



DES
DEPARTMENT OF ENVIRONMENT
AND SUSTAINABILITY



air quality



desert conservation
PROGRAM



sustainability

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PART 70

TECHNICAL SUPPORT DOCUMENT

(STATEMENT of BASIS)

APPLICATION FOR:
Minor Revision

SUBMITTED BY:
Republic Services

FOR:
Sunrise Municipal Solid Waste Landfill
Source: 15033

LOCATION:
1 1/2 Miles east of the intersection of Vegas Valley Drive and Hollywood Boulevard
T21S, R62E, Sections 1 and 12
Las Vegas, Nevada 89142

SIC code 4953, "Refuse Systems"
NAICS code 562212, "Solid Waste Landfill"

TSD Date: January 14, 2025

EXECUTIVE SUMMARY

Republic Silver State Disposal, Inc., Sunrise Municipal Solid Waste Landfill (Sunrise Landfill) is the former primary municipal solid waste landfill for Clark County. The source is located in Hydrographic Area 212 (Las Vegas Valley). Hydrographic Area 212 is designated as attainment for all regulated air pollutants except ozone, for which it was designated as a moderate nonattainment area on January 5, 2023. The designation has not imposed any new requirements at this time. Hydrographic basin 212 was designated a serious nonattainment area for ozone on January 21, 2025. Clark County has drafted or imposed new requirements to address this designation. Hydrographic Area 212 is also subject to a maintenance plan for CO and PM₁₀.

Sunrise landfill stopped accepting waste in October, 1993, but continues to collect landfill gases consisting of CH₄, NMOC, HAPs, and H₂S that are created from anaerobic bacterial decomposition of the organic materials in the solid waste. The collected gasses are sent to an open combustion flare with a minimum destruction efficiency of 98% for target pollutants. The source is subject to 40 CFR Part 62, Subpart OOO and 40 CFR Part 63, Subpart AAAAA. The design capacity of this landfill is greater than or equal to 2.5 million megagrams and 2.5 million cubic meters; therefore, it is subject to Part 70 permitting requirements.

The source is also a source of greenhouse gasses. DAQ will continue to require the permittee to estimate their GHG potential to emit in terms of each individual pollutant (CO₂, CH₄, N₂O, SF₆ etc.) during subsequent permitting actions.

The source falls under SIC code 4953, “Refuse Systems” and NAICS code 562212, “Solid Waste Landfill”. It is a major source for SO₂ and a minor source for PM₁₀, PM_{2.5}, NO_x, CO, VOC, HAP, H₂S, and NMOC.

The following table is a summary of the source’s potential to emit for each regulated air pollutant from all emission units addressed by this Part 70 Operating Permit.

Table 1: Emission Units PTE Summary (TPY)

Pollutants	PM₁₀	PM_{2.5}	NO_x	CO	SO₂	VOC¹	HAPs	H₂S	NMOC²	GHG³
Source PTE	4.18	4.18	10.03	62.67	249.20	8.93	6.69	44.73	22.90	58,353.29
Major Source Thresholds (Title V)	100	100	100	100	100	100	10/25 ⁴	-	-	-
Major Stationary Source Thresholds (PSD)	250	250	-	250	250	-	10/25 ⁴	-	-	-
Major Stationary Source Threshold (Nonattainment)	-	-	100	-	-	100	-	-	-	-

¹ VOC emissions comprise 39% of the NMOC in landfills (Reference: AP-42, Table 2.4-2; revised 11/98).

² Non-methane organic compounds, expressed as hexane.

³ GHG is expressed as CO₂e.

⁴10 tons for any individual hazardous air pollutant or 25 tons for combination of all HAPs.

Clark County Department of Environment and Sustainability (DES) has delegated authority from the U.S. Environmental Protection Agency to implement the requirement of the Part 70 operating permit program (Part 70 OP).

This permit is being issued based on the minor revision application submitted on October 10, 2024.

