

November 9, 2022
File No. 07218279.01, Task 3

Mr. Mark Houghton, P.E.
County of San Joaquin
Post Office Box 1810
Stockton, California 95201

Subject: North County Sanitary Landfill, Lodi, California
Summary Report on Monthly Operation, Monitoring and Maintenance (OM&M) of the
Landfill Gas (LFG) Migration Control Facilities for October 2022

Dear Mr. Houghton:

SCS Field Services (SCS) is pleased to provide the County of San Joaquin (County) with the enclosed report summarizing the monthly OM&M services provided at the North County Sanitary Landfill (site) during October 2022. This report includes the results of the well field and blower flare station migration control facilities monitoring for the site for this reporting period.

SCS appreciates the opportunity to be of assistance to the County on this project. As you review the enclosed information, please contact Justin Ruhle at (209) 279-4418 or Art Jones at (209) 345-2062 if you have any questions or comments.

Sincerely,



Justin C. Ruhle
Project Manager
SCS Field Services



Arthur E Jones Jr
DSW Region Manager/VP
SCS Field Services

cc: J. Chandra
J. Acevedo

Encl.



North County Sanitary Landfill Monthly OM&M Report

October 2022

Mr. Mark Houghton, P.E.
County of San Joaquin
Post Office Box 1810
Stockton, California 95201
(209) 468-3066

SCS FIELD SERVICES

07218279.00, Task 3 | November 9, 2022

Mr. Justin C. Ruhle, Project Manager
4730 Enterprise Way, Suite A
Modesto, California 95356
(209) 345-2062

North County Sanitary Landfill Operation, Monitoring and Maintenance Summary Report For October 2022

ROUTINE OPERATION, MONITORING AND MAINTENANCE (OM&M) SERVICES

The North County Landfill site is an organic refuse disposal site. By way of background, organic materials buried in a landfill decompose anaerobically (in the absence of oxygen) producing a combustible gas, which contains approximately 50 to 60 percent methane, 40 to 50 percent carbon dioxide, and trace amounts of various other gases, some of which are odorous. The North County property contains a system to control the combustible gases generated in the landfill.

The gases produced in a landfill can vent vertically to the atmosphere or migrate horizontally through subsurface soil to locations on adjacent properties if it is not actively removed. If the soil surrounding a landfill consists of permeable materials, there is a greater likelihood that the LFG will migrate to off-site locations.

OPERATION CRITERIA

The current Permit to Operate (expiration date November 30, 2021) issued by the San Joaquin Valley Air Pollution Control District (SJVAPCD) delineates the equipment description and operating criteria for the subject system. ***Note that upon receipt of a new permit, SCS requests a copy be sent to verify if any changes in monitoring need to be implemented.***

Additionally, the gas collection system shall be operated in accordance with SJVAPCD and the California Landfill Methane Rules (LMR) such that the surface emissions, measured as methane, do not exceed 500 ppmv at any point on the surface of the landfill or along the transfer path of the gas collection system or above 25 ppmv integrated average in any 50,000 square foot grid area.

State California Code of Regulations (CCR Title 27) requires that solid waste disposal site owners/operators implement LFG control or monitoring provisions to ensure that methane gas concentrations in soil at the property line do not exceed the lower explosive limit (LEL, or 5 percent by volume) and that interiors of on-site structures do not exceed 1.25 percent methane by volume in air. Instrument calibration data is attached to this report.

Testing for methane gas (the combustible component of LFG), oxygen gas, carbon dioxide gas, pressure, and temperature were performed using a Landtec GEM-5000 Gas Analyzer. This instrument measures combustible gas concentrations in air directly on either of two scales: the first as percent by volume of the lower explosive limit (LEL) of methane gas in air (5 percent); the second as percent by volume (0 to 100 percent) in the gas sampled. An instrument calibration table is provided with this report.

SUMMARY OF WELLFIELD MONITORING

LFG MONITORING PROBES

In accordance with the approved schedule, all compliance perimeter monitoring probes are to be tested on a quarterly basis. As previously reported during August 2022, all the compliance and evaluation perimeter gas monitoring probes defined as GW-1 through GW-10 and LSG 11 through LSG 22 were tested and results indicated that no methane gas concentrations above the LEL (5 percent by volume) were detected. These results were included in our third quarter 2022 probe report. The next required quarterly testing is to be performed by the end of December 2022, as directed by the County.

