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:
Reopen for Cause and Minor Revision

SUBMITTED BY:
Republic Dumpco, Inc. and TriAD Environmental Consultants

FOR:
Apex Regional Landfill
Source ID: 395

SIC code 4953, "Refuse Systems"
SIC code 1442, "Construction Sand and Gravel"
SIC code 4911, "Electrical Services"
NAICS code 721120, "Solid Waste Landfill"
NAICS code 721120, "Construction Sand and Gravel Mining"
NAICS code 721120, "Other Electrical Power Generation"

TSD Date: January 20, 2022

EXECUTIVE SUMMARY

Apex Regional Landfill ("Apex") is a municipal solid waste landfill, a producer of construction sand and gravel, and a producer of electrical energy from landfill gas (LFGTE). The source is located in the Garnet Valley hydrographic basin 216, which is designated as attainment for all regulated air pollutants, and operates under Standard Industrial Classification (SIC) Code 4953: Refuse Systems, SIC 1442: Construction Sand and Gravel, SIC 4911: Electrical Services, North American Industrial Classification System (NAICS) Code 562212: Solid Waste Landfill, NAICS 212321: Construction Sand and Gravel Mining, and NAICS Code 221119: Other Electrical Power Generation.

Apex exceeds the major Part 70 source thresholds for NO_X, CO, SO_2, combined HAP, and H_2S. The source is a minor source for PM_{10}, $PM_{2.5}$, and VOC. As the source is neither a pre-defined Categorical Stationary Source, nor a source category that, as of August 7, 1980, was being regulated under Section 111 or 112 of the CAA, fugitive emissions are not included in the evaluation of the source's status for any pollutant except for HAPs. For HAPs, all emission sources, including fugitives, are included when major source status is determined.

The Clark County Department of Environment and Sustainability, Division of Air Quality (DAQ), has permitting responsibilities for all emission units at the source. The permitting history of this source reflects changes in air quality permitting practices, both at the local and federal levels, in response to changing environmental regulations.

The potential emissions for the source are shown in the table below.

Source-Wide PTE (tons per year)

Pollutant	PM_{10}	$PM_{2.5}$	NO_x	CO	SO_2	VOC	HAP	H_2S
Source PTE – Fugitives	221.53	27.71	5.50	29.11	0.00	36.54	32.16	147.27
Source PTE – Non Fugitives	41.83	30.01	122.41	250.25	167.48	38.75	2.06	0.44
Insignificant Activities PTE	1.98	1.98	25.58	14.66	2.41	18.28	0.06	0.00
Source PTE- Major Source Determination[1]	43.81	31.99	147.99	264.91	169.89	57.03	34.28[2]	0.44
Source PTE[3]	263.35	57.72	127.91	279.36	167.48	75.29	34.22	147.71

[1]The emissions include non-fugitive and insignificant emissions. Not a source-wide PTE.
[2] For HAPs, fugitives are included.
[3] Fugitive and non-fugitive emissions included. Insignificant emissions units' PTE not included.

DAQ has been delegated the authority to implement the requirements of the Part 70 Operating Permit program.

This permitting action incorporates the additional Reopen for Causes to include an emissions statement for NOx and/or VOCs and incorporate AQR Section 92 and 94 requirements for fugitive emissions. Based on the information submitted by the applicant on February 26, 2021, the application submitted on April 15, 2021, and a technical review performed by DAQ staff, DAQ proposes a revision of the Part 70 OP for Apex Landfill.

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I. ACRONYMS

Table I-1. Acronyms

Acronym	Term
AQR	Clark County Air Quality Regulation
CAAA	Clean Air Act Amendments
CE	Control efficiency
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CI	Compression ignition
CO	carbon monoxide
DAQ	Division of Air Quality
DES	Department of Environment and Sustainability
EF	emission factor
EPA	U.S. Environmental Protection Agency
EU	emission unit
GHG	greenhouse gases
gpm	gallons per minute
H_2S	Hydrogen sulfide
HAP	hazardous air pollutant
hp	horsepower
ICE	internal combustion engine
kW	kilowatt
LFGTE	landfill gas to energy
MSWL	municipal solid waste landfill
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industry Classification System
NO_x	nitrogen oxides
NRS	Nevada Revised Statutes
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
ppm	parts per million
PSD	Prevention of Significant Deterioration
PTE	potential to emit
RICE	reciprocating internal combustion engine
SCC	Source Classification Codes
SIC	Standard Industrial Classification
SO_2	sulfur dioxide
TDS	total dissolved solids
USGS	United States Geological Survey
VOC	volatile organic compound

II. SOURCE INFORMATION

A. General

Permittee	Republic Dumpco, Inc.
Address (Mailing/Billing):	770 East Sahara Ave., Las Vegas, NV 89104
Source Name:	Apex Regional Landfill
Source Address:	13550 North Las Vegas Blvd. East of Interstate 15/US 93 Junction Las Vegas, NV 89124
Contact:	David Vossmer, General Manager
Telephone Number:	(702) 599-5901
Email:	dvossmer@republicservices.com

B. Source Description

Aggregate Plant

Mined stone is fed into the primary plant by front-end loader where it undergoes initial size reduction before being transported over a series of overland conveyors for further processing. The material is processed through screening, crushing and washing operations to produce various construction aggregates for onsite use as cover material or wholesale delivery to the construction industry. The operations are divided into: Primary Plant, Gabion Plant, Secondary Plant, Sand Plant, Cone Plant, Wash Plant and Landfill Cover Plant. Each plant has the capability to run independently from the primary feed plant and from one another.

Municipal Solid Waste Landfill

Republic's Apex landfill serves as the primary municipal solid waste landfill for Clark County since October of 1993. The types of material the landfill accepts include municipal solid waste, petroleum contaminated soil, asbestos, construction debris, sewage sludge, septic waste, medical waste and dead animal waste. The Municipal Solid Waste Landfill will be open to public waste delivery 24 hours a day, 365 days per year, closing only on recognized holidays.