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ACRONYMS AND ABBREVIATIONS

(These terms may be seen in the Technical Support Document)

AQR	Clark County Air Quality Regulation
ATC	Authority to Construct
CFR	Code of Federal Regulations
CO	carbon monoxide
CO ₂ e	carbon dioxide equivalent
DAQ	Division of Air Quality
DES	Clark County Department of Environment and Sustainability
DOM	date of manufacture
EPA	U.S. Environmental Protection Agency
EU	emission unit
HAP	hazardous air pollutant
hp	horsepower
kW	kilowatts
NAICS	North American Industry Classification System
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO _x	nitrogen oxides
NRS	Nevada Revised Statutes
NSPS	New Source Performance Standard
NSR	New Source Review
OP	Operating Permit
PM _{2.5}	particulate matter less than 2.5 microns in diameter
PM ₁₀	particulate matter less than 10 microns in diameter
PSD	Prevention of Significant Deterioration
PTE	potential to emit
SIC	Standard Industrial Classification
SO ₂	sulfur dioxides
TSD	technical support document
VOC	volatile organic compound

I. SOURCE DESCRIPTION

Sunrise Landfill operates a landfill gas collection system, consisting of 34 wells covering an area of 750 acres, that collects landfill gases generated from anaerobic bacterial decomposition of the organic materials in the solid waste. The collection system is rated at 1,908 scfm, with a capture efficiency of up to 75%. The collection system has a blower capable of drawing 3,000 scfm from the extraction well network.

The collected gas is passed through a knock out drum to remove most remaining condensate before being directed to a non-assisted combustion flare rated at 98% destruction efficiency of the targeted pollutants. Collateral combustion emissions from the flare burner are NO_x, SO₂, CO, PM₁₀, and PM_{2.5}. The flare is equipped with a programmable logic control system or equivalent control system. The control system will automatically activate the propane pilot system. Upon successful ignition, the blowers will be activated and the landfill gas will ignite the flare. In the event of flare-outs, the gas flow will be stopped until re-ignition occurs.

II. PERMITTING HISTORY

The Part 70 operating permit renewal was issued on October 6, 2022. The renewal permit incorporated a significant revision application, submitted on May 18, 2021, which requested to replace the original flare with a new flare with a lower heat-input rating.

III. CURRENT PERMITTING ACTION

The permittee requested the following permit revisions:

1. Removal of the new combustion flare previously identified as EU: A03. This flare was added with the renewal permitting action of 2022. However, the flare was never installed. Instead, the permittee opted to make improvements to the existing flare. These repairs/improvements include replacing the main and pilot thermocouples, installing a new programmable logic controller, and replacing inadequate belts on the blower. These modifications increase the efficiency of the flare and significantly reduce instances of flame failure, thus eliminating the need to replace the original flare.
2. Removal of Condition 3.1.4, which required the permittee to operate the flare at a minimum combustion temperature of 1,400°F. The requirement to maintain a minimum combustion temperature (40 CFR 63.1983(c)(1)(i)) is specific to enclosed combustors. Therefore, it is not applicable to the open flare operated at Sunrise Landfill.
3. Reduce the monitoring frequency requirement for H₂S fugitive emissions from monthly to quarterly. This is consistent with Permit Condition 4.1.18 which allows the permittee to petition DES for a reduction in frequency if records indicate the H₂S emissions are stable for a minimum period of 12 months. The permittee submitted records from July, 2023 to July, 2024. These records were reviewed by the Compliance Division of DES, and it was concluded that the request can be granted. Condition 4.1.16 has been revised to reflect the frequency change from monthly to quarterly. Also, 4.1.18 has been removed from the permit. With the revised monitoring requirement, the condition is no longer applicable. This relaxation of monitoring frequency is within the scope of the minor revision because the source already followed existing condition to remove the monitoring frequency.

IV. EMISSIONS INFORMATION

A. Emission Unit List

Table IV-A-1 lists the emission units at this stationary source.

Table IV-A-1: Emission Unit List

EU	Description	Rating	Make	Model #	Serial #	SCC
A01	Landfill Gas Collection and Combustion Flare, Non-Assisted, Open Flare Design	57.24 MMBtu/hr	LFG Specialties, LLC	PCF1230110	1700	50100410
A02	Landfill Fugitive Emissions	N/A	N/A	N/A	N/A	50100402

B. Applicability Emissions

Permitting applicability is determined by calculating the emissions for all proposed emission units using 8,760 hours of operation (except for emergency generators or fire pumps, which use 500 hours), any inherent controls, any inherent throughput limitations, and the emission factors provided by the manufacturer, by source test results, by EPA AP-42, or by other approved methods. The applicability emissions are included in this evaluation as part of an ongoing assessment of the source's status with every proposed change.