Additionally, as required semi-annually by Waste Discharge Requirements (WDR's), soil pore gas samples were also collected during August 2022, from each evaluation gas monitoring well indicated on the WDR (SSG1D, SG3D and SG6), and analyzed for volatile organics under Method TO-15. These results were provided to County personnel in a separate transmittal. The next required semi-annual testing is to be performed during the first quarter 2023 (January through March).

LFG EXTRACTION WELL TESTING

System adjustments are required whenever an extraction well exhibits an unacceptable change in pressure, methane and/or oxygen gas concentration (which could be due to an overpull or underpull condition). Overpull occurs when the extraction rate of a particular extraction well exceeds that of the LFG generation rate within the radius of influence of the well. During this overpull condition, air can be drawn through the ground surface to the extraction well and then ultimately be injected into the flare. If an excessive overpull condition is allowed to continue for a long period, a significant drop in the methane gas content of the LFG and/or a subsurface landfill fire could occur.

Underpull occurs when the extraction rate of a particular extraction well is less than the generation rate within the radius of influence of the well. This condition could result in off-site subsurface LFG migration and/or surface emissions.

Results of monthly testing and adjusting of accessible LFG interior and perimeter vertical and horizontal extraction wells, performed on October 13, 2022 (Table 1, Appendix A), indicate that all extraction wells were exhibiting normal decomposition with the exception of one location which exhibited a slight overpull condition. These conditions are necessary to maintain operational criteria (e.g. maintain a minimum 1400 degrees Fahrenheit (°F) flare exit gas temperature) at the BFS and to help decrease/control methane gas concentrations at perimeter monitoring probes to below the LEL and to assist in VOC removal. SCS will continue to adjust accessible LFG extraction wells to minimize the amount of overpull while maintaining operational criteria.

On October 13, 2022, SCS personnel continued to perform adjustments to LFG Extraction Well Nos. NCLFGX10 through NCLFGX17.

Finally, during this reporting period, temperatures at LFG extraction wells were monitored and observed to range from 89.2 to 126.9 °F (Table 1, Appendix A). These temperatures are considered to be in the normal to upper range for anaerobic decomposition. SCS will continue to test LFG temperatures at each extraction well on a monthly basis to monitor for abrupt changes. This additional information should provide a better understanding of subsurface conditions at the site.

LFG COLLECTION SYSTEM

Visual observation of the LFG collection system is conducted monthly. During this visit, observations are made to ensure no pipe breakages have occurred and condensate drain sumps remain functional. Minor repairs are completed as required. In previous reports, SCS has provided recommendations for repairs/modifications and will report in future reports when these are completed.

On October 13, 2022, SCS observed the 2-inch wellhead at Horizontal Collector No. HC15 is maxed out and recommends installing a 3-inch QED wellhead. SCS recommends swapping the wellhead at LFG Extraction Well No. GC3A (2-inch) with the wellhead at HC15 (3-inch), therefore requiring only a new Fernco coupling.

Finally, SCS routinely conducts a pressure drop survey (i.e., measurement of main pipeline pressure at various points throughout the LFG collection system). The results of this survey indicated that no major restrictions within the LFG collection system currently exist and all accessible extraction wells are receiving adequate vacuum.

LFG BLOWER/FLARE STATION (BFS)

Visual observation and testing of the LFG BFS is conducted monthly. During this visit, operating parameters are monitored and mechanical and electrical components are checked for workability. Throughout the reporting period, the BFS was set to operate continuously. BFS data is shown in Tables 2 and 3, Appendix A. An Inspection Checklist form is included as Appendix B. Operational hours are tracked by the County. During October 2022, SCS understands the BFS was operated as needed throughout the reporting period.

On October 13, 2022, SCS performed Carbon Monoxide (CO) testing of the flare inlet and observed 0 ppm CO was detected indicating normal decomposition.