Container trucks carrying municipal solid waste enter from I-15. Trucks are weighed or measured as they enter the facility by driving over scales. Waste trucks then drive down a paved and an unpaved road before entering the landfill disposal area. Once at the disposal area, trucks are either unloaded using engine driven tippers or end dumped. The tippers advance across the width of active cells until a new lift is started on top of the completed one in a stacking manner. Empty trucks exit the facility the same way they came in.

Republic has a landfill gas collection and control system with an enclosed combustor (Zule Zink Low Emission Flare) flare capable of burning at 136.605 MMBtu/hr or 5,000 cubic feet per minute (EU: W11). The potential SO_2 emissions from the flare are controlled by passing the landfill gas through a Paques THIOPAQ desulfurization system to remove H_2S from the landfill gas prior to it going to the enclosed combustion flare or to the landfill energy plant. The landfill gas consists of methane and CO_2 with small concentrations of NMOC, HAPs and air toxics generated through anaerobic bacterial decomposition of the organic materials in the solid waste. The landfill gas collection system is designed to capture approximately 75% of the landfill gas generated, leaving approximately 25% as fugitive emissions.

Cover material is excavated from the next disposal cell or from borrow areas and processed by Las Vegas Paving to meet landfill specifications. It is then transported to the active cell where it is used as cover material. Cover material is transported from the Las Vegas Paving aggregate plant as needed. Water is used during excavating and various processing activities to control particulate matter. Baghouses are used at each crusher (EUs: A04, A09, A58, A62, A79, A104a, A130 and A151).

Landfill Energy

Republic Services Renewable Energy is located at the Apex Regional Landfill Waste Management Center which is owned and operated by Republic Dumpco, Inc., a subsidiary of Republic Services of Southern Nevada. RSRE combusts LFG in turbines to produce electricity. The energy produced is sold to NV Energy to assist in meeting the 25 percent renewable energy mandate set forth by the State of Nevada (by 2025).

RSRE operates two (2) Solar Taurus landfill gas turbines and a John Zink off-gas flare. RSRE is a major Part 70 source for CO and minor for PM_{10}, NO_X, SO_2, VOC and HAP.

Landfill gas is collected by Republic Services through a system of wells located throughout the Apex Waste Management Center. The collected gas is treated through the desulfurization system and piped to the RSRE facility. The LFG passes through chillers prior to reaching the siloxane treatment skids where 60 percent of siloxane compounds are removed from the LFG. From the siloxane removal system the gas travels to the compressor skids where it is compressed for combustion in two 5.334 MW LFG turbines. The gas is combusted and the associated thermal energy is then converted into electrical energy. The exhaust gases exit to the atmosphere after leaving the turbine and passing through a SCR system for NO_x control. The two gas turbines are subject to the regulatory requirements of 40 CFR Part 60, Subpart KKKK, and 40 CFR Part 63, Subpart YYYY.

RSRE uses a SCR system as the NO_X emissions control system. The original 60 percent manufacturer's guarantee for the catalyst's NO_X removal efficiency was based on an average siloxane concentration of less than 75 ppb in pretreated LFG. This maximum SCR catalyst loading rate and an influent LFG concentration of 2,000 mg/m^3 for non-methane organic compounds (NMOC), were the basis for the design of the Venture system for the siloxane removal and its efficiency. However, the LFG has higher loading rates for both siloxane and NMOC. As a result, the current NO_X removal efficiency has been set to 30 percent by control analysis triggered by a significant revision of the ATC issued on May 19, 2014.

The filters in the siloxane system are regenerated on a regular basis to ensure maximum removal of the siloxane by the system. During the regeneration process, regen gas is sent to a small flare for destruction.

Pig Farm

The source also operates several boilers in the pig farm.

C. Permitting Action

The permittee submitted a response to DAQ's Notification to Reopen the Title V Operating Permit for Cause to include $PM_{2.5}$ emissions in the Part 70 OP. The submittal included $PM_{2.5}$ EF for each emission unit and activity related to processing, transporting, and/or sorting materials. A combination of DAQ default values and site-specific EF were proposed. Supporting documentation of the chosen EF was submitted as well.

Apex also provided notification regarding an electric evaporative unit that will be used at the facility's leachate pond. This floating evaporator's main purpose is to increase the natural evaporation rate to reduce volume in the pond quicker. Due to the negligible emissions generated by the evaporation, it will be listed as an insignificant activity in the Part 70 OP.

In a minor revision application submitted on April 15, 2021, Apex requested the addition of two tipper engines (EUs: W227 and W228). These new units are listed in Table II-C-2.

Table II-C-1 lists the emission units that emit particulate emissions and did not have a $PM_{2.5}$ potential emission quantified. The emission units in the Part 70 OP that are not listed in Table II-C-1 already have $PM_{2.5}$ emissions included in the source PTE.

Table II-C-1: $PM_{2.5}$ Affected Emission Units

EU	Description	Rating	Manufacturer	Model No.	Serial No.
Primary Plant					
A01	Material Unloading	4,825 tons/hr			
A02	Grizzly 1	1,650 tons/hr			
A04	Primary Crusher 1	600 tons/hr	Crush Boss	HSI 400	6356511
A07	Belt System (2 Belts)				
A08	Grizzly 2	600 tons/hr			
A09	Primary Crusher 2	600 tons/hr	Crush Boss	HSI 400	6356536
A12	Belt System (5 Belts)				
A16	Stacker S1				
A17	Belt System (7 Belts)				
A22	Stacker S2				
Gabion Plant					
A23	Belt 13				
A25	Gabion Screen SC1	800 tons/hr	Cedar Rapids	6x16 TD	46531
A27	Belt 14				
A28	Stacker S3				
A30	Belt 15				
A31	Stacker S4				
A33	Belt 16				
A34	Stacker S5				
Secondary Plant					
A35	Belt System (2 Belts)				
A37	Triple Deck Screen SC2	600 tons/hr	JCI	6x20 TD	SAD1554A
A38	Triple Deck Screen SC3	600 tons/hr	JCI	6203-32	97412D32
A40	Belt System (3 Belts)				
A42	Stacker S6				