Table III-B-1: Applicability Emissions (tons per year)

Pollutant	PM ₁₀	PM _{2.5}	NO _x	CO	SO ₂	VOC	HAP	H ₂ S	GHG ¹
Source Applicability Emissions	4.18	4.18	10.03	62.67	309.10	8.93	6.69	55.50	58,353.29
Major source Thresholds	100	100	100	100	100	100	10/25 ²	-	75,000
Nonattainment NSR Thresholds	-	-	100	-	-	100	N/A	-	-
PSD Thresholds	250	250	-	250	250	-	-	-	-

¹In units of CO_{2e}

²10 tons for any single HAP or 25 tons for any combination of HAP pollutants.

C. Source-Wide PTE

PTE is calculated to include any controls or limits, whether voluntarily proposed by the permittee or required. PTE does not include insignificant emission units and activities, but does include fugitive emissions.

Table III-C-1: Source-Wide PTE (tons per year)

Pollutants	PM ₁₀	PM _{2.5}	NO _x	CO	SO ₂	VOC	HAPs	H ₂ S	NMOC	GHG ¹
Source PTE	4.18	4.18	10.03	62.67	249.20	8.93	6.69	44.73	22.90	58,353.29

¹In units of CO_{2e}

Table III-C-2: Emissions Increase (tons per year)

Description	PM ₁₀	PM _{2.5}	NO _x	CO	SO ₂	VOC	HAP	H ₂ S	NMOC	GHG ¹
Current Permitting Action	4.18	4.18	10.03	62.67	249.20	8.93	6.69	44.73	22.90	58,353.29
Title V OP issued 10/06/2022	4.18	4.18	10.03	62.67	249.20	8.93	6.69	44.73	22.90	58,353.29
Emissions Increase	0	0	0	0	0	0	0	0	0	0
AQR 12.5.1(d) Minor NSR Significance Levels	7.5	5.0	20	50	20	20	-	5	-	-
AQR 12.2.2(uu) Significance Thresholds	15	10	40	100	40	40	10	10	-	-
RACT/BACT Analysis Required	No	No	No	No	No	No	No	No	No	No

¹In units of CO_{2e}

V. CONTROL TECHNOLOGY

There are no additional control requirements associated with this permitting action. All BACT and RACT requirements established with previous permitting actions remain enforceable.

VI. OPERATIONAL LIMITS

There are no additional operational limitations associated with this permitting action. All operational limits established with previous permitting actions remain enforceable.

VII. REVIEW OF APPLICABLE REGULATIONS

There are no additional applicable local or federal regulations associated with this permitting action. All regulations identified with previous permitting actions remain applicable and enforceable.

VIII. MONITORING

The permittee shall calculate fugitive H₂S emissions on a quarterly basis using ASTM Test Method D5504 (gas chromatography with chemiluminescence detector).

All other monitoring requirements established with previous permitting actions remain enforceable.

IX. PERFORMANCE TESTING

There are no additional performance testing requirements associated with this permitting action. All performance testing methods and frequencies established with previous permitting actions remain enforceable.

X. INCREMENT ANALYSIS

Sunrise Municipal Solid Waste Landfill is a major source in Hydrographic Area 212 (the Las Vegas Valley). Permitted emission units include one flare and fugitive emissions. Since minor source baseline dates for NO_x (October 21, 1988) and SO₂ (June 29, 1979) have been triggered, Prevention of Significant Deterioration (PSD) increment analysis is required.

DAQ modeled the source using AERMOD to track the increment consumption. Stack data submitted by the applicant were supplemented with information available for similar emission units. Five years (2011 to 2015) of meteorological data from the McCarran Station were used in the model. U.S. Geological Survey National Elevation Dataset terrain data were used to calculate elevations. Table X-1 shows the location of the maximum impact, and the potential PSD increment consumed by the source at that location. The impacts are below the PSD increment limits.

Table X-1: PSD Increment Consumption

Pollutant	Averaging Period	Source's PSD Increment Consumption ($\mu\text{g}/\text{m}^3$)	Location of Maximum Impact	
			UTM X (m)	UTM Y (m)
SO ₂	3-hour	82.66 ¹	680600	4001400
SO ₂	24-hour	12.02 ¹	679640	4001811
SO ₂	Annual	2.99	680000	4002400
NO _x	Annual	0.12	680000	4002400

¹ Highest Second High Concentration.

