/01/2020	24.00	47.8	649	934,724	447,109	1,013	453	905,843
5/02/2020	24.00	47.8	642	924,889	442,405	1,013	448	896,313
5/03/2020	24.00	47.8	640	921,746	440,902	1,013	447	893,267
5/04/2020	24.00	47.8	639	920,659	440,381	1,013	446	892,213
5/05/2020	24.00	47.8	646	930,190	444,941	1,013	451	901,450
5/06/2020	24.00	47.8	646	929,879	444,792	1,013	451	901,148
5/07/2020	24.00	47.8	640	921,696	440,878	1,013	447	893,218
5/08/2020	22.58	47.8	591	851,646	407,370	1,013	413	825,333
5/09/2020	24.00	47.8	648	932,974	446,272	1,013	452	904,147
5/10/2020	24.00	47.8	651	937,450	448,413	1,013	454	908,485
5/11/2020	24.00	47.8	649	934,227	446,872	1,013	453	905,362
5/12/2020	20.00	47.8	569	810,358	387,621	1,013	393	785,320
5/13/2020	24.00	47.8	648	933,058	446,312	1,013	452	904,229
5/14/2020	24.00	47.8	653	940,612	449,926	1,013	456	911,549
5/15/2020	22.75	47.8	603	867,765	415,081	1,013	420	840,953
5/16/2020	24.00	47.8	643	925,833	442,856	1,013	449	897,227
5/17/2020	24.00	47.8	642	924,992	442,454	1,013	448	896,412
5/18/2020	17.83	47.8	440	633,297	302,927	1,013	307	613,730
5/19/2020	23.08	47.8	612	881,321	421,565	1,013	427	854,090
5/20/2020	23.50	47.8	602	867,161	414,792	1,013	420	840,368
5/21/2020	24.00	47.8	643	925,873	442,876	1,013	449	897,266
5/22/2020	23.83	47.8	642	925,135	442,523	1,013	448	896,551
5/23/2020	24.00	47.8	627	903,435	432,143	1,013	438	875,521
5/24/2020	24.00	47.8	627	903,096	431,980	1,013	438	875,192
5/25/2020	24.00	47.8	639	919,801	439,971	1,013	446	891,382
5/26/2020	24.00	47.8	643	926,594	443,220	1,013	449	897,965
5/27/2020	24.00	47.8	636	915,258	437,798	1,013	443	886,979
5/28/2020	15.08	47.8	398	572,822	273,999	1,013	278	555,123
5/29/2020	0.00							
5/30/2020	10.42	47.8	259	372,314	178,090	1,013	180	360,811
5/31/2020	18.75	47.8	477	686,264	328,262	1,013	333	665,060
Totals/ Average:	**677.83**	**47.8**	**639**	**25,975,066.3**	**12,424,731**	**1,013**	**12,586**	**25,172,506**
						Maximum:	**456**	**911,549**

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: Jun-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
6/01/2020	24.00	47.8	637	916,944	438,605	1,013	444	888,613
6/02/2020	24.00	47.8	649	934,291	446,902	1,013	453	905,424
6/03/2020	12.50	47.8	338	487,294	233,089	1,013	236	472,238
6/04/2020	16.25	47.8	377	542,987	259,729	1,013	263	526,210
6/05/2020	24.00	47.8	633	911,276	435,893	1,013	442	883,120
6/06/2020	14.00	47.8	362	520,846	249,138	1,013	252	504,753
6/07/2020	0.00							
6/08/2020	8.92	47.8	219	314,844	150,600	1,013	153	305,116
6/09/2020	22.25	47.8	586	843,532	403,489	1,013	409	817,469
6/10/2020	7.25	47.8	178	256,013	122,460	1,013	124	248,103
6/11/2020	13.83	47.8	5	7,293	3,489	1,013	4	7,068
6/12/2020	23.25	47.8	628	904,060	432,442	1,013	438	876,127
6/13/2020	22.00	47.8	586	843,340	403,397	1,013	409	817,283
6/14/2020	22.08	47.8	581	836,504	400,127	1,013	405	810,658
6/15/2020	22.33	47.8	586	843,947	403,688	1,013	409	817,871
6/16/2020	22.83	47.8	566	814,379	389,544	1,013	395	789,217
6/17/2020	24.00	47.8	599	862,490	412,557	1,013	418	835,841
6/18/2020	1.33	47.8	40	58,114	27,798	1,013	28	56,319
6/19/2020	11.25	47.8	230	330,675	158,173	1,013	160	320,458
6/20/2020	24.00	47.8	604	869,085	415,712	1,013	421	842,233
6/21/2020	24.00	47.8	599	861,880	412,266	1,013	418	835,250
6/22/2020	24.00	47.8	605	871,212	416,729	1,013	422	844,294
6/23/2020	24.00	47.8	607	874,605	418,352	1,013	424	847,582
6/24/2020	24.00	47.8	623	897,416	429,264	1,013	435	869,688
6/25/2020	24.00	47.8	633	911,132	435,825	1,013	441	882,981
6/26/2020	24.00	47.8	622	896,122	428,645	1,013	434	868,434
6/27/2020	24.00	47.8	631	908,421	434,528	1,013	440	880,353
6/28/2020	24.00	47.8	620	892,437	426,882	1,013	432	864,863
6/29/2020	24.00	47.8	608	874,902	418,494	1,013	424	847,870
6/30/2020	23.67	47.8	605	789,841	377,807	1,013	383	765,437
Totals/ Average:	**579.75**	**47.8**	**600**	**20,875,880.2**	**9,985,622**	**1,013**	**10,115**	**20,230,871**
						Maximum:	**453**	**905,424**

Notes:

The A-60 Flare commenced operation on April 1, 2009.

*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: Jul-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
7/01/2020	24.00	47.8	605	871,172	416,711	1,013	422	844,255
7/02/2020	21.25	47.8	543	757,244	362,215	1,013	367	733,847
7/03/2020	24.00	47.8	599	862,384	412,507	1,013	418	835,738
7/04/2020	24.00	47.8	603	868,413	415,391	1,013	421	841,581
7/05/2020	24.00	47.8	605	870,778	416,522	1,013	422	843,873
7/06/2020	24.00	47.8	595	856,783	409,828	1,013	415	830,311
7/07/2020	14.08	47.8	351	505,746	241,915	1,013	245	490,120
7/08/2020	9.00	47.8	214	307,820	147,241	1,013	149	298,309
7/09/2020	23.42	47.8	553	796,614	381,047	1,013	386	772,000
7/10/2020	21.58	47.8	476	685,307	327,805	1,013	332	664,133
7/11/2020	15.67	47.8	341	490,612	234,676	1,013	238	475,454
7/12/2020	24.00	47.8	571	822,813	393,578	1,013	399	797,390
7/13/2020	24.00	47.8	571	821,684	393,039	1,013	398	796,296
7/14/2020	8.33	47.8	204	293,334	140,311	1,013	142	284,270
7/15/2020	0.00							
7/16/2020	0.00							
7/17/2020	9.58	47.8	201	289,416	138,437	1,013	140	280,473
7/18/2020	20.83	47.8	454	654,300	312,973	1,013	317	634,084
7/19/2020	22.50	47.8	589	847,946	405,600	1,013	411	821,746
7/20/2020	24.00	47.8	643	925,937	442,906	1,013	449	897,328
7/21/2020	22.83	47.8	597	859,723	411,234	1,013	417	833,160
7/22/2020	17.33	47.8	404	582,252	278,510	1,013	282	564,262
7/23/2020	24.00	47.8	520	748,735	358,145	1,013	363	725,601
7/24/2020	24.00	47.8	602	866,927	414,680	1,013	420	840,141
7/25/2020	24.00	47.8	613	883,356	422,538	1,013	428	856,063
7/26/2020	24.00	47.8	636	915,646	437,984	1,013	444	887,355
7/27/2020	24.00	47.8	635	914,757	437,559	1,013	443	886,494
7/28/2020	24.00	47.8	622	895,498	428,346	1,013	434	867,830
7/29/2020	24.00	47.8	608	875,948	418,995	1,013	424	848,884
7/30/2020	24.00	47.8	629	905,079	432,929	1,013	439	877,115
7/31/2020	24.00	47.8	626	900,960	430,959	1,013	437	873,123
Totals/ Average:	**614.42**	**47.8**	**593**	**21,877,185.4**	**10,464,580**	**1,013**	**10,601**	**21,201,239**
Notes:						**Maximum:**	**449**	**897,328**