EU	Description	Rating	Manufacturer	Model No.	Serial No.
A44	Belt System (2 Belts)				
A46	Stacker S7				
A47	Belt Feeders System (2 Belts)				
A49	Belt System (2 Belts)				
A51	Stacker S8				
A52	Belt Feeders System (2 Belts)				
A58	HSI 1 Crusher	400 tons/hr	Crush Boss	HSI 400	101400
A60	Recirculation Belt 33				
Sand Plant					
A62	VSI Crusher 1	200 tons/hr	CEMCO	70	AEV0300170
A65	Screen SC4	300 tons/hr	JCI	6x20 TD	96H05D32
A69	Belt System (3 Belts)				
A72	Stacker S9				
A74	Belt System (3 Belts)				
A77	Stacker S10				
A152	Air Separator	130 tons/hr	Fisher	13’	13-471
Cone Plant					
A79	Cone Crusher 1	300 tons/hr	Nordberg	HP 300	30310657
A82	Triple Deck Screen SC5	450 tons/hr	JCI	6203-32LP	R061494
A83	Triple Deck Screen SC6	450 tons/hr	JCI	7x20 TD	43J0491
A85	Belt System (2 Belts)				
A87	Stacker S11				
A89	Belt System (4 Belts)				
A93	Stacker S12				
A95	Belt System (2 Belts)				
A98	Belt System (5 Belts)				
A102	Stacker S13				
A104a	VSI Crusher 2	150 tons/hr	CEMCO	80	ADEV0399180V
Wash Plant					
A106	Belt Feeder System (2 Belts)				
A108	Triple Deck Screen SC7	605 tons/hr	JCI	6203-32LP	5173980
A109	Triple Deck Screen SC8	605 tons/hr	Cedar Rapids	TSS 6203-32	54400
A112	Sand Screw 1	70 tons/hr			
A113	Sand Screw 2	70 tons/hr			
A114	Belt System (2 Belts)				
A116	Stacker S14				
A118	Belt 60				
A119	Stacker S15				
A122	Belt System (2 Belts)				
A124	Storage Hopper				
A125	Belt 63				
A126	Rock Truck Dumping				
Landfill Cover Plant					
A127	Blasting and Drilling	24,200 ft^2blast			

EU	Description	Rating	Manufacturer	Model No.	Serial No.
A128	Grizzly 3	1,800 tons/hr			
A130	Primary Crusher 2	400 tons/hr	Crush Boss	400	400504
A133	Belt System (2 Belts)				
A136	Screen SC9	1,800 tons/hr	Cedar Rapids	8x20 TD	46531
A138	Belt System (3 Belts)				
A141	Stacker S16				
A143	Belt System (2 Belts)				
A145	Stacker S17				
A147	Belt System (2 Belts)				
A149	Stacker S18				
A151	Cone Crusher 2	200 tons/hr	Svedala	S-3000	03JA08802
Haul Roads					
H01	Haul Road, Paved				
H02	Haul Road, Unpaved				
MSWL					
W01	Soil Treatment Bulk Material Unloading				
	Stationary Grizzly Deck				
	Material Transfer to Soil Treatment Cell				
	Soil Transfer from Soil Treatment Cell				
W05	Cover Material Handing for Waste Placement				
W08	Waste Placement				
W09	Stockpiles: Active/Inactive (cover material)	123.11 acres			

Table II-C-2: New Emission Units

EU	Description	Rating	Manufacturer	Model No.	Serial No.
W227	Diesel Tipper Engine DOM: TBD	172 hp	Caterpillar	C4.4	TBD
W228	Diesel Tipper Engine DOM: TBD	172 hp	Caterpillar	C4.4	TBD

The PTE table in the Executive Summary of the Part 70 OP has been updated as fugitive emissions were incorrectly included in all the emission units in the Primary, Gabion, Secondary, Sand, Cone, Wash, and Landfill Cover Plants (EUs: A01 through A152, excluding A127); the soil treatment units (EUs: W01 and W02); the Process W units (EU: W05); the AST (EU: W06); and the waste placement units. The fugitive emissions now only include blasting and drilling (EUs: A127), the haul roads (EUs: H01 and H02), the stockpiles (EU: W09), and the landfill fugitive emissions (EU: W100).

The Department of Environment and Sustainability (DES), Division of Air Quality (DAQ), has identified this source as possibly emitting 25 tons or more of actual emissions for oxides of nitrogen (NOx) and/or volatile organic compounds (VOCs) in any calendar year. Clark County was required to implement Section 182(a)(3)(B) of the Clean Air Act (CAA) which requires all ozone nonattainment areas to have in place a program that requires emissions statements from stationary sources of NOx and/or VOCs.

Section 12.9.1 of the Clark County Air Quality Regulations (AQRs) codifies this requirement for Clark County and states the following:

1. The Responsible Official of each Stationary Source that emits 25 tons or more of NOx and/or VOC shall submit an Annual Emissions Statement (Statement) to the department for the previous calendar year.
2. Pursuant to CAA Section 182, the Statement must include all actual emissions for all NOx and VOC emitting activities.
3. The Statement shall be submitted to and received by the department on or before March 31 of each year or other date, upon prior notice by the Control Officer, and shall include a certification that the information contained in the Statement is accurate to the best knowledge of the individual certifying the Statement.

A condition requiring submittal of an annual emission statement has been included in the permit.

The source was notified on September 2, 2021, that AQR Section 92 and 94 requirements to control fugitive dust would be added to the Part 70 OP. These new conditions are in Sections III-B-1 and III-B-3 of the Part 70 OP.