XI. ENVIRONMENTAL JUSTICE

The map and statistical tables included in this section were obtained from the EJ Screen website. As a means to obtain reasonable demographic data, a five mile radius from the center of the source was selected. The area within this circle equates to 78.53 square miles and represents a residential population of 241,011. There are no emission increases associated with this permitting action. As a result, this permitting action will not have an adverse or disparate effect on an underserved population when compared to the general population of Las Vegas. Therefore, an extensive assessment wasn't performed.

Map of Selected Area



Languages Spoken at Home

LANGUAGE	PERCENT
English	52%
Spanish	41%
Other Indo-European	1%
Tagalog (including Filipino)	3%
Other Asian and Pacific Island	1%
Total Non-English	48%

HEALTH INDICATORS					
INDICATOR	VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Low Life Expectancy	21%	20%	59	20%	67
Heart Disease	5.6	5.7	54	5.8	48
Asthma	10.3	10.1	68	10.3	55
Cancer	5.1	6	33	6.4	22
Persons with Disabilities	14.3%	13.7%	60	13.7%	59

CRITICAL SERVICE GAPS					
INDICATOR	VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Broadband Internet	16%	12%	71	13%	70
Lack of Health Insurance	16%	12%	73	9%	86
Housing Burden	Yes	N/A	N/A	N/A	N/A
Transportation Access Burden	Yes	N/A	N/A	N/A	N/A
Food Desert	Yes	N/A	N/A	N/A	N/A

CLIMATE INDICATORS					
INDICATOR	VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Flood Risk	2%	6%	47	12%	22
Wildfire Risk	10%	33%	61	14%	81

Sites reporting to EPA within defined area:

Superfund	0
Hazardous Waste, Treatment, Storage, and Disposal Facilities	5
Water Dischargers	156
Air Pollution	7
Brownfields	2
Toxic Release Inventory	0

Other community features within defined area:

Schools	49
Hospitals	5
Places of Worship	31

Other environmental data:

Air Non-attainment	Yes
Impaired Waters	Yes

Selected location contains American Indian Reservation Lands*	No
Selected location contains a "Justice40 (CEJST)" disadvantaged community	Yes
Selected location contains an EPA IRA disadvantaged community	Yes

SELECTED VARIABLES	VALUE	STATE AVERAGE	PERCENTILE IN STATE	USA AVERAGE	PERCENTILE IN USA
ENVIRONMENTAL BURDEN INDICATORS					
Particulate Matter 2.5 ($\mu\text{g}/\text{m}^3$)	8.7	8.15	63	8.45	67
Ozone (ppb)	68.9	69.2	35	61.8	83
Nitrogen Dioxide (NO_2) (ppbv)	11	10	45	7.8	79
Diesel Particulate Matter ($\mu\text{g}/\text{m}^3$)	0.569	0.388	72	0.191	97
Toxic Releases to Air (toxicity-weighted concentration)	220	1,400	69	4,600	33
Traffic Proximity (daily traffic count/distance to road)	1,800,000	1,800,000	52	1,700,000	69
Lead Paint (% Pre-1960 Housing)	0.018	0.063	64	0.3	18
Superfund Proximity (site count/km distance)	0	0.11	0	0.39	0
RMP Facility Proximity (facility count/km distance)	0.61	0.4	75	0.57	68
Hazardous Waste Proximity (facility count/km distance)	4	3.3	54	3.5	74
Underground Storage Tanks (count/ km^2)	3.1	3.2	65	3.6	70
Wastewater Discharge (toxicity-weighted concentration/m distance)	160000	30000	94	700000	98
Drinking Water Non-Compliance (points)	0.001	0.39	94	2.2	73
SOCIOECONOMIC INDICATORS					
Demographic Index USA	2.2	N/A	N/A	1.34	82
Supplemental Demographic Index USA	2.23	N/A	N/A	1.64	82
Demographic Index State	2.53	1.81	78	N/A	N/A
Supplemental Demographic Index State	1.9	1.44	75	N/A	N/A
People of Color	74%	51%	77	40%	80
Low Income	44%	32%	71	30%	75
Unemployment Rate	9%	7%	69	6%	77
Limited English Speaking Households	10%	6%	79	5%	85
Less Than High School Education	24%	14%	81	11%	87
Under Age 5	6%	5%	66	5%	65
Over Age 64	13%	18%	46	18%	39

XII. PUBLIC PARTICIPATION

Public participation is not required for issuance of a minor revision pursuant to AQR 12.5.2.17.