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: Aug-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
8/01/2020	24.00	47.8	625	899,365	430,196	1,013	436	871,577
8/02/2020	20.83	47.8	553	746,467	357,060	1,013	362	723,403
8/03/2020	24.00	47.8	616	886,951	424,258	1,013	430	859,546
8/04/2020	23.83	47.8	603	867,766	415,081	1,013	420	840,954
8/05/2020	24.00	47.8	612	881,861	421,823	1,013	427	854,614
8/06/2020	24.00	47.8	620	892,655	426,986	1,013	433	865,074
8/07/2020	24.00	47.8	617	888,249	424,879	1,013	430	860,805
8/08/2020	24.00	47.8	609	876,390	419,206	1,013	425	849,312
8/09/2020	24.00	47.8	618	889,552	425,502	1,013	431	862,067
8/10/2020	24.00	47.8	620	892,452	426,889	1,013	432	864,878
8/11/2020	24.00	47.8	619	891,556	426,461	1,013	432	864,009
8/12/2020	24.00	47.8	622	895,333	428,267	1,013	434	867,669
8/13/2020	23.83	47.8	605	871,838	417,029	1,013	422	844,901
8/14/2020	24.00	47.8	609	876,273	419,150	1,013	425	849,198
8/15/2020	24.00	47.8	602	867,122	414,773	1,013	420	840,330
8/16/2020	24.00	47.8	610	877,699	419,833	1,013	425	850,581
8/17/2020	24.00	47.8	615	885,262	423,450	1,013	429	857,910
8/18/2020	24.00	47.8	621	894,430	427,835	1,013	433	866,795
8/19/2020	24.00	47.8	604	869,583	415,950	1,013	421	842,715
8/20/2020	24.00	47.8	596	858,624	410,708	1,013	416	832,095
8/21/2020	24.00	47.8	606	872,366	417,282	1,013	423	845,413
8/22/2020	24.00	47.8	607	873,667	417,904	1,013	423	846,673
8/23/2020	24.00	47.8	607	873,510	417,829	1,013	423	846,521
8/24/2020	24.00	47.8	600	864,162	413,357	1,013	419	837,462
8/25/2020	16.92	47.8	406	584,222	279,453	1,013	283	566,171
8/26/2020	24.00	47.8	628	903,755	432,296	1,013	438	875,832
8/27/2020	24.00	47.8	613	882,788	422,266	1,013	428	855,512
8/28/2020	23.58	47.8	562	809,552	387,235	1,013	392	784,539
8/29/2020	14.08	47.8	307	441,731	211,294	1,013	214	428,082
8/30/2020	7.17	47.8	131	188,888	90,351	1,013	92	183,052
8/31/2020	12.08	47.8	80	114,734	54,881	1,013	56	111,189
Totals/ Average:	**694.33**	**47.8**	**598**	**24,918,802.7**	**11,919,486**	**1,013**	**12,074**	**24,148,878**
						Maximum:	**438**	**875,832**

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: Sep-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
9/01/2020	6.67	47.8	102	147,276	70,447	1,013	71	142,725
9/02/2020	0.00							
9/03/2020	0.00							
9/04/2020	2.58	47.8	38	55,234	26,420	1,013	27	53,528
9/05/2020	0.92	47.8	9	12,677	6,064	1,013	6	12,286
9/06/2020	6.00	47.8	77	111,515	53,341	1,013	54	108,070
9/07/2020	0.50	47.8	17	23,817	11,392	1,013	12	23,081
9/08/2020	0.00							
9/09/2020	0.00							
9/10/2020	0.00							
9/11/2020	12.83	47.8	331	476,029	227,701	1,013	231	461,321
9/12/2020	24.00	47.8	633	911,868	436,177	1,013	442	883,694
9/13/2020	21.58	47.8	569	819,997	392,232	1,013	397	794,662
9/14/2020	23.75	47.8	615	886,250	423,923	1,013	429	858,867
9/15/2020	20.00	47.8	446	642,554	307,355	1,013	311	622,701
9/16/2020	24.00	47.8	468	673,679	322,243	1,013	326	652,864
9/17/2020	22.17	47.8	455	655,389	313,494	1,013	318	635,139
9/18/2020	24.00	53.0	470	676,113	358,340	1,013	363	725,997
9/19/2020	24.00	53.0	545	784,764	415,925	1,013	421	842,664
9/20/2020	23.58	53.0	552	794,933	421,315	1,013	427	853,583
9/21/2020	14.33	53.0	324	466,189	247,080	1,013	250	500,584
9/22/2020	0.00							
9/23/2020	0.00							
9/24/2020	0.00							
9/25/2020	0.00							
9/26/2020	0.00							
9/27/2020	0.00							
9/28/2020	0.00							
9/29/2020	0.00							
9/30/2020	0.00							
Totals/ Average:	**250.92**	**49.6**	**541**	**8,138,285.2**	**4,033,448**	**1,013**	**4,086**	**8,171,766**
						Maximum:	**442**	**883,694**

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 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - current) source tests.

REDWOOD LANDFILL
Novato, CA

S-65 Engine (#2) Heat Input Rate

MONTH: Oct-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
10/01/2020	0.00							
10/02/2020	0.00							
10/03/2020	0.00							
10/04/2020	0.00							
10/05/2020	0.00							
10/06/2020	10.33	53.0	198	284,418	150,741	1,013	153	305,402
10/07/2020	24.00	53.0	499	718,649	380,884	1,013	386	771,670
10/08/2020	24.00	53.0	547	787,308	417,273	1,013	423	845,396
10/09/2020	24.00	53.0	588	847,351	449,096	1,013	455	909,869
10/10/2020	24.00	53.0	603	868,070	460,077	1,013	466	932,116
10/11/2020	24.00	53.0	604	869,684	460,933	1,013	467	933,850
10/12/2020	24.00	53.0	607	874,333	463,396	1,013	469	938,841
10/13/2020	24.00	53.0	608	875,482	464,005	1,013	470	940,075
10/14/2020	15.58	53.0	397	571,279	302,778	1,013	307	613,428
10/15/2020	13.17	53.0	295	425,331	225,425	1,013	228	456,711
10/16/2020	21.33	53.0	531	765,316	405,617	1,013	411	821,781
10/17/2020	12.42	53.0	263	379,106	200,926	1,013	204	407,076
10/18/2020	19.83	53.0	489	704,334	373,297	1,013	378	756,300
10/19/2020	18.08	53.0	446	642,387	340,465	1,013	345	689,782
10/20/2020	16.42	53.0	303	435,731	230,937	1,013	234	467,879
10/21/2020	20.58	53.0	457	658,320	348,910	1,013	353	706,891
10/22/2020	23.17	53.0	571	822,241	435,788	1,013	441	882,906
10/23/2020	19.67	53.0	528	704,788	373,538	1,013	378	756,787
10/24/2020	24.00	53.0	589	848,430	449,668	1,013	456	911,027
10/25/2020	7.83	53.0	186	267,936	142,006	1,013	144	287,704
10/26/2020	5.75	53.0	110	158,943	84,240	1,013	85	170,670
10/27/2020	5.08	53.0	111	159,459	84,513	1,013	86	171,224
10/28/2020	0.00							
10/29/2020	0.00							
10/30/2020	0.00							
10/31/2020	5.25	53.0	109	157,000	83,210	1,013	84	168,584
Totals/ Average:	**406.50**	**53.0**	**567**	**13,825,894.2**	**7,327,724**	**1,013**	**7,423**	**14,845,969**
						Maximum:	**470**	**940,075**

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 - 9/17/20) and July 21 & 22, 2020 (9/18/20 - current) source tests.

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)
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
May-20	0.00	0.00
June-20	0.00	0.00
July-20	0.00	0.00
August-20	0.00	0.00
September-20	0.00	0.00
October-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 2 - 2020

Date	H_2S Reading (ppm_v)	Calculated TRS (ppm_v)
4/2/20 6:45	973.9	988.5
4/6/20 6:30	918.5	932.3
4/9/20 6:30	936.9	951.0
4/13/20 6:20	976.2	990.8
4/16/20 6:45	943.8	958.0
4/20/20 8:00	899.4	912.9
4/23/20 6:30	941.8	955.9
4/23/20*	603.5	609.1
4/27/20 6:15	921.0	934.9
4/30/20 6:40	905.6	919.2
5/4/20 9:30	921.2	935.0
5/7/20 6:30	952.4	966.7
5/11/20 6:30	961.8	976.3
5/14/20 6:30	910.9	924.6
5/18/20 6:30	875.0	888.1
5/21/20 6:45	958.4	972.7
5/26/20 6:30	893.8	907.2
5/28/20 6:30	906.2	919.8
6/1/20 6:30	920.4	934.2
6/4/20 8:45	856.2	869.1
6/8/20 6:30	1,000.0	1,015.0
6/12/20 6:20	846.2	858.9
6/15/20 9:00	836.9	849.4
6/18/20 6:30	810.7	822.9
6/22/20 6:30	839.3	851.9
6/25/20 6:30	796.4	808.4
6/29/20 6:20	836.5	849.1
Quarterly Average:	894.2	907.5

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 3 - 2020

Date	H_2S Reading (ppm_v)	Calculated TRS (ppm_v)
7/2/20 9:30	787.2	799.0
7/6/20 6:30	814.7	826.9
7/10/20 6:20	881.1	894.3
7/13/20 6:20	902.9	916.4
7/16/20 6:30	900.0	913.5
7/20/20 6:40	859.3	872.2
7/24/20 6:30	876.3	889.4
7/27/20 6:40	909.8	923.5
7/29/20 8:45	879.6	892.8
7/29/20*	888.5	895.0
8/3/20 6:30	849.6	862.3
8/5/20 6:20	926.4	940.3
8/12/20 6:20	782.8	794.5
8/14/20 6:20	778.8	790.4
8/17/20 6:30	775.3	787.0
8/20/20 6:30	811.1	823.3
8/24/20 6:30	782.8	794.5
8/27/20 6:30	856.1	868.9
8/31/20 6:30	850.0	862.8
9/3/20 7:50	1,000.0	1,015.0
9/9/20 6:20	939.3	953.4
9/11/20 6:15	900.0	913.5
9/14/20 6:45	989.0	1,003.8
9/17/20 6:10	878.3	891.5
9/21/20 6:30	821.0	833.3
9/24/20 6:50	921.7	935.5
9/28/20 6:20	852.2	865.0
Quarterly Average:	867.2	879.9

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 4 - 2020

Date	H_2S Reading (ppm_v)	Calculated TRS (ppm_v)
10/1/20 6:45	895.3	908.7
10/5/20 8:30	930.7	944.6
10/6/20 10:30	825.7	838.1
10/6/20*	519.3	525.8
10/12/20 9:15	959.6	974.0
10/15/20 10:15	795.0	807.0
10/19/20 9:15	727.0	737.9
10/22/20 9:10	749.1	760.3
10/27/20 12:10	796.2	808.1
10/29/20 9:25	888.7	902.0
Quarterly Average:	TBD	TBD

H_2S= hydrogen sulfide

ppm_v= parts per million by volume

TRS= total reduced sulfur

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)
2020	1	753	913.5	127.25
2020	2	668	783.8	112.88
2020	3	762	740.4	128.80
2020	4*	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 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. 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.