In accordance with current DAQ policy, nonroad engine language has been added to the permit and the visible emission checks language has been updated. The boiler/water heater burner efficiency test language has been updated for clarity.

The gasoline storage tank (EU: W06) control requirements have been updated to specific 40 CFR 63, Subpart CCCCCC, language. The previous Part 70 OP contained a condition that the permittee shall perform all applicable requirements contained in Subpart CCCCCC.

As the 57.6 MMBtu/hr flare at the landfill (EU: G27) is an open flare, the permittee is required to perform an EPA Method 22 test at least quarterly. This requirement has been added to the Part 70 OP. As the flare at the energy plant (EU: E03) is an enclosed flare, the Method 22 requirement for this unit is removed in the Part 70 OP. Per an EPA Applicability Determination issued on July 12, 2996, an enclosed flare is considered a vapor combustor, instead of a process flare, and is not subject to the Method 22 requirement of 40 CFR 60.18.

Other corrections to Part 70 OP include:

1. Update the PTE tables to include the condition on which the PTE is based. These conditions are not enforceable permit limits;
2. Correct the Blasting PTE (EU: A127), which was incorrectly calculated as one 1,730,000 square foot blast instead of up to 100 17,300 square foot blasts;
3. Correct typographical errors;
4. Remove the paved road (EU: H01) from the emissions control condition pertaining only to unpaved haul roads;
5. Per 40 CFR Part 60, Subpart KKKK, SO_2 is required to be performance tested annually. SO_2 has been added to the testing conditions pertaining to subsequent performance tests;
6. Method 22 has been removed from the performance testing requirements table, Table III-D-3, as Method 22 is not required for the turbines;

7. Add a requirement for the results of visible emissions observations to be recorded for the aggregate plant and landfill gas to energy plant;
8. Add a requirement that the visible emissions observations at the pig farm be recorded;
9. Add a requirement that the results of the moisture tests (EUs: W01, W02, and W05) be recorded;
10. Add the due date of January 31, per 40 CFR 63, Subpart DDDDD, to the 5-year compliance report requirement for the pig farm boilers (EUs: P01, P02, and P03);
11. Add a condition requiring the source to submit updates to the Landfill Gas Collection and Control Design Plan; and
12. Update the monitoring condition requiring the source to follow the surface monitoring requirements of 40 CFR 60, Subpart WWW, or submit and follow a site-specific surface monitoring.

D. Operating Scenario

No change in the operating of emission units at Apex is requested in this permitting action.

E. Proposed Exemptions

Apex has requested the addition of a floating evaporator to the insignificant activity list. The evaporator is electric. The unit is used to speed up the natural evaporation of the leachate pond.

DAQ agrees with this request.

III. EMISSIONS INFORMATION

A. Total Source Potential to Emit

As the new units (EUs: W227 and W228) are continuous duty engines, the applicability emissions, SDE, and PTE are based on 8,760 hours of operation per year. The inclusion of $PM_{2.5}$ emissions is not included in the emissions increase calculation.

Detailed calculations for each emission unit with its corresponding emission factor can be found in the Attachments section at the end of this document. The calculated source SDE and emission increase are presented in the following tables. The SDE is based on 8,760 hours of operation for all non-fugitive emissions except for the soil treatment operation (EUs: W01 and W02), the cover material handling (EU: W05), and the GDO (EU: W06). As these units do not have a rating, the SDE is based on the operation limit. This calculation also assumes enough LFG to operate the flares and turbines 8,760 hours each.

Table III-A-1: Status Determination Emissions (tons per year)

EU	Conditions	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	VOC	HAP	H_2S
A01-A22	8,760 hrs/yr	9.62	2.92	0.00	0.00	0.00	0.00	0.00	0.00
A23-A34	8,760 hrs/yr	1.60	0.16	0.00	0.00	0.00	0.00	0.00	0.00
A35-A60	8,760 hrs/yr	8.39	1.44	0.00	0.00	0.00	0.00	0.00	0.00
A62-A77, A152	8,760 hrs/yr	2.11	0.97	0.00	0.00	0.00	0.00	0.00	0.00
A79-A104a	8,760 hrs/yr	4.70	1.31	0.00	0.00	0.00	0.00	0.00	0.00
A106-A126	8,760 hrs/yr	0.36	0.19	0.00	0.00	0.00	0.00	0.00	0.00
A128-A151	8,760 hrs/yr	8.86	1.68	0.00	0.00	0.00	0.00	0.00	0.00
E01	8,760 hrs/yr	6.65	6.65	32.85	66.58	26.44	9.64	0.43	0.00
E02	8,760 hrs/yr	6.65	6.65	32.85	66.58	26.44	9.64	0.43	0.00
E03	8,760 hrs/yr	0.88	0.88	1.05	3.50	2.00	0.19	0.03	0.00
P01	8,760 hrs/yr	0.16	0.16	3.20	0.80	0.03	0.03	0.01	0.00
P02	8,760 hrs/yr	0.11	0.11	2.08	1.20	0.01	0.16	0.01	0.00
P03	8,760 hrs/yr	0.18	0.18	3.26	1.88	0.01	0.25	0.01	0.00
P04	8,760 hrs/yr	0.16	0.16	4.10	21.34	0.04	1.15	0.03	0.00
W11	2,628 MMSCF/yr	11.16	11.16	14.98	35.90	789.80	7.36	0.56	0.43
G27	1,009.152 MMSCF/yr	4.29	4.29	17.17	93.34	332.58	2.85	1.26	0.05
W01[1]	20,000 tons/yr	0.26	0.08	0.00	0.00	0.00	0.00	0.00	0.00
W02[1]	20,000 tons/yr	0.00	0.00	0.00	0.00	0.00	2.78	0.00	0.00
W05[1]	1,090,951 tons/yr	6.15	1.84	0.00	0.00	0.00	0.00	0.00	0.00
W06	61,771 gal/yr	0.00	0.00	0.00	0.00	0.00	0.40	0.01	0.00
W08	8,760 hrs/yr	1.04	0.33	0.00	0.00	0.00	0.00	0.00	0.00
W214	8,760 hrs/yr	0.36	0.36	7.24	6.28	0.01	2.75	0.05	0.00
W215	8,760 hrs/yr	0.36	0.36	7.24	6.28	0.01	2.75	0.05	0.00
W217	8,760 hrs/yr	0.25	0.25	4.41	2.02	0.01	1.93	0.03	0.00
W219	8,760 hrs/yr	0.03	0.03	3.47	6.07	0.01	0.33	0.05	0.00
W222	8,760 hrs/yr	0.37	0.37	7.52	6.18	0.01	0.67	0.03	0.00
W223	8,760 hrs/yr	0.03	0.03	0.50	6.18	0.01	0.23	0.03	0.00
W224	8,760 hrs/yr	0.03	0.03	0.50	6.18	0.01	0.23	0.03	0.00
W225	8,760 hrs/yr	0.03	0.03	0.50	6.18	0.01	0.23	0.03	0.00
W226	8,760 hrs/yr	0.05	0.05	1.09	13.40	0.02	0.51	0.03	0.00
W227	8,760 hrs/yr	0.02	0.02	0.50	4.33	0.01	0.24	0.03	0.00
W228	8,760 hrs/yr	0.02	0.02	0.50	4.33	0.01	0.24	0.03	0.00
insig		1.98	1.98	25.58	14.66	2.41	18.28	0.06	0.00
Totals		**76.87**	**44.69**	**170.60**	**373.21**	**1,179.88**	**62.85**	**3.23**	**0.48**