As previously reported, SCS observed the upper and lower thermocouples are in need of replacement and can perform this work if requested.

Finally, the flare exit gas temperature was observed to remain above the SJVAPCD 1400 °F prescribed operating criteria during our site visit. During this monitoring event, the lowest flare exit gas temperature observed by SCS was approximately 1552 °F. All other operating parameters remained within acceptable operating limits.

SITE SURFACE OBSERVATION

Visual observation of the landfill surface along the extent of the extraction system is also performed on a monthly basis. Observations for erosion, surface cracks (that might allow LFG to escape or promote air intrusion) and settlement around wells, laterals and main pipelines are conducted.

As previously reported during September 2022, SCS completed the third quarter 2022 LMR/NSPS surface emissions monitoring (SEM). SCS will be presenting the results in our third quarter 2022 SEM report. Please note that according to the County, the SJVAPCD issued an NOV for emissions prior to this event. The next complete SEM event which must be performed on a 25-foot pathway, third quarter 2022, will need to be performed prior to the end of December 2022.

During this reporting period, no settlement that might adversely impact (e.g., allow condensate accumulation such that a complete blockage could occur) the LFG collection system operation was observed.

STANDARD PROVISIONS

This report addresses conditions at the subject site during the reporting period only. Accordingly, we assume no responsibility for any changes that may occur subsequent to our monitoring which could affect the quantity of LFG at the subject site or adjacent properties. The County is responsible for ensuring that SCS and qualified County personnel are the only parties designated to operate and adjust the LFG systems.

NON-ROUTINE SERVICES PERFORMED

- Perform readings of LFG Extraction Well Nos. NCLFGX10 through NCLFGX17 on October 13, 2022.

RECOMMENDED NON-ROUTINE SERVICES

- SCS recommends that the overall flow be increased to reduce possible emissions.
- Replace the two malfunctioning flare exit gas thermocouples.
- Clean the flame arrestor as it has 4.28 inches of pressure on the inlet. Also, inspect and clean the burners as needed.
- Continue to increase extraction rates the new wells and observe the flow/applied pressure on the old wells and adjust as needed.

APPENDIX A
WELLFIELD AND FLARE MONITORING RESULTS
FOR OCTOBER 2022
TABLES 1 THROUGH 3

EXHIBIT B - 1
Table 1. October 2022 - LFG Extraction Well Monitoring Results
North County Sanitary Landfill, Lodi, California