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 # 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
Dave Bearden
3117 Fite Circle Suite 108
Sacramento, CA 95827
DBearden@scsengineers.com

For Submittal To:
BAAQMD
Marco Hernandez & Gloria Espena
Compliance & Enforcement Division
375 Beale Street, Suite 600
San Francisco, CA 94105
mhernandez@baaqmd.gov & gespena@baaqmd.gov

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**
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.	**Permit to Operate**

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

Redwood Landfill, Inc

BAAQMD Facility # A1179

Annual Compliance Emissions Test Report #20200
Source Test for Landfill Gas Flare - Sources A-60A & S-71

Located at:
Redwood Landfill
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
Attn: Patrick S. Sullivan
3117 Fite Circle Suite 108
Sacramento, CA 95827
psullivan@scsengineers.com

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
sourcetest@baaqmd.gov

Testing Performed On:
July 22nd – 23rd, 2020

Final Report Submitted On:
September 15th, 2020

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-60 A Landfill Gas Flare & S-71 Willexa Gas Treatment & Desorption System 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 & Desorption System (S-71)
Source Test Dates:	July 22nd, - 23rd, 2020
Test Objective:	Determine Compliance with Regulation 8, Rule 34 and Title V Permit A1179, Condition 19867, Permit Condition 25635, Part 13
Test Performed By:	Blue Sky Environmental, Inc 624 San Gabriel Ave., Albany, CA 94706 Guy Worthington (510) 508 3469
Test Parameters:	**Landfill Gas & Willexa Purge Gas** O_2, N_2, CO_2, BTU, THC, CH_4, NMOC, HHV, F-Factor, Sulfur & VOC Species, Volumetric Flow Rate, Landfill Gas **Flare Emissions** THC, CH_4, NMOC, NOx, CO, O_2, SO_2, Volumetric Flow Rate, Temperature.

Table 1.2. Compliance Summary

A60-A@ 1,601°F July 23rd 0931-1245	Average Test	Permit Limit	Compliance Status
NOx, lbs/MMBTU	**0.05**	**0.06**	**In Compliance**
NOx, ppm @ 15% O_2	**12.8**	**15**	**In Compliance**
CO, lbs/MMBTU	**0.10**	**0.20**	**In Compliance**
CO, ppm @ 15% O_2	**40.8**	**82**	**In Compliance**
NMOC, (ppmvd @ 3% O_2 as CH_4)	**6.7**	**30**	**In Compliance**
CH_4 Destruction Efficiency %	**99.978%**	**99%**	**In Compliance**
SO_2, ppm	**1.9**	**300**	**In Compliance**
SO_2, lbs/MMBTU	**0.01**	**1.69**	**In Compliance**

SECTION 2. SOURCE TEST PROGRAM

2.1. Overview

This performance test was conducted to demonstrate that the Enclosed Landfill Gas Flare (A-60-A) and Willexa System Waste Gas Treatment System (S-71) are operating in accordance with the Bay Area Air Quality Management District (BAAQMD) Title V Permit A1179, Regulation 8 Rule 34 and PTO Condition 19867, Part 30 and Condition 25636, Part 4. The A-60 flare is divided into two discrete zones A (larger) and B (smaller). This report also includes the results of sampling the Willexa System Waste Gas (S-71), all of the data presented in the very back section of the report, since there are no compliance limits associated with the results.

2.2. Pollutants Tested

The following EPA and ASTM sampling and analytical methods were used:

EPA 3A	O_2, CO_2
EPA 10	CO
Modified EPA 18	NMOC
EPA 7E	NOx
EPA 6C	SO_2
EPA 4 Part 16.4	Moisture Calculation
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 for the Willexa Waste Gas (S-71) Sampling:

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 22nd and the Flare A60-A on July 23rd, 2020.

2.4. Sampling and Observing Personnel

Guy Worthington and Timothy Eandi representing Blue Sky Environmental, Inc, performed testing.

Fred Parker (Manager), Patrick Madison (Operator) and Sean Johnson 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 also provided the Yokogawa Flare data.

The BAAQMD was notified of the test in a plan submitted by SCS Engineers on June 26th, 2020. A Source Test Protocol acknowledgement was requested and received by SCS Engineers (NST #6010), but no observers were present to witness the testing. A copy of the source test protocol and emails can be found in Appendix I.

2.5. Source/Process Description

The enclosed LFG flare A-60 consists of two Zones, Large A & Small B. 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, sulfurs, siloxanes and chlorinated compounds from up to 1,875 SCFM of landfill gas prior to using as a fuel in the Engines. 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 landfill gas and waste gases flow rate records are contained in Appendix-F. There is no condensate injection.

The A60–A flare was operated at an average of 1,601 Degrees Fahrenheit (°F). The landfill gas methane content averaged 51.1 percent (%) and the average LFG 1,502 SCFM and the Willexa (S-71) was not purging to the Flare during this test.

The Willexa has main four stages (cycles) consisting of multiple steps that are generally described below:

1 Depress Cycle #1 – 1" line, ~100 SCFM initially for a few minutes. This cycle removes the landfill gas from the vessel and sends it to the Flare and introduces O_2 before the regen cycle starts.

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. Depress Cycle #2 – O_2 Purge – 1" line, for ~ 30-45 minutes at ~60 SCFM.
4. Stabilization Cycle – Shuts off valve to flare to stabilize methane.

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 sampling at the mid-point of the A60A Flare stack, the stack was traversed during all 3 runs. Sampling points for the 12 inch diameter stack were 4.3, 14.0, 25.8, 43.0, 90.0, 107.2, 119.0 and 128.7 inches.

Blue Sky Environmental conducted sampling at the mid-point of the Willexa stack, the stack was traversed during all 3 runs. Sampling points for the 12 inch diameter stack were 0.5, 1.3, 2.3, 3.9, 8.1, 9.7, 10.7 and 11.6 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 32 minute test runs were performed on the Flare A60-A on July 23rd, 2020. Waste Gas testing occurred over an approximate 5 hour period on July 22nd, 2020. Testing of the waste gas was performed during the period of highest concentrations of emissions from the Willexa system. The first event is the LFG purge of the 1-inch line to the Flare. The second and third events were integrated samples taken a period spanning Steps 6/7/8 and 9. During this period the flows were recorded using an Shortridge AIRFOIL pitot fixed in the center of the duct approximately every 15 seconds, additional flows were performed using EPA Method 2 using a Standard Pitot.

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).

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.

System Performance Criteria

Instrument Linearity	≤ 2% Full Scale (checked)
Instrument Bias	≤ 5% Full Scale (checked)
System Response Time	≤± 2 minutes (checked)
NOx Converter Efficiency (EPA 7E)	≥ 90% (checked)

Concurrent with the exhaust sampling, Blue Sky collected a total of ten integrated 6-liter summa canister samples. Three LFG samples were collected from the Flare A60-A exhaust and analyzed for M18. An additional three LFG samples were collected from the A-60-A Flare One sample of the Willexa 1" purge line was collected. Three samples of the Willexa 12" purge gas were sampled. . The samples were collected using Teflon tubing connections that were filled and purged prior to sampling. All the samples were analyzed for NMOC, HHV, F-Factor, Fixed Gases and Sulfur Species (incl. H_2S and TRS) and VOC Compounds.

Willexa Gas Samples			
07/22/20	LFG Gas Sample	Willexa Purge Gas Sample 12"	Willexa Purge Gas Sample 1"
Run 1-Step 1 1151-1205	-		1"-1
Run 2-Step 6/7/8 (A) 1220-1325	-	12" 6/7/8 (A)	-
Run 3 –Step 6/7/8 (B) 1331-1638	-	12" 6/7/8 (B)	-
Run 4 – Step 9 (A) + (B) 1439-1638	-	12" – 9 (A) + (B)	-
LFG Gas Samples			
07/23/20	-	-	-
Run 1 0930-1015	R1-LFG-A60	-	-
Run 2 1053-1130	R2-LFG-A60	-	-
Run 3 1200-1300	R3-LFG-A60	-	-
Stack CH_4			
Run 1 0930 -	M18-R1-A60	-	-
Run 2 1053 -	M18-R2-A60	-	-
Run 3 1208 -	M18-R3-A60	-	-

The inlet volumetric Flow Rate and Flare Temperature was continuously measured and recorded by the facility Yokogawa monitors.