[1]SDE are based on permitted operational limits as these emission units are part of the soil treatment operation and cover material processing

Table III-A-2: PTE of New Units and Emissions Increase (tons per year)

EU	Conditions	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	VOC	HAP	H_2S
W227	8,760 hrs/yr	0.02	0.02	0.50	4.33	0.01	0.24	0.03	0
W228	8,760 hrs/yr	0.02	0.02	0.50	4.33	0.01	0.24	0.03	0
$PM_{2.5}$ Emissions from Existing Affected Emission Units[1]		-	32.65	-	-	-	-	-	-
Emissions Increase		0.04	0.04	1.00	8.66	0.02	0.48	0.06	0
Minor NSR Significance Levels		7.5	5.0	20	50	20	20	NA	5

[1]The individual emission units included in this are listed in Table II-C-1 of this document.

The $PM_{2.5}$ emissions from the existing emission units are not included in the emissions increase for NSR purposes, as these units are not new or modified in this action. The emissions are above the minor NSR significance levels, but these emissions are not included in determining if the significance of this permitting action. The $PM_{2.5}$ emissions are included in the table above for clarity of this action.

Table III-A-3: Facility-Wide PTE (tons per year)

Pollutant	PM_{10}	$PM_{2.5}$	NO_x	CO	SO_2	VOC	HAP	H_2S
Aggregate	11.73	2.84	5.50	29.11	0.00	0.00	0.00	0.00
Haul Roads	215.53	26.45	0.00	0.00	0.00	0.00	0.00	0.00
MSWL	22.32	14.65	50.64	117.17	115.65	56.38	33.35	147.71
Pig Farm	0.45	0.45	8.54	3.88	0.05	0.44	0.03	0.00
Landfill Gas to Energy	13.32	13.32	63.23	129.20	51.78	18.47	0.84	0.00
Total	**263.35**	**57.72**	**127.91**	**279.36**	**167.48**	**75.29**	**34.22**	**147.71**

B. Control Technology

A controls analysis is not required in this permitting action as the PTE of the new emission units does not exceed the Minor NSR Significance Levels.

C. Production Limitations

No new production limits are established in this permitting action. The new units have no restrictions on hour of operation.

D. Compliance Demonstration

No new monitoring or recordkeeping conditions are added in this permitting action.

E. Performance Testing

No new performance testing requirements are added in this permitting action.

F. Public Participation

Public participation is required as the emissions increase is greater than the minor NSR significance levels of AQR 12.5.1.

G. Increment

Apex Regional Landfill is a major source in Hydrographic Area 216 (Garnet Valley). Permitted emission units include landfill operations. Since minor source baseline dates for PM_{10} (December 31, 1980), NO_2 (January 24, 1991) and SO_2 (December 31, 1980) have been triggered, Prevention of Significant Deterioration (PSD) increment analysis is required.

DAQ modeled the source using AERMOD to track the increment consumption. The average of 2019 and 2020 actual emissions were used in the model. Stack data submitted by the applicant were supplemented with information available for similar emission units. On-site meteorological data collected at the source from July 2011 to July 2012 were used in the model. U.S. Geological Survey National Elevation Dataset terrain data were used to calculate elevations. Table III-G-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 III-G-1: PSD Increment Consumption

Pollutant	Averaging Period	Source's PSD Increment Consumption (µg/m³)	Location of Maximum Impact	
			UTM X (m)	UTM Y (m)
SO_2	3-hour	54.96[1]	691574	4029555
SO_2	24-hour	11.91[1]	691574	4029555
SO_2	Annual	1.80	691525	4029553
NO_X	Annual	1.97	693200	4029500
PM_{10}	24-hour	21.71[1]	689401	4028556
PM_{10}	Annual	9.05	689401	4028556

[1] Highest Second High Concentration.

IV. REGULATORY REVIEW

No new regulations apply as a result of this permitting action. Existing applicable regulations are unchanged. The new tipper engines (EUs: W227 and W228) are subject to 40 CFR Part 60, Subpart IIII. The engines will meet the emission standards of 40 CFR Part 60, Subpart IIII, by meeting the Tier 4 emissions standards in Table IV-1.