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Init Temp (F)	Adj Temp (F)	Init Static Pressure ("H2O)	Adj Static Pressure ("H2O)	Init Flow (scfm)	Adj Flow (scfm)	System Pressure ("H2O)	Comments
GX-01	10/13/2022 12:58	39.30	32.90	0.00	27.80	89.90	90.00	-2.21	-2.14	8.50	7.70	-28.26	MINIMAL VACUUM SETTING
GX-02	10/13/2022 13:11	45.60	33.60	0.00	20.80	103.80	103.90	-4.21	-4.20	10.50	10.50	-28.26	NO CHANGE
GX-04	10/13/2022 12:55	54.60	36.00	0.00	9.40	96.50	96.70	-12.14	-12.83	43.80	55.00	-27.32	INCREASED FLOW/VACUUM
GX-05	10/13/2022 12:52	45.00	34.10	0.00	20.90	91.70	91.80	-0.87	-0.87	9.70	9.70	-27.68	NO CHANGE
GX-06	10/13/2022 12:49	52.30	37.80	0.00	9.90	103.50	104.00	-4.72	-4.80	16.90	20.10	-24.47	INCREASED FLOW/VACUUM
GX-07	10/13/2022 13:23	37.40	32.50	0.00	30.10	115.50	115.60	-1.50	-1.50	8.10	8.10	-28.28	MINIMAL VACUUM SETTING
NCLFGX3A	10/13/2022 13:08	49.50	38.50	0.00	12.00	106.00	106.00	-0.15	-0.15	4.70	3.90	-27.98	
NCLFGX08	10/13/2022 12:38	55.80	38.70	0.00	5.50	119.10	119.10	-25.94	-25.93	42.40	42.40	-26.69	VALVE FULL OPEN
NCLFGX09	10/13/2022 12:41	57.80	39.50	0.00	2.70	126.80	126.90	-26.20	-26.20	51.80	53.80	-27.66	VALVE FULL OPEN
NCLFGX10	10/13/2022 13:01	50.20	37.30	0.00	12.50	102.60	102.80	-1.40	-1.41	17.60	17.60	-27.62	NO CHANGE
NCLFGX11	10/13/2022 13:04	47.00	35.90	0.00	17.10	92.10	92.10	-0.34	-0.35	6.40	6.20	-28.01	MINIMAL VACUUM SETTING
NCLFGX12	10/13/2022 12:27	48.30	36.80	0.00	14.90	98.00	98.30	-0.11	-0.15	9.00	11.40	-28.32	
NCLFGX13	10/13/2022 12:29	52.80	37.60	0.00	9.60	103.10	103.70	-2.14	-2.32	9.50	13.80	-28.39	INCREASED FLOW/VACUUM
NCLFGX14	10/13/2022 12:20	48.10	37.50	0.00	14.40	111.00	111.00	-3.24	-2.87	15.70	12.30	-28.59	DECREASED FLOW/VACUUM
NCLFGX15	10/13/2022 12:23	46.40	35.90	0.00	17.70	104.90	99.70	-0.74	-0.62	4.30	8.80	-28.13	
NCLFGX16	10/13/2022 12:32	52.20	37.90	0.00	9.90	109.80	110.10	-3.00	-3.52	16.10	22.80	-28.03	INCREASED FLOW/VACUUM
NCLFGX17	10/13/2022 12:34	52.40	37.80	0.00	9.80	115.60	115.60	-6.01	-7.15	11.70	16.00	-28.35	INCREASED FLOW/VACUUM
HC06	10/13/2022 12:44	60.30	39.70	0.00	0.00	98.60	99.10	-28.42	-28.38	0.00	0.00		VALVE FULL OPEN
HC6W	10/13/2022 11:55	6.80	16.90	4.70	71.60	91.80	90.10	-19.65	-15.15	2.60	13.20	-27.97	MINIMAL VACUUM SETTING
HC07	10/13/2022 12:02	47.20	37.10	0.00	15.70	94.80	95.00	-18.50	-14.57	92.30	66.40	-31.17	DECREASED FLOW/VACUUM
HC11	10/13/2022 11:58	56.30	40.70	0.00	3.00	114.40	114.40	-19.25	-19.24	80.10	80.20	-28.85	VALVE FULL OPEN
HC13	10/13/2022 13:20	55.30	39.60	0.00	5.10	101.20	101.10	-28.05	-28.05	0.00	0.00		VALVE FULL OPEN
HC14	10/13/2022 12:08	46.10	37.10	0.00	16.80	100.50	101.20	-21.38	-20.23	58.80	51.40	-28.21	DECREASED FLOW/VACUUM
HC15	10/13/2022 12:11	54.30	44.90	0.00	0.80	102.00	101.80	-5.05	-6.07			-29.58	INCREASED FLOW/VACUUM
NCLFMP02	10/13/2022 11:48	50.50	39.50	0.00	10.00	89.20	89.30	-29.59	-29.56	0.00	0.00		
NCLFMP03	10/13/2022 11:46	52.90	38.40	0.00	8.70	91.90	91.90	-29.54	-29.54	0.00	0.00		
NCLFMP05	10/13/2022 13:20	54.60	39.70	0.00	5.70	100.90	100.90	-28.05	-28.04	0.00	0.00		
NCLFX4EH	10/13/2022 13:15	49.10	36.50	0.00	14.40	94.50	94.40	-25.36	-25.28	0.00	0.00		
NCLFX4EV	10/13/2022 13:14	48.90	36.00	0.00	15.10	93.10	93.30	-25.08	-25.09	0.00	0.00		NO CHANGE
NCLFX5EH	10/13/2022 13:18	48.90	37.50	0.00	13.60	95.30	95.30	-3.49	-3.49	0.00	0.00		
NCLFX5EV	10/13/2022 13:17	48.80	36.40	0.00	14.80	93.90	94.10	-3.53	-3.53	0.00	0.00		NO CHANGE