3.5. Instrumentation and Analytical Procedures

The following continuous emissions analyzers were used:

Instrumentation	Parameter	Principle
TECO 43C	SO_2	Pulsed Fluorescence
TECO 42C	NO_x	Chemiluminescence
TECO 48C	CO	GFC/IR
Ratfisch RS-55	THC	FID
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.

3.6. Summary and Comments

The measured emissions meet the Permit required limits, no deviations from the protocol or abnormalities during the test were observed.

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 & Quality Assurance Records

H Sampling Train Configuration & Stack Diagrams

I Related Correspondence (Source Test Plan)

J Permit to Operate

K Willexa Purge Gas Characterization Results

- K-1. Summary Tables
- K-2 Calculations
- K-3 Flow Measurements
- K-4 Lab Reports

A
Tabulated Results

TABLE #1

Redwood Landfill
Flare A-60A
1,601°F

RUN	RUN 1	RUN 2	RUN 3	AVERAGE	LIMITS
Test Date	7/23/20	7/23/20	7/23/20		
Test Time	0931-1015	1053-1135	1209-1245		
Test Minutes	30	30	30		
Standard Temp., °F	70	70	70		
Flare Temperature, °F	1,597	1,604	1,601	1,601	
LFG Fuel Flow Rate, SCFM	1,502	1,503	1,501	1,502	
Total Fuel Heat Input, MMBTU/Hr	45.0	46.4	46.4	46.0	
Exhaust Flow Rate, DSCFM (Method 19)	18,818	19,904	19,132	19,285	
Oxygen, O_2, %	13.0	13.2	12.9	13.0	
Carbon Dioxide, CO_2, %	6.8	6.7	7.0	6.9	
Water Vapor, H_2O, %	5.3	5.4	5.7	5.5	
NO, ppm		16.63	17.83	17.2	
NO_2, ppm		0.02	0.39	0.21	
NO_2/NO		0.001	0.022	0.012	
NOx, ppm	16.2	16.6	18.2	17.0	
NOx, ppm @ 15% O_2	**12.2**	**12.7**	**13.4**	**12.8**	**15**
NOx, lbs/hr	2.18	2.36	2.49	2.34	
NOx, lbs/MMBTU	**0.05**	**0.05**	**0.05**	**0.05**	**0.06**
CO, ppm	60.1	62.4	40.2	54.2	
CO, ppm @ 15% O_2	**45.1**	**47.7**	**29.6**	**40.8**	**82**
CO, lbs/hr	4.91	5.40	3.34	4.55	
CO, lbs/MMBTU	**0.11**	**0.12**	**0.07**	**0.10**	**0.20**
Total Reduced Sulfur as H_2S in fuel, ppm	**724**	**797**	**834**	**785**	**410**
SO_2, ppm (calculated)	**1.7**	**1.9**	**2.0**	**1.9**	**300**
SO_2, lbs/hr	0.32	0.37	0.39	0.36	
SO_2, lbs/MMBTU	**0.01**	**0.01**	**0.01**	**0.01**	**1.69**
THC, ppm wet (M25A)	11.9	13.1	7.7	10.9	
THC, ppm dry	12.6	13.9	8.2	11.55	
THC, lbs/hr as CH_4	0.59	0.69	0.39	0.55	
CH_4, ppm (M18)	7.9	11.1	6.8	8.6	
CH_4, lbs/hr	0.4	0.5	0.3	0.4	
NMHC, ppm as CH_4 (M25A/M18)	4.7	2.8	1.4	3.0	
NMHC, lbs/hr as CH_4	0.22	0.14	0.07	0.14	
NMHC, ppm @ 3% O_2 as CH_4	**10.7**	**6.5**	**3.1**	**6.7**	**30**
LFG INLET NMHC ppm as CH_4 (25C)	1,225	1,310	1,299	1,278	**OR**
LFG INLET NMHC lbs/hr as CH_4	4.6	4.9	4.8	4.8	
Total NMHC Removal Efficiency	**95.2%**	**97.2%**	**98.6%**	**>97.0%**	**98**
LFG INLET CH_4 ppm	500,000	516,000	516,000	510,667	
LFG INLET CH_4 lbs/hr	1,864	1,925	1,923	1,904	
CH_4 Removal Efficiency	**99.980%**	**99.972%**	**99.983%**	**99.978%**	**99**
INLET THC (TOC) lbs/hr as CH_4	1,868.9	1,930.1	1,927.5	1,909	
THC (TOC) Removal Efficiency	99.969%	99.964%	99.980%	99.971%	

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
ppm dry = ppm * 100/(100-%H2O)

TABLE #2

Redwood Landfill

Landfill Gas Characterization

RUN			R1-LFG-A60	R2-LFG-A60	R3-LFG-A60	LIMITS
Test Date			7/23/20	7/23/20	7/23/20	
Average TNMHC as Hexane		ppm	204	218	217	
Acrylonitrile		ppb	<25.9	<25.0	<28.3	300
Benzene		ppb	480	538	563	1,500
Benzyl Chloride	Chloromethylbenzene	ppb	<6.47	<6.24	<7.08	500
Carbon Tetrachloride		ppb	<6.47	<6.24	<7.08	200
Chlorobenzene		ppb	51.4	58.0	59.7	200
Chloroethane		ppb	87.9	98.0	113	500
Chloroform		ppb	<6.47	<6.24	<7.08	200
1,1 Dichloroethane	Ethylidene Dichloride	ppb	<6.47	<6.24	<7.08	500
1,1 Dichloroethene	Vinylidene Chloride	ppb	<6.47	<6.24	<7.08	500
1,2 Dichloroethane	Ethylene Dichloride	ppb	103	99.1	105	200
1,4 Dichlorobenzene		ppb	234	238	246	1,000
Ethylbenzene		ppb	1,740	2,140	1,930	4,000
Ethlyene Dibromide	1,2 Dibromoethane	ppb	<6.47	<6.24	<7.08	200
Hexane		ppb	450	470	500	2,000
Isopropyl Alcohol	IPA	ppb	1,120	1,560	1,480	10,000
Methyl Alcohol	Methanol	ppb	3,390	4,860	4,470	300,000
Methyl Ethyl Ketone	MEK	ppb	2,350	3,360	2,950	15,000
Methylene Chloride		ppb	23.7	25.8	29.0	1,000
Methyl tert Butyl Ether	MTBE	ppb	<6.47	<6.24	<7.08	500
Perchloroethylene	Tetrachloroethylene	ppb	52.3	54.7	59.1	1,000
Styrene		ppb	135	134	145	500
Toluene		ppb	2,790	3,430	2,920	20,000
1,1,1 Trichlororethane		ppb	<6.47	<6.24	<7.08	200
1,1,2,2 Tetrachloroethane		ppb	<6.47	<6.24	<7.08	200
Trichloroethylene	Trichloroethene	ppb	50.1	53.5	54.1	500
Vinyl Chloride		ppb	121	126	136	2,000
Xylenes		ppb	3,525	4,450	3,770	20,000
Carbon Disulfide		ppm	<0.065	<0.062	<0.071	
Carbonyl Sulfide		ppm	<0.065	<0.062	<0.071	
Dimethyl Sulfide		ppm	0.253	0.219	0.206	
Ethyl Mercaptan		ppm	0.191	0.195	0.167	
Methyl Mercaptan		ppm	0.836	0.819	0.828	
Hydrogen Sulfide		ppm	718	791	828	
TRS as H2S		ppm	724	797	834	410

TABLE # 3

Redwood Landfill

7/24/19

S-71 Willexa Waste Gas Characterization (Permit Condition 30)