Table IV-1: Tier 4 Emission Standards for the New Tipper Engines, in g/kW-hr

EU	PM	NMHC	NO_X	NMHC + NO_X	CO
W227 and W228	0.02	0.19	0.40	NA	3.5

The boilers at the pig farm (EUs: P01, P02, and P03) are subject to 40 CFR Part 63, Subpart DDDDD. Specifically, all three units are subject to the 5-year boiler tune-up requirement of 40 CFR §63.7540(a)(12) and CFR §63.750(d). The requirements of 40 CFR §63.7540(a)(10) have been removed from the permit, as these apply to boilers greater than 10 MMBtu/hr.

In the TSD for the September 12, 2013, Authority to Construct it was determined that 40 CFR 63, Subpart AAAA, applied to the source. The source will meet these requirements by meeting the 40

CFR 60, Subpart WWW requirements in the permit, and the approved gas collection and control design plan required by these subparts.

V. APPENDIX

Table V-1: Summary of New Emission Units

EU#	W227-W228	**Horsepower:**	172		**Emission Factor (lb/hp-hr)**	**Control Efficiency**	**Potential Emissions**	
Make:	Cat	**Hours/Day:**	24.0				**lb/hr**	**ton/yr**
Model:	C4.4	**Hours/Year**	8760	**PM10**	3.29E-05	0.00%	0.01	0.02
S/N:	TBD			**NOx**	6.58E-04	0.00%	0.11	0.50
				CO	5.75E-03	0.00%	0.99	4.33
Manufacturer Guarantees				**SO_2**	1.21E-05	0.00%	0.01	0.01
PM10	0.02	g/kW-hr		**VOC**	3.12E-04	0.00%	0.05	0.24
NOx	0.4	g/kW-hr		**HAP**	4.52E-05	0.00%	0.01	0.03
CO	3.5	g/kW-hr						
SO_2		g/kW-hr						
VOC	0.19	g/kW-hr						
Engine Type:	Diesel			Diesel Fuel Sulfur Content is 15 ppm (0.0015%)				

Table V-2: Emission Units with $PM_{2.5}$ Added

Primary Plant											
EU	**Rating (tph)**	**Description**	**Throughput**		**PM_{10} EF (lbs/ton)**	**$PM_{2.5}$ EF (lbs/ton)**	**Method**	**PM10 PTE**		**PM2.5 PTE**	
			tons/hr	**tons/yr**				**lbs/hr**	**tons/yr**	**lbs/hr**	**tons/yr**
A01	4,825	Mining/Excavation[1]	4,825.0	4,200,000	0.000092	0.000026	Wet Suppression	0.440	0.19	0.13	0.05
A02	1,650	Grizzly 1[2]	1,650.0	2,400,000	0.000016	0.000005	Wet Suppression	0.030	0.02	0.01	0.01
A04	600	Grizzly to Primary Crusher 1 Primary Crusher 1 [a,b,c] Primary Crusher 1 to Belt 1	600.0	2,100,000			Baghouse	0.034	0.06	0.03	0.06
A07	1,650	2 Belt System (Drop from Grizzly and Belt 1 to Belt 2)	1,650.0	2,400,000	0.000092	0.000026	Wet Suppression	0.150	0.11	0.04	0.03
A08	600	Grizzly 2	600.0	1,800,000	0.000016	0.000005	Wet Suppression	0.010	0.01	0.01	0.01
A09	600	Grizzly 2 to Primary Crusher 2 Primary Crusher 2 [a,b,c] Primary Crusher 2 to Belt 3	600.0	1,800,000			Baghouse	0.034	0.05	0.03	0.05
A12	1,650	3 Belt System (Grizzly to Belt 2, Belt 3 to Belt 4 and Belt 4 to Belt 5)	1,650.0	2,400,000	0.000138	0.000039	Wet Suppression	0.230	0.17	0.06	0.05
	2,500	2 Belt Transfers (Belt 2 to Belt 5 and Belt 5 to Stacker S1)	2,500.0	2,400,000	0.000092	0.000026	Wet Suppression	0.230	0.11	0.07	0.03
A16	2,500	Stacker S1	2,500.0	4,200,000	0.000046	0.000013	Wet Suppression	0.120	0.10	0.03	0.03
A17	2,500	7 Belt System (Belt Feeders 6, 7 and 8 to Belt 9, Belt 9 to Belt 10, Belt 10 to Belt 11, Belt 11 to Belt 12 and Belt 12 to Stacker S2)	2,500.0	4,200,000	0.000322	0.000091	Wet Suppression	0.810	0.68	0.23	0.19
A22	2,500	Stacker S2	2,500.0	4,200,000	0.000046	0.000013	Wet Suppression	0.120	0.10	0.03	0.03
Primary Plant Subtotal								**2.208**	**1.60**	**0.68**	**0.54**

Gabion Plant

EU	Rating (tph)	Description	Throughput		PM_{10} EF (lbs/ton)	$PM_{2.5}$ EF (lbs/ton)	Method	PM10 PTE		PM2.5 PTE	
			tons/hr	tons/yr				lbs/hr	tons/yr	lbs/hr	tons/yr
A23	415	Belt 12 to Belt 13 (From Primary Plant)	415.0	1,000,000	0.000046	0.000013	Wet Suppression	0.02	0.02	0.01	0.01
A25	415	Belt 13 to Gabion Screen SC1	415.0	1,000,000	0.00074	0.00005	Wet Suppression	0.31	0.37	0.01	0.01
		Gabion Screen SC1									
		Gabion Screen SC1 to Belt 14									
		Gabion Screen SC1 to Belt 15									
		Gabion Screen SC1 to Belt 16									
A27	210	Belt 14	210.0	600,000	0.000046	0.000013	Wet Suppression	0.01	0.01	0.01	0.01
A28	210	Stacker S3	210.0	600,000	0.000046	0.000013	Wet Suppression	0.01	0.01	0.01	0.01
A30	105	Belt 15	105.0	300,000	0.000046	0.000013	Wet Suppression	0.01	0.01	0.01	0.01
A31	105	Stacker S4	105.0	300,000	0.000046	0.000013	Wet Suppression	0.01	0.01	0.01	0.01
A33	105	Belt 16	105.0	300,000	0.000046	0.000013	Wet Suppression	0.01	0.01	0.01	0.01
A34	105	Stacker S5	105.0	300,000	0.000046	0.000013	Wet Suppression	0.01	0.01	0.01	0.01
Gabion Plant Subtotal								**0.39**	**0.45**	**0.08**	**0.08**