XIII. ATTACHMENTS

See the following attachment for calculations.

Table A-1. Source PTE Calculations

EU	Rating	Conditions*	PTE (Tons per Year)							
			PM ₁₀ / PM _{2.5}	NO _x	CO	SO ₂	VOCs	HAPs	NMOC	H ₂ S
A01	57.24 MMBtu/hr	1,340,000,000 scf/yr	4.18	10.03	62.67	249.20	0.26	2.11	0.67	0.40
* Based on operating 8,760 hours/year.										
Specifications:			Pollutant		Units		Calculated Emissions			
Flare Capacity	1,908	scfm	PM ₁₀ / PM _{2.5}	lbs/hr	0.95					
Annual Flare Capacity	501,422	MMBtu/hr		tons/yr	4.18					
Assumed % Methane	50%	Percent	NO _x	lbs/hr	2.29					
LFG Heating Value	500	Btu/cf		tons/yr	10.03					
Flare Flow Rate	57.24	MMBtu/hr	CO	lbs/hr	14.31					
	501,422	MMBtu/yr		tons/yr	62.67					
Flare Flow Rate	57.24	MMBtu/hr	SO ₂	lbs/hr	56.90					
	501,422	MMBtu/yr		tons/yr	249.20					
			VOCs	lbs/hr	0.060					
				tons/yr	0.26					
			HAPs	lbs/hr	0.48					
				tons/yr	2.11					
			NMOC	lbs/hr	0.15					
				tons/yr	0.67					
			H ₂ S	lbs/hr	0.0916					
				tons/yr	0.40					
Pollutant			Emission Factor		Units					
	PM ₁₀ / PM _{2.5}	1.67E-02	lb/MMBtu							
	NO _x	4.00E-02	lb/MMBtu							
	CO	2.50E-01	lb/MMBtu							
	SO ₂	9.9E-01	lb/MMBtu							
	VOCs	1.04E-03	lb/MMscf							
	HAPs	8.42E-03	lb/MMBtu							
	NMOC	2.67E-03	lb/MMBtu							
	H ₂ S	1.60E-03	lb/MMBtu							

Table A-2. GHG Calculations

Combustion Source	Unit Rated Throughput (scfm)	Annual Potential Throughput (mmscf)	Annual Potential Methane Generation (mmscf)	Annual Potential CO2 Generation (mmscf)						
Collection System	1,908	1,002.84	501.42	501.42						
Totals	1,908	1,002.84	501.42	501.42						
Potential Emissions										
Combustion Source	Heat Rate (MMBTU/Hr)	Total CO2 (metric tons)	Total CO2 (short tons)	N2O (metric tons CO2 eq.)	N2O (short tons CO2 eq.)	CH4 (metric tons CO2 eq.)	CH4 (short tons CO2 eq.)	Total Potential Emissions CO2 eq. metric tons (CO2+CO2 eq.)	Total Potential Emissions CO2 eq. short tons (U.S tons)	
A01 - Flare	57.240	52,491.24	57,861.10	94.14	103.77	40.11	44.22	52,625.49	58,009.08	
Totals	57.927	52,804.55	58,206.46	99.10	109.24	34.10	37.59	52,937.75	58,353.29	

Applicability Calculations

The following applicability emissions calculations have been carried over from the TSD that accompanied the renewal permit issued on October 6, 2022. These calculations were based on maximum H₂S concentration of 7,200 ppm, which was obtained from a 2020 semiannual emission report.

H₂S: 7,200 ppm @ 1000 scfm (75%) = 309.10 tons of SO₂ per year from the flare

H₂S: 7,200 ppm @ 333 scfm (25%) = 55.0 tons of H₂S per year fugitive

Total H₂S is estimated to be 55.0 tons (fugitive) + 0.50 (controlled from the flare) = 55.5 tons per year.