RUN			**1"**	**12"- 6/7/8 (A)**	**12"- 6/7/8 (B)**	**12"- 9 (A) + B**
SOURCE			**1"**	**12"**	**12"**	**12"**
PROCESS STEP			**1**	**6/7/8 (A)**	**6/7/8 (B)**	**9 (A) + B**
Test Date			7/22/20	7/22/20	7/22/20	7/22/20
Test Time			1151-1205	1220-1325	1331-1424	1439-1638
GAS FLOW VELOCITY, FPM			2,930	2,018	2,281	2,276
GAS FLOW RATE, SCFM			16	1,585	1,792	1,788
O_2		%	1.2	21.2	21.2	21.2
N_2		%	10.8	78.2	78.8	78.8
CO_2		%	37.0	0.6	<0.1	<0.2
CH_4		%	51.0%	21.4%	6.4%	4.3%
TRS as H2S		ppm	0.621	0.385	0.276	0.079
NMOC (as Carbon)		ppm	167	85	45	<4.7
NMOC (as Hexane)		ppm	28	14	8	<0.8
Acrylonitrile		ppb	<14.6	<13.3	<14.8	<3.16
Benzene		ppb	<3.64	<3.32	<3.71	<0.79
Benzyl Chloride	Chloromethylbenzene	ppb	<3.64	<3.32	<3.71	<0.79
Carbon Tetrachloride		ppb	<3.64	<3.32	<3.71	<0.79
Chlorobenzene		ppb	<3.64	<3.32	<3.71	<0.79
Chloroethane		ppb	132	176	27.6	<0.79
Chloroform		ppb	<3.64	<3.32	<3.71	<0.79
1,1 Dichloroethane	Ethylidene Dichloride	ppb	11.0	27.2	19.2	<0.79
1,1 Dichloroethene	Vinylidene Chloride	ppb	<3.64	<3.32	<3.71	<0.79
1,2 Dichloroethane	Ethylene Dichloride	ppb	15.9	30.2	15.9	30.2
1,4 Dichlorobenzene		ppb	<3.64	<3.32	<3.71	<0.79
Ethylbenzene		ppb	<3.64	<3.32	<3.71	<0.79
Ethlyene Dibromide	1,2 Dibromoethane	ppb	<3.64	<3.32	<3.71	<0.79
Hexane		ppb	22.3	30.5	13.5	<0.79
Isopropyl Alcohol	IPA	ppb	142	101	356	137
Methyl Alcohol	Methanol	ppb	1,470	1,700	3,930	1,890
Methyl Ethyl Ketone	MEK	ppb	15.4	12.7	137	120
Methylene Chloride		ppb	22.0	47.5	15.3	<1.58
Methyl tert Butyl Ether	MTBE	ppb	<3.64	<3.32	<3.71	<0.79
Perchloroethylene	Tetrachloroethylene	ppb	<3.64	<3.32	<3.71	<0.79
Styrene		ppb	<3.64	<3.32	<3.71	<0.79
Toluene		ppb	<3.64	<3.32	<3.71	<0.79
1,1,1 Trichlororethane		ppb	<3.64	<3.32	<3.71	<0.79
1,1,2,2 Tetrachloroethane		ppb	<3.64	<3.32	<3.71	<0.79
Trichloroethylene	Trichloroethene	ppb	<3.64	<3.32	<3.71	<0.79
Vinyl Chloride		ppb	92.8	33.6	3.84	<0.79
Xylenes		ppb	<10.92	<9.97	<7.50	<2.37
Carbon Disulfide		ppm	0.194	<0.066	<0.074	<0.079
Carbonyl Sulfide		ppm	<0.073	<0.066	<0.074	<0.079
Dimethyl Sulfide		ppm	0.251	0.385	0.276	<0.079
Ethyl Mercaptan		ppm	<0.073	<0.066	<0.074	<0.079
Methyl Mercaptan		ppm	<0.073	<0.066	<0.074	<0.079
Hydrogen Sulfide		ppm	<0.073	<0.066	<0.074	<0.079
TRS as H2S		ppm	0.621	0.385	0.276	<0.079

TNMOC= (Ethane (C2) *2) + Propane (C3)*3) + (Isobutane (C4)*4) + Isopentane (C5)*5) + (Hexanes (C6)*6) + (C6*8)

Redwood Landfill, Inc.

BAAQMD Facility #1179

Annual Compliance Emissions Test Report #20199
Landfill Gas Engines-Source S-64 and S-65

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
3117 Fite Circle, Suite 108
Sacramento, CA 95827

For Submittal To:

Bay Area Air Quality Management District
Attn: Marco Hernandez
Compliance & Enforcement Division
375 Beale Street, Suite 600
San Francisco, CA 94105

Testing Performed On:
July 21st & 22nd, 2020

Final Report Submitted On:
September 18th, 2020

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 are 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 Jeramie Richardson (810) 923-3181, Chuck Arrivas (925) 338-4875 or Guy Worthington at (510) 508 3469.

Jeramie Richardson

Project Manager

TABLE of CONTENTS

SECTION 1. INTRODUCTION

1.1. Summary

Blue Sky Environmental, Inc. was contracted to perform the emissions testing on the S-64 and S-65 Landfill Gas Engines at Redwood Landfill, Inc., 8950 Redwood Highway, Novato, California. This report presents the results of the test program. Table 1 summarizes the source test information. Table 2 and 3 summarize the results compared to the emission limits.

Table 1. Source Test Information

Test Location:	Redwood Landfill, Inc., 8950 Redwood Highway, Novato, California
Source Contact:	Alisha McCutcheon (415) 892-2851
Source Tested:	Landfill Gas Engines #1 (S-64) and #2 (S-65)
Source Test Date:	July 21st & 22nd, 2020
Test Objective:	**Determine Compliance with ATC Condition 25635, Part 13 and 40 CFR 60 Subpart JJJJ**
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, CO_2, BTU, THC, NMOC, HHV, F-Factor, Sulfur & Volumetric Flow Rate **Engine Emissions** THC, NMOC, CH_4, NO_X, CO, O_2, SO_2, PM10 (S-64), NH_3, Formaldehyde (S-64) & Volumetric Flow Rate.

Table 2
Engine #1 Compliance Summary

Engine #1 (S-64)	Average Test Result	Permit Limit (Regulation Limit)	Status
NO_X, gm/BHp-hr	0.06	0.15	In Compliance
CO, gm/BHp-hr	0.29	1.8	In Compliance
SO_2, ppm @ 15% O_2	<0.5	9	In Compliance
SO_2, gm/BHp-hr	<0.01	0.18	In Compliance
Ammonia, ppm @ 15% O_2	0.49	10	In Compliance
NMOC, ppmd @ 15% O_2 as CH_4	3.3	32	In Compliance
NMOC, gm/BHp-hr as CH_4	0.01	0.16	In Compliance
Total Reduced Sulfurs, ppm	0.437	150	In Compliance
Total Particulate, as PM10 (g/BHp)	<0.009	0.10	In Compliance
Formaldehyde, lb/hr	0.0100	0.51	In Compliance
CH_4, ppm @ 15% O_2	687.1	3,000	In Compliance

Table 3
Engine #2 Compliance Summary

Engine #2 (S-65)	Average Test Result	Permit Limit (Regulation Limit)	Status
NO_X, gm/BHp-hr	0.07	0.15	In Compliance
CO, gm/BHp-hr	0.32	1.8	In Compliance
SO_2, ppm @ 15% O_2	<0.5	9	In Compliance
SO_2, gm/BHp-hr	<0.01	0.18	In Compliance
Ammonia, ppm @ 15% O_2	0.68	10	In Compliance
NMOC, ppmd @ 15% O_2 as CH_4	6.1	32	In Compliance
NMOC, gm/BHp-hr as CH_4	0.03	0.16	In Compliance
Total Reduced Sulfurs, ppm	0.164	150	In Compliance
CH_4, ppm @ 15% O_2	756	3,000	In Compliance

SECTION 2. SOURCE TEST PROGRAM

2.1. Overview

This annual test was performed to demonstrate that the S-64 and S-65 landfill gas (LFG) Engines are operating in accordance with the Bay Area Air Quality Management District (BAAQMD) Permit to Operate (PTO) for Facility 1179, Permit Condition 25635, Part 13. Testing also satisfied initial testing requirements of 40 CFR 60, Subpart JJJ – New Source Performance Standards for Spark Ignition Internal Combustion Engines.

2.2. Pollutants Tested

The following BAAQMD, CARB, EPA and ASTM sampling and analytical methods were used:

EPA 3A	CO_2
EPA 10	CO
EPA ALT-078	NMOC, CH_4
EPA 7E	NO_X
EPA 3A	O_2
EPA 6C	SO_2
EPA 19	Flow Rate Calculation, DSCFM
EPA 25C	LFG Gas analysis for NMOC by GC
ASTM 1945/3588	LFG Gas analysis for BTU and F-Factor
ASTM D-5504	Sulfur Species, H_2S and TRS
CARB Method 430	Formaldehyde
BAAQMD ST-1B	NH_3
EPA 5/202	Particulate Matter (PM_{10} as total PM)

2.3. Test Date(s)

Testing was conducted on July 21st & 22nd, 2020.

2.4. Sampling and Observing Personnel

Jeramie Richardson, Chuck Arrivas, Wes Alder and Alex Arrivas representing Blue Sky Environmental, Inc., performed the testing.

Dave Bearden of SCS Engineers and Fred Parker, Patrick Madison, and Sean Johnson of Waste Management, were present to operate and oversee the Engine operations and assist in coordinating testing and the collection of process data during testing.

The EPA and BAAQMD were notified of the test in a plan submitted by Blue Sky Environmental on June 18th, 2020. A Source Test Protocol acknowledgement (NST #5996) was received by Blue Sky Environmental, but no agency observers were present to witness the testing. A copy of the source test protocol and BAAQMD acknowledgment can be found in Appendix I.

2.5. Source/Process Description

The two identical Caterpillar G3502C, landfill gas Engines are rated for 2,739 brake-horsepower-hour equipped with oxidation catalysts and SCR with urea injection. Engine #1 (S-64) and Engine #2 (S-65) emissions vent through 30-inch diameter stacks (inner diameter approx. 28.5 inches).

2.6. Source Operating Conditions

The operating kilowatt (kW) and fuel flow rate records are contained in Appendix-F.

During the test period Engine #1 (S-64) was operated at an average of 1,933 kW with an average fuel flow rate of 650 Standard Cubic Feet per Minute (SCFM). Engine #2 (S-65) was operated at an average of 1,937 kW with an average fuel flow rate of 655 SCFM.

LFG samples collected at the header of Engine S-64 showed that the Methane quality averaged 53.0 percent (%) and the Oxygen content was 0.67%.

LFG samples collected at the header of Engine S-65 showed that the Methane quality averaged 53.0 percent (%) and the Oxygen content was 0.67%.