Secondary Plant

EU	Rating (tph)	Description	Throughput		PM_{10} EF (lbs/ton)	$PM_{2.5}$ EF (lbs/ton)	Method	PM10 PTE		PM2.5 PTE	
			tons/hr	tons/yr				lbs/hr	tons/yr	lbs/hr	tons/yr
A35	1,525	Belt Feeder 17 to Belt 18	1525.0	2,500,000	0.000046	0.000013	Wet Suppression	0.070	0.06	0.02	0.02
A37	900	Belt 18 to Triple Deck Screens SC2 and SC3	900.0	2,475,000	0.000740	0.000050	Wet Suppression	0.670	0.92	0.05	0.060
		Triple Deck Screen SC2									
		Screen SC2 to Belt 19									
		Screen SC2 to Belt 21									
		Screen SC2 to Belt 26									
		Screen SC2 to Belt 31									
A38	900	Triple Deck Screen SC3	900.0	2,475,000	0.000740	0.000050	Wet Suppression	0.670	0.92	0.050	0.06
		Screen SC3 to Belt 21									
		Screen SC3 to Belt 32									
A40	900	2 Belt System (Belt 19 to Belt 20 and Belt 20 to Stacker S6)	900.0	2,250,000	0.000092	0.000026	Wet Suppression	0.080	0.10	0.02	0.03
	900	Belt 32 to Belt 20	900.0	2,250,000	0.000046	0.000013	Wet Suppression	0.040	0.05	0.01	0.01
A42	900	Stacker S6	900.0	2,250,000	0.000046	0.000013	Wet Suppression	0.040	0.05	0.01	0.01
A44	300	2 Belt System (Belt 21 to Belt 22 and Belt 22 to Stacker S7)	300.0	1,125,000	0.000092	0.000026	Wet Suppression	0.030	0.05	0.01	0.01
		Additional Transfer from SC3 (via Belt 21) Included	300.0	1,125,000	0.000046	0.000013		0.010	0.03	0.00	0.00
A46	300	Stacker S7	300.0	1,125,000	0.000046	0.000013	Wet Suppression	0.010	0.03	0.01	0.01
A47	500	2 Belt Feeders to Belt 25	500.0	1,125,000	0.000092	0.000026	Wet Suppression	0.050	0.05	0.01	0.01
A49	500	2 Belt System (Belt 26 to Belt 27 and Belt 27 to Stacker S8)	500.0	1,500,000	0.000092	0.000026	Wet Suppression	0.050	0.07	0.01	0.02
A51	500	Stacker S8	500.0	1,500,000	0.000046	0.000013	Wet Suppression	0.020	0.03	0.01	0.01
A52	500	2 Belt Feeders to Belt 30	500.0	1,500,000	0.000092	0.000026	Wet Suppression	0.050	0.07	0.01	0.02
A58	600	Belt 31 to HSI 1 Crusher	600.0	1,500,000			Baghouse	0.101	0.13	0.101	0.13
		HSI 1 Crusher [a,b]									
		HSI 1 Crusher to Belt 33									
A60	600	Recirculation Belt 33	600.0	1,500,000	0.000046	0.000013	Wet Suppression	0.030	0.03		
Secondary Plant Subtotal								**1.921**	**2.59**	**0.32**	**0.40**

Sand Plant

EU	Rating (tph)	Description	Throughput		PM_{10} EF (lbs/ton)	$PM_{2.5}$ EF (lbs/ton)	Method	PM10 PTE		PM2.5 PTE	
			tons/hr	tons/yr				lbs/hr	tons/yr	lbs/hr	tons/yr
A62	200	Belt 25 to VSI Crusher 1 Belt 35 to VSI Crusher 1 VSI Crusher 1 [a,b] VSI Crusher 1 to Belt 34	200.0	1,100,000			Baghouse	0.042	0.09	0.042	0.09
A65	300	Belt 34 to Screen SC4 Screen SC4 Screen SC4 to Belt 35 Screen SC4 to Belt 39	300.0	1,100,000	0.000740	0.000050	Wet Suppression	0.22	0.41	0.02	0.03
A69	210	3 Belt System (Belt 36 to Belt 37, Belt 37 to Belt 38 and Belt 38 to Stacker S9)	210.0	343,750	0.000138	0.000039	Wet Suppression	0.03	0.02	0.01	0.01
A72	210	Stacker S9	210.0	343,750	0.000046	0.000013	Wet Suppression	0.01	0.01	0.01	0.01
A74	200	3 Belt System (Belt 39 to Belt 40, Belt 40 to Belt 41 and Belt 41 to Stacker S10)	200.0	687,500	0.000138	0.000039	Wet Suppression	0.03	0.05	0.01	0.01
A77	200	Stacker S10	200.0	687,500	0.000046	0.000013	Wet Suppression	0.01	0.02	0.01	0.01
A152	130	Air Separator	130.0	782,925	0.001100	0.001100	Wet Suppression	0.14	0.43	0.14	0.43
Sand Plant Subtotal								**0.34**	**1.03**	**0.10**	**0.59**