**Table 2. Blower/Flare Station Data
North County Sanitary Landfill, Lodi, California**

Date	Time	Methane Gas [%Vol]	Oxygen Gas [%Vol]	Carbon Dioxide Gas [%Vol]	Balance Gas [%Vol]	Flow (scfm)	Flare Exit Gas Temp. (F)	Pressure inlet (in-W.C.)	Pressure outlet (in-W.C.)	Temp. inlet (F)	Temp. outlet (F)	Comments
10/13/2022	13:31	51.2	0.0	39.5	9.3	715	1552	-29.0	5.7	98	98	

EXHIBIT B.1
Table 3. Flare Test Port Monitoring Results
North County Sanitary Landfill, Lodi, California

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Init Temp (F)	Adj Temp (F)	Init Static Pressure ("H2O)	Adj Static Pressure ("H2O)	Init Flow (scfm)	Adj Flow (scfm)	Comments
NCLFLARE	10/13/2022 11:32	51.80	39.40	0.00	8.80	88.30	88.40	-30.42	-30.40	680.00	680.00	
NCLFLARE	10/13/2022 13:31	51.20	39.50	0.00	9.30	97.50	97.60	-28.98	-28.97	715.00	715.00	



GEM-5000 Calibration Data - October 2022
North County Sanitary Landfill, Lodi, California

Point Name	Record Date	CH4 (% by vol)	CO2 (% by vol)	O2 (% by vol)	Bal Gas (% by vol)	Comments
NCL50CH4	10/13/2022 11:27	50.00	35.00	0.00	15.00	
NCLF1102	10/13/2022 11:25	0.10	0.20	11.00	88.70	



Weather Data October 2022
North County Sanitary Landfill, Lodi, California

Record Date	Barometric Pressure	Ambient Temp	Precipitation	Wind Speed	Wind Direction	General Weather	Field Technician
10/13/2022	29.88	69.00	0.00	7.00	SE	Light wind	AS



APPENDIX B

**GAS CONTROL SYSTEM INSPECTION CHECKLIST
FOR OCTOBER 2022**

**NORTH COUNTY SANITARY LANDFILL
MONTHLY LFG FLARE STATION INSPECTION CHECKLIST**

DATE: October 13, 2022

By:Anton Svorinich

ITEM	READING		COMMENTS
	Field	Blwr Disch	
Vacuum	-28.97	5.66	BTU Load (millionBTU/hr) = 51.2% CH4 (Measured @ Blower Discharge) x 715 (scfm) x 0.000547 = 20.02 MMBTU/hr
CH ₄	51.2	51.2	
CO ₂	39.5	39.5	
O ₂	0.0	0.0	
Balance	9.3	9.3	
Blower Inlet Vacuum:	-30.88 In. WC		Field Valve 100% Open
Blower on: (circle one)	1*	2	(After switching blowers)
Blower Discharge Temp	115 °F		
Blower Discharge Press	5.66 In. WC		
Auto Shut-off Valve Pressure	80 PSI		
LFG Flow rate	715 SCFM		Flow total-4976796610
Runtime for Blowers:	Blower 1:	67,486 Hrs.	13.0amps
	Blower 2:	61,216 Hrs.	
Flare Temperature: (°F)	1552		Setpoint-1550
Circle the controlling TC	Top TC	71 °F	Needs to be replaced
	Middle TC	1,552 °F	Out-41
	Bottom TC	1,704 °F	Malfunctioning
Flare Temp Set Point	1,550 °F		
Compressor Pressure	120 PSI		Drained condensation
Dryer Suction Pressure	120 PSI		
Pressure Regulator:			
Dryer Discharge	120 PSI		
Air Supply To Sump	80 PSI		
No of Cond. Sump Pump Pulses	730,225		
Main propane:25%, Spare-100%			
MAINTENANCE CHECKLIST:			
OTHER:			
Operation of Blowers(Note any squaeking noises or abnormal sounds)			
Operation of Louvers:			
Operation of air compressor. Any squeaking noises:			
Any leaks in piping:			
Any alarms on PLC:			