Additional data on the LFG samples is contained in Appendix C.

Engine serial numbers and hours of operation at time of test

Engine #1 (S-64), SN: LGS00188, Hours of Operation: 24,753

Engine #2 (S-65), SN: LGS00189, Hours of Operation: 25,466

SECTION 3. SAMPLING AND ANALYSIS PROCEDURES

3.1. Port location

Both the S-64 and S-65 sampling were conducted in the 30-inch diameter ID stacks, via two 4-inch ports, ~4 stack diameters downstream from and ~1½ diameters upstream of nearest disturbances.

3.2. Point description/Labeling – ports/stack

Ammonia and Formaldehyde were sampled from a point mid-stack. The CEM and PM samples were collected from a full traverse across two axis. Traverse points were 0.6, 1.9, 3.4, 5.1, 7.3, 10.3, 18.7, 21.8, 23.9, 25.6, 27.1 and 28.4 inches from the stack wall.

3.3. Sample train descriptions

Sampling system diagrams are included in the Appendix H. Additional descriptive information is included in the following section.

3.4. Sampling procedure descriptions

Three sixty-minute test runs were performed on both Engines for Continuous Emission Monitoring (CEM) gases and Ammonia (NH_3).

Three sixty-minute tests for Particulate Matter (PM) and three thirty-minute test runs for formaldehyde were performed on Engine #1 (S-64).

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 Velocity & Flow Rate by EPA Method 2. This method is used to determine stack gas velocity using a standard or S-type pitot tube and inclined manometer. Temperature is monitored using a K-type thermocouple and calibrated Omega temperature meter. QA/QC procedures include leak checks before and after each traverse to validate the results. Thermometer calibrations are performed using an Omega Model CL-300 calibrator. Geometric calibrations of S-type pitots are performed every 6 months or following modification according to the guidelines in California Air Resources Board (CARB) QA/QC Volume VI, Table 3.

Stack Gas Molecular Weight by EPA Method 3. This method is used to determine the molecular weight of the stack gas. Measurements of gas constituents $\%O_2$ and $\%CO_2$ were made by CARB 100.

Stack Gas Moisture by EPA Method 4. This method is used to determine the moisture content in the gas stream by extracting a sample and condensing the moisture in Greenburg-Smith impingers immersed in an ice bath and in a final impinger silica gel trap. The moisture is condensed in a solution of de-ionized water, or solutions of another type of sampling train if the moisture is being determined as part of another sampling method, such as **EPA Method 5**. The moisture gain in the impinger solutions and silica gel is determined volumetrically and gravimetrically respectively. QA/QC procedures require that a minimum of 21 cubic feet of sample is pulled using a leak tight pump. The sample volume is measured with a calibrated dry gas meter. The impingers are immersed in a ice bath to maintain a gas outlet temperature of <68°F. Pre- -test leak checks are performed for each run at least 15 inches of mercury vacuum. Post-test leak checks are performed at the highest sample vacuum or greater. The leak test is acceptable if the leak rate is less than 0.02 cubic feet per minute or 4% of the average sampling rate, whichever is less. If the final leak check exceeds the criteria, then the volume is corrected based on the leak rate, or the run is voided and repeated.

EPA Method 5 was used to determine the filterable particulate emissions. The sampling equipment consists of a stainless steel or glass or quartz nozzle, a heated stainless steel, inconel, glass or quartz probe/liner, heated filter box and filter holder with glass fiber filter, followed by a Teflon® line and umbilical to four Greenburg-Smith impingers, a pump and a meter control module. Filterable particulate is determined gravimetrically from the probe/nozzle acetone rinse and filter, following evaporation and desiccation of these fractions. The first two impingers contain 100ml of de-ionized water each, a third short-stem impinger is left empty and the fourth impinger contains silica gel desiccant to dry the gas before the pump and gas meter. Moisture is condensed in the solution of de-ionized water and absorbed in the silica gel. The moisture gain in the impinger solutions and silica gel is determined volumetrically and gravimetrically respectively. QA/QC: consists of pitot leak checks performed by pressurizing each leg of the pitot separately to a pressure greater than 3" H_2O. The leak check is passed when no movement in the manometer fluid occurs over 15 seconds. Sampling system leak checks are performed before and after each test run. Sampling system leak checks are performed by capping the nozzle, then pulling a vacuum greater than 15 inches of mercury and observing the meter rate. The leak check is passed, when the leak rate is less than 0.02CFM or 4% of the average sample rate, whichever is less. The final leak check is performed at a vacuum at least as high as the highest vacuum pulled during the run. The impingers are kept in ice to maintain the temperature of the gas exiting the last impinger to below 68°F. No silicone grease is used in the components of the sampling train. The dry gas meter, pitot, thermocouples, gauges and nozzles are all calibrated according to the methods and with a frequency of between 6 to 12 months as specified in CARB QA/QC Volume VI, Table 3. Nozzles are calibrated in the field to within 0.001" diameter and are inspected for damage prior to each test. Acetone rinse blanks were collected using identical equipment, reagents, proportions and techniques as the test samples

EPA Method 202. The concentrations and emission rates of PM_{10} were measured using a combination of EPA Methods 5 and EPA Method 202. The measurements included filterable and condensable particulate matter (CPM). The Method 5 samples were handled as described in the Method. The Method 202 samples were also handled as described in Method 202, including the use of "dry" impingers and the required post-test nitrogen purge.

The apparatus included a quartz sampling nozzle and quartz probe liner attached to a glass filter holder with glass-fiber filter heated to ~250 degrees Fahrenheit. The filter holder was mounted at the end of probe liner, which was then attached to a length of heated Teflon tubing to connect the filter holder to the impinger train. The impinger train was connected to the control box, which contained the sampling pump and dry gas meter. A nozzle size was chosen to allow isokinetic sampling (i.e. within 20%) at all the traverse points at the calculated sampling rate.

The filterable "front-half" PM_{10} was recovered from the sampling apparatus as described in EPA Method 5. The sample fractions included the rinses of the internal sections of the nozzle. probe liner, the front-half of the filter holder, and the filter. The sample fractions were analyzed gravimetrically to determine the concentration of filterable PM_{10}.

The "back-half" contents were recovered and analyzed for condensable PM_{10} as described in EPA Method 202. The probe extension, condenser and first impinger contents were rinsed with water into the second impinger, water was added as necessary for the subsequent purge. Then the condenser and first impinger were reattached to the second impinger and the condenser, impingers and CPM filter was purged with nitrogen for one hour.

After the purge, the sample was recovered in three fractions. These included the CPM filter, the water contents and rinses of the condenser, impingers, and filter holder, and the acetone/hexane rinses of the condenser, impingers, and filter holder. The sample containers were transported to Chips Environmental laboratory for analysis.

Ammonia by BAAQMD Method ST-1B. This method is used to determine the ammonia content in the gas stream by extracting a sample via a Teflon® or stainless-steel probe and condensing/adsorbing the ammonia in two Greenburg-Smith impingers containing 200ml of 0.1N HCl, followed by an empty knock-out impinger and a fourth impinger containing 200g of pre-weighed silica gel. The moisture gained is determined volumetrically and gravimetrically. A minimum of 20 cubic feet of sample is pulled using a leak tight pump and sampling assembly and the volume is measured with a calibrated dry gas meter. Ammonia is determined at the laboratory by analysis using Specific Ion Electrode or Nessler's reagent and a spectrophotometer according to BAAQMD Lab 1A. Results are recorded on the field data sheet. Sampling QA/QC consists of performing sampling system leak checks before and after each test run. Reagent blanks are collected. All the sampling equipment is calibrated according to CARB schedules and documentation is included in the final report. Analytical QA/QC consists of a reagent blank, and laboratory blanks, and duplicates. **Ammonia Lab Analysis by BAAQMD Method 1A.** This method is used to determine the ammonia content in a sample procured using BAAQMD method ST-1B. The Orion 920A meter is calibrated with 1mg/ml ammonia (NH_3) as nitrogen (N_2) and 10mg/ml ammonia as nitrogen. This calibration is performed while using an Orion #95-11 ion specific electrode. The ammonia working standards are produced by diluting 100mg/ml ammonia as Nitrogen with 0.1N HCl in 100:1 and 10:1 ratios respectively. The standards are then enhanced with a pH adjusting ionic strength adjuster to help the electrode read the nitrogen more effectively. When the calibration is completed the meter will calculate a standard curve for the electrode. The standard curve is acceptable between –54mv (millivolts) and –60mv.

After the meter calibration passes and the standard curve is established, a 49ml aliquot of sample is placed into a clean polypropylene beaker, and then enhanced with a pH adjusting ionic strength adjuster. The sample is then placed on top of a magnetic stirrer and a clean Teflon coated magnetic stirring bar is added. The ammonia specific ion electrode is then placed into the samples and a concentration of ammonia (as N_2) is displayed on the meter.

CARB Method 430 was used to determine emissions of aldehyde and ketone compounds. Gaseous emissions are drawn through a short 1/8-inch Teflon sample line and two midget impingers in series, on ice, each containing an 10ml aqueous acidic solution of 2,4-dinitrophenyl-hydrazine (DNPH). Sample is drawn at a rate of 0.1 to 0.5 liters per minute for 12 to 60 minutes. After organic solvent extraction, the samples are analyzed using reverse phase HPLC where target compounds are quantified and identified by comparison of retention times and area counts of the samples with those of standards. Each impinger is analyzed separately.

EPA Method 25A/ALT-078: Sampling for Total Hydrocarbons, Methane and Non-Methane Hydrocarbons. EPA Method 25A (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 are used 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

EPA Method 3A (O_2, CO_2), 6C (SO_2), 10 (CO) and 7E (NO_X): Continuous Emission Monitoring on each engine was conducted in accordance with EPA Methods 6C (SO_2), 7E (NO_X), 10 (CO) and 3A (O_2 and CO_2). 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, 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 (per EPA Methods) was calibrated at the beginning and end of each test run. The calibration gases were selected to fall approximately within 80 to 90 percent of the instrument range. Zero and calibration drift values were determined for each test. All calibration gases are EPA Protocol #1.

System Performance Criteria

Instrument Linearity	≤ 2% Full Scale (complied)
Instrument Bias	≤ 5% Full Scale (complied)
ALT-078 Instrument Linearity	≤ 5% Cal Gas Value
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)

Fuel Samples by ASTM 1945 (fixed Gases, C1-C6+ and CH_4) ASTM 5504 (Sulfurs), 25C (NMOC). Three samples of landfill gas (LFG) were collected per engine (one per run), in 6-liter SILCO SUMMA Canisters. The samples were collected using Teflon tubing connections. The gas sample was controlled with a valve to collect a 60-minute integrated sample. The samples were analyzed for NMOC, HHV, F-Factor and Fixed Gases and Sulfur Species (including H_2S and TRS) by AAC Labs in Ventura.

3.5. Instrumentation and Analytical procedures

The following continuous emissions analyzers were used:

Instrumentation	Parameter	Principle
TECO 42C	$NO_X/NO/NO_2$	Chemiluminescence
TECO 48C	CO	GFC/IR
Servomex 1440	CO_2	IR
Servomex 1440	O_2	Paramagnetic
TECO 43C	SO_2	Pulsed Fluorescence
TECO 55C	$THC/CH_4/NMOC$	FID

All calibration gases are EPA Protocol #1. The analyzer data recording system consists of a Honeywell DPR3000 strip chart recorder, which is supported by a computer-based Data Acquisition System (DAS) known as DasyLAB.

The instrument response was recorded on strip charts and DAS. The averages were corrected for calibration bias and drift using EPA Method 7E equations.

3.6. Comments: Limitations and Data Qualifications

The measured emissions meet the Permit required limits, no deviations from the protocol or abnormalities during the test were observed.

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 Chart Records

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 PTO

A
Tabulated Results

BLUE SKY ENVIRONMENTAL, INC

TABLE #1

Redwood Landfill
Engine #1 (S-64)

RUN	1	2	3	AVERAGE	Limits
Test Date	7/22/20	7/22/20	7/22/20	--	
Test Time	1245-1351	1439-1545	1637-1744	--	
Standard Temp., °F	70	70	70	70	
Generator kW	1,933	1,932	1,934	1,933	
Engine BHp	2,694	2,692	2,694	2,693	
Fuel Flow Rate, SCFM	653	651	645	650	
Fuel Gross Btu/cf @60°F	540	535	537	537	
Fuel Fd Factor, DSCF/MMBtu @60°F	9,306	9,298	9,323	9,309	
Exhaust Flow Rate, DSCFM (M2)	6,038	5,659	5,625	5,774	
Urea Injection Rate, gph	1.06	1.02	1.01	1.03	
SCR Temperature, °F	850	850	850	850	
Oxygen, O_2, %	9.8	9.8	9.9	9.8	
Carbon Dioxide, CO_2 %	9.8	9.7	9.9	9.8	
Water Vapor, H_2O, %	11.02	10.65	10.83	10.83	
NOx, ppm	8.1	7.8	7.9	7.9	
NOx, ppm @ 15% O_2	**4.3**	**4.1**	**4.2**	**4.2**	
NOx, lbs/hr	0.35	0.31	0.32	0.33	
NOx, gm/BHp-hr	**0.06**	**0.05**	**0.05**	**0.06**	**0.15**
CO, ppm	67.5	68.3	72.5	69.4	
CO, ppm @ 15% O_2	**36.0**	**36.3**	**38.8**	**37.0**	
CO, lbs/hr	1.77	1.68	1.77	1.74	
CO, gm/BHp-hr	**0.30**	**0.28**	**0.30**	**0.29**	**1.80**
SO_2, ppm	<1.0	<1.0	<1.0	<1.0	
SO_2, ppm @ 15% O_2	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**9**
SO_2, lbs/hr	<0.06	<0.06	<0.06	<0.06	
SO_2, gm/BHp-hr	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**0.18**
Ammonia, ppm	1.08	0.91	0.78	0.92	
Ammonia, ppm @ 15% O_2	**0.58**	**0.48**	**0.42**	**0.49**	**10**
NMOC, ppmd as Methane (wet)(ALT 078)	5.1	5.4	5.8	5.5	
NMOC, ppmd as Methane (dry)	5.8	6.1	6.6	6.1	
NMOC, ppmd as Propane	1.9	2.0	2.2	2.0	
NMOC, ppmd @ 15% O_2 as Methane	**3.1**	**3.2**	**3.5**	**3.3**	**32**
NMOC, lbs/hr as Methane (MW=16)	0.09	0.09	0.09	0.09	
NMOC, gm/BHp-hr as Methane	**0.01**	**0.01**	**0.02**	**0.01**	**0.16**
NMOC, ppmd @ 15% O_2 as Propane	1.0	1.1	1.2	1.1	
NMOC, lbs/hr as Propane (MW=44)	0.08	0.08	0.08	0.08	
NMOC, gm/BHp-hr as Propane	0.01	0.01	0.01	0.01	
CH_4, ppm (wet)(ALT 078)	1,150.4	1,135.6	1,153.1	1,146.4	
CH_4, ppmd (dry)	1292.9	1270.9	1293.2	1285.7	
CH_4, ppm @ 15% O_2	**688.7**	**676.0**	**692.2**	**685.7**	**3,000**
CH_4, lbs/hr as Methane	19.38	17.85	18.06	18.4	
CH_4, gm/BHp-hr as Methane	3.26	3.01	3.04	3.10	
THC, ppmd as Methane (dry)	1,298.7	1,277.0	1,299.8	1,291.8	
THC, lbs/hr as Methane	19.47	17.94	18.15	18.52	
THC gm/BHp-hr as Methane	3.28	3.02	3.06	3.12	
Inlet CH_4, ppmd as Methane (dry)	533,000	528,000	530,000	530,333	
Inlet CH_4, lbs/hr as Methane	864	853	848	855	
CH_4 Removal Efficiency	**>97.8%**	**>97.9%**	**>97.9%**	**>97.8%**	
Total Reduced Sulfurs in LFG (ppm)	**0.457**	**0.444**	**0.411**	**0.437**	**150**

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)
VOC = Volatile Organic Compounds
Methane Molecular Weight = 16
Propane Molecular Weight = 44
SO_2 = Sulfur Dioxide (MW = 64.1)

CALCULATIONS,

PPM @ 15% O_2 = ppm * 5.9 / (20.9 - %O_2)
lbs/hr = ppm * 8.223 E-05 * DSCFM * MW / Tstd. °R
gm/BHp-hr = lbs/hr * 453.6/BHp-hr
Engine BHp = Engine kW * 1.3932 hp/kW
ppm dry = ppm wet *100 / (100-%$H_2$0)

TABLE #2

Method 5 Particulate Emission Test Results
WMI-RLI
Engine #1 (S-64)
1937 kW

RUN #		1	2	3	AVERAGE	LIMITS
TEST DATE		7/22/20	7/22/20	7/22/20		
TEST TIME		1235-1347	1434-1545	1632-1741		
Generator Kw		1,933	1,932	1,934	1,933	
Engine Kw		2,030	2,029	2,030	2,030	
Engine BHp-hr		2,720	2,719	2,720	2,720	
SAMPLE VOLUME	DSCF	35.237	33.313	33.159	33.903	
ISOKINETIC	%	104.4	98.7	98.9	100.7	
DUCT TEMP	°F	839.7	843.1	841.0	841.3	
VELOCITY	Ft/sec	60.64	56.75	57.51	58.30	
FLOW RATE	ACFM	16,699	15,628	15,839	16,055	
FLOW RATE	DSCFM	6,038	5,659	5,625	5,774	
H_2O	%	11.02	10.65	10.83	10.83	
O_2	%	9.82	9.81	9.88	9.84	
CO_2	%	9.83	9.73	9.88	9.81	
Filiterable Particulate (FP)	mg	0.8	<1.7	1.1	<1.2	
	gr/DSCF	0.0004	<0.0008	0.0005	<0.0006	
	lb/hr	0.018	<0.039	0.025	<0.027	
	g/BHp-hr	0.003	<0.006	0.004	<0.005	
Total Particulate	mg	2.5	<2.1	2.3	<2.3	
	gr/DSCF	0.0011	<0.0010	0.0011	<0.0011	
	lb/hr	0.057	<0.047	0.052	<0.052	
	g/BHp-hr	**0.010**	**<0.008**	**0.009**	**<0.009**	**0.1**

Notes: Less than (<) signs precede the method detection limit.

Particulate Concentration (gr/DSCF) = mg/Vmstd x 0.01543 =
Particulate Emission Rate (lb/hr) = 0.00857 x gr/DSCF x DSCFM =
Particulate Emission Factor (g/BHp-hr) = lb/hr * 453.6 / BHp-hr =

TABLE #3

Redwood Landfill
Engine #1 (S-64)
Formaldehyde

RUN		Run 1	Run 2	Run 3	AVG	Limits
Test Date		7/22/20	7/22/20	7/22/20		
Test Time		1317-1347	1514-1544	1711-1742		
Sample Duration	mins	30	30	30		
Standard Temp., °F (Tstd)		70	70	70	70	
Exhaust Flow Rate, DSCFM (M2)		6,038	5,659	5,625	5,774	
Meter yd		1.0504	1.0504	1.0504	1.0504	
Meter Volume, Vm		14.893	15.073	15.017	14.994	
Rotometer Rate LPM		0.5	0.5	0.5	0.5	
Total Liter Volume, Vm corr		15.644	15.833	15.774	15.750	
Avg Meter Temp., °F (Tm)		78.0	94.8	96.3	89.7	
Std. Meter Volume (Vm std)	Liters	15.411	15.124	15.027	15.187	
Formaldehyde, ug/sample		13.43	4.44	3.29	7.05	
Formaldehyde, ug/DSCM		871.5	280.6	208.4	453.5	
Formaldehyde, ppb		690.8	225.8	167.7	361.4	
Formaldehyde, gm/hr		8.94	2.70	1.99	4.55	
Formaldehyde, lbs/hr		**0.0197**	**0.0060**	**0.0044**	**0.0100**	**0.51**

WHERE:

ml = milliliters
gm = grams
ug = micrograms
DSCFM = Dry Standard Cubic Feet per Minute
DSCM = Dry Standard Cubic Meter

CALCULATIONS:

Formaldehyde ppb = 1000*(ug/sample)*24.14/(30.0 Mol.Wt.*Vm std liters)
ug/DSCM = (1000 L/DSCM)* (ug/sample)/(Sample Vol L)
gm/hr = ug/DSCM * (DSCFM*60min-hr/35.3)/(1000000 ug/gm)
Lbs/hr = (gm/hr)/453.6 gm/lb
Vmstd=Vm*Yd*(460+Tstd)/(460+Tm)

BLUE SKY ENVIRONMENTAL, INC

TABLE #4

Redwood Landfill
Engine #2 (S-65)

RUN	1	2	3	AVERAGE	Limits
Test Date	7/21/20	7/21/20	7/21/20	--	
Test Time	1242-1345	1503-1608	1708-1817	--	
Standard Temp., °F	70	70	70	70	
Generator kW	1,946	1,940	1,927	1,937	
Engine BHp	2,710	2,703	2,684	2,699	
Fuel Flow Rate, SCFM	658	655	651	655	
Fuel Gross Btu/cf @60°F	533	540	538	537	
Fuel Fd Factor, DSCF/MMBtu @60°F	9,312	9,298	9,312	9,307	
Exhaust Flow Rate, DSCFM (M2)	5,941	5,938	6,045	5,975	
Urea Injection Rate, gph	1.05	1.05	1.04	1.05	
SCR Temperature, °F	850	850	850	850	
Oxygen, O_2, %	10.3	10.3	9.8	10.1	
Carbon Dioxide, CO_2 %	9.4	9.5	9.5	9.4	
Water Vapor, H_2O, %	9.51	10.68	9.56	9.9	
NOx, ppm	10.3	10.3	10.4	10.4	
NOx, ppm @ 15% O_2	**5.7**	**5.7**	**5.5**	**5.7**	
NOx, lbs/hr	0.44	0.44	0.45	0.44	
NOx, gm/BHp-hr	**0.07**	**0.07**	**0.08**	**0.07**	**0.15**
CO, ppm	74.5	72.0	71.6	72.7	
CO, ppm @ 15% O_2	**41.4**	**40.0**	**38.1**	**39.8**	
CO, lbs/hr	1.92	1.86	1.88	1.89	
CO, gm/BHp-hr	**0.32**	**0.31**	**0.32**	**0.32**	**1.80**
SO_2, ppm	<1.0	<1.0	<1.0	<1.0	
SO_2, ppm @ 15% O_2	**<0.6**	**<0.6**	**<0.5**	**<0.5**	**9**
SO_2, lbs/hr	<0.06	<0.06	<0.06	<0.06	
SO_2, gm/BHp-hr	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**0.18**
Ammonia, ppm	1.37	1.21	1.15	1.25	
Ammonia, ppm @ 15% O_2	**0.76**	**0.67**	**0.61**	**0.68**	**10**
NMOC, ppmd as Methane (wet)(ALT 078)	11.0	10.4	8.6	10.0	
NMOC, ppmd as Methane (dry)	12.1	11.7	9.5	11.1	
NMOC, ppmd as Propane	4.0	3.9	3.2	3.7	
NMOC, ppmd @ 15% O_2 as Methane	**6.7**	**6.5**	**5.1**	**6.1**	**32**
NMOC, lbs/hr as Methane (MW=16)	0.18	0.17	0.14	0.16	
NMOC, gm/BHp-hr as Methane	**0.03**	**0.03**	**0.02**	**0.03**	**0.16**
NMOC, ppmd @ 15% O_2 as Propane	2.24	2.16	1.68	2.02	
NMOC, lbs/hr as Propane (MW=44)	0.16	0.16	0.13	0.15	
NMOC, gm/BHp-hr as Propane	0.03	0.03	0.02	0.03	
CH_4, ppm (wet)(ALT 078)	1,194	1,246	1,292	1,244	
CH_4, ppmd (dry)	1320	1395	1428	1381	
CH_4, ppm @ 15% O_2	**732**	**776**	**761**	**756**	**3,000**
CH_4, lbs/hr as Methane	19.46	20.56	21.43	20.5	
CH_4, gm/BHp-hr as Methane	3.26	3.45	3.62	3.44	
THC, ppmd as Methane (dry)	1,332	1,407	1,438	1,392	
THC, lbs/hr as Methane	19.64	20.73	21.58	20.65	
THC gm/BHp-hr as Methane	3.29	3.48	3.65	3.47	
Inlet CH_4, ppmd as Methane (dry)	526,000	533,000	531,000	530,000	
Inlet CH_4, lbs/hr as Methane	859	867	857	861	
CH_4 Removal Efficiency	**97.7%**	**97.6%**	**97.5%**	**97.6%**	
Total Reduced Sulfurs in LFG (ppm)	**0.147**	**0.170**	**0.175**	**0.164**	**150**

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)
VOC = Volatile Organic Compounds
Methane Molecular Weight = 16
Propane Molecular Weight = 44
SO_2 = Sulfur Dioxide (MW = 64.1)

CALCULATIONS,

PPM @ 15% O_2 = ppm * 5.9 / (20.9 - %O_2)
lbs/hr = ppm * 8.223 E-05 * DSCFM * MW / Tstd. °R
gm/BHp-hr = lbs/hr * 453.6/BHp-hr
Engine BHp = Engine kW * 1.3932 hp/kW
ppm dry = ppm wet *100 / (100-%$H_2$0)

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 Q1	January	1.99	58.03	27.05	29.16	116.23	363.53	1,415.15
	February	0.00	59.56	27.63	25.87	113.07		
	March	0.26	73.87	31.32	28.78	134.22		
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	326.15	1,428.33
	May	0.00	63.49	21.03	25.98	110.50		
	June	0.00	71.80	11.20	20.88	103.87		
2020 Q3	July	0.66	60.39	15.49	21.88	98.42	295.91	1,324.98
	August	0.00	51.93	21.62	24.92	98.47		
	September	0.00	71.80	19.09	8.14	99.02		
2020 Q4	October	0.33	56.26	28.64	13.83	99.05	99.05	1,084.41
	November							
	December							

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 Q1	January	0.02	2.76	0.60	0.32	3.69	11.94	34.46
	February	0.00	2.83	0.62	0.28	3.73		
	March	0.00	3.51	0.70	0.31	4.52		
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	7.62	36.02
	May	0.00	1.52	0.47	0.58	2.58		
	June	0.00	1.72	0.25	0.47	2.44		
2020 Q3	July	0.00	1.45	0.35	0.49	2.29	6.95	30.77
	August	0.00	1.24	0.49	0.56	2.29		
	September	0.00	1.78	0.41	0.18	2.37		
2020 Q4	October	0.00	1.46	0.64	0.33	2.43	2.43	25.46
	November							
	December							

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 Q1	January	0.16	4.66	0.02	0.03	4.86	15.69	51.48
	February	0.00	4.78	0.02	0.02	4.83		
	March	0.02	5.93	0.02	0.02	6.00		
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	0.01	3.64	0.02	0.02	3.69	11.38	58.12
	May	0.00	3.58	0.02	0.02	3.62		
	June	0.00	4.05	0.01	0.02	4.08		
2020 Q3	July	0.04	3.89	0.01	0.02	3.96	11.99	50.61
	August	0.00	3.34	0.02	0.02	3.38		
	September	0.00	4.62	0.01	0.01	4.64		
2020 Q4	October	TBD	TBD	0.02	0.01	TBD	TBD	TBD
	November							
	December							

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.