Cone Plant

EU	Rating (tph)	Description	Throughput		PM_{10} EF (lbs/ton)	$PM_{2.5}$ EF (lbs/ton)	Method	PM10 PTE		PM2.5 PTE	
			tons/hr	tons/yr				lbs/hr	tons/yr	lbs/hr	tons/yr
A79	300	Belt 30 to Cone Crusher 1 Cone Crusher 1 [a,b] Cone Crusher 1 to Belt 42	300.0	1,400,000			Baghouse	0.0895	0.19	0.09	0.19
A82	450	Belt 42 to Screens SC5 and SC6 Triple Deck Screen SC5 Screen SC5 to Belt 43 Screen SC5 to Belt 49 Screen SC5 to Belt 51	450.0	1,400,000	0.000740	0.00005	Wet Suppression	0.330	0.52	0.02	0.04
A83	450	Triple Deck Screen SC6 Screen SC6 to Belt 45	450.0	1,400,000	0.000740	0.000050	Wet Suppression	0.330	0.52	0.020	0.04
A85	210	2 Belt System (Belt 43 to Belt 44 and Belt 44 to Stacker S11)	210.0	420,000	0.000092	0.000026	Wet Suppression	0.020	0.02	0.01	0.01
A87	210	Stacker S11	210.0	420,000	0.000046	0.000013	Wet Suppression	0.010	0.01	0.01	0.01
A89	300	4 Belt System (Belt 45 to Belt 46, Belt 46 to Belt 47, Belt 47 to Belt 48 and Belt 48 to Stacker S12)	300.0	1,050,000	0.000184	0.000050	Wet Suppression	0.060	0.10	0.02	0.03
A93	300	Stacker S12	300.0	1,050,000	0.000046	0.000013	Wet Suppression	0.010	0.02	0.01	0.01
A95	250	2 Belt System (Belt 49 to Belt 50 and Belt 50 to Belt 30)	250.0	700,000	0.000092	0.000026	Wet Suppression	0.020	0.03	0.01	0.01
A98	450	4 Belt System (Belt 51 to Belt 52, Belt 52 to Belt 53, Belt 53 to Belt 54 and Belt 54 to Stacker S13)	450.0	1,050,000	0.000184	0.000052	Wet Suppression	0.080	0.10	0.02	0.03
	150	Belt 53 to Belt 55	150.0	420,000	0.000046	0.000013	Wet Suppression	0.010	0.01	0.01	0.01
A102	450	Stacker S13	450.0	1,050,000	0.000046	0.000013	Wet Suppression	0.020	0.02	0.01	0.01
A104a	150	Belt 55 to VSI Crusher 2 VSI Crusher 2 [a,b] VSI Crusher 2 to Belt 39	150.0	420,000			Baghouse	0.0895	0.13	0.09	0.13
Cone Plant Subtotal								**1.069**	**1.67**	**0.32**	**0.52**

Wash Plant

EU	Rating (tph)	Description	Throughput		PM_{10} EF (lbs/ton)	$PM_{2.5}$ EF (lbs/ton)	CF^2	Method	PM10 PTE		PM2.5 PTE	
			tons/hr	tons/yr					lbs/hr	tons/yr	lbs/hr	tons/yr
A106	1,200	Belt Feeder 56 to Belt 57	1200.0	2,850,000	0.000046	0.000013	1	Wet Suppression	0.06	0.07	0.02	0.02
A108	605	Belt 57 to Screens SC7 and SC8 Triple Deck Screen SC7 Screen SC7 to Sand Screw 1 Screen SC7 to Belt 61	605.0	1,995,000	0.000740	0.000050	0.0001	Wet	0.01	0.01	0.01	0.01
A109	605	Triple Deck Screen SC8 Screen SC8 to Sand Screw 2 Screen SC8 to Belt 60 Screen SC8 to Belt 61	605.0	1,995,000	0.000740	0.000050	0.0001	Wet	0.01	0.01	0.01	0.01
A112	70	Sand Screw 1 to Belt 58	70.0	342,000	0.000046	0.000013	0.0001	Wet	0.01	0.01	0.01	0.01
A113	70	Sand Screw 2 to Belt 58	70.0	342,000	0.000046	0.000013	0.0001	Wet	0.01	0.01	0.01	0.01
A114	140	2 Belt System (Belt 58 to Belt 59 and Belt 59 to Stacker S14)	140.0	570,000	0.000092	0.000026	0.0001	Wet	0.01	0.01	0.01	0.01
A116	140	Stacker S14	140.0	570,000	0.000046	0.000013	0.0001	Wet	0.01	0.01	0.01	0.01
A118	550	Belt 60 to Stacker S15	550.0	2,565,000	0.000046	0.000013	0.0001	Wet	0.01	0.01	0.01	0.01
A119	550	Stacker S15	550.0	2,565,000	0.000046	0.000013	0.0001	Wet	0.01	0.01	0.01	0.01
A122	415	2 Belt System (Belt 61 to Belt 62 and Belt 62 to Storage Hopper)	415.0	570,000	0.000092	0.000026	0.0001	Wet	0.01	0.01	0.01	0.01
A124	415	Storage Hopper to Belt 63	415.0	570,000	0.000046	0.000013	0.0001	Wet	0.01	0.01	0.01	0.01
A125	415	Belt 63 to Rock Truck	415.0	570,000	0.000046	0.000013	0.0001	Wet	0.01	0.01	0.01	0.01
A126	415	Rock Truck Dumping	415.0	570,000	0.000016	0.000005	0.0001	Wet	0.01	0.01	0.01	0.01
Wash Plant Subtotal									**0.18**	**0.19**	**0.14**	**0.14**

Landfill Cover Plant

EU	Rating	Description	Throughput (A)			Pollutant	EF	PTE	
			ft^2/hr	ft^2/blast	blasts/yr			lbs/yr	tons/yr
A127	NA	Blasting	17300.0	17,300	100	PM_{10}	$EF=0.52[0.000014(A)^{1.5}]$	1656.53	0.83
			17300.0	17,300	100	$PM_{2.5}$	$EF=0.03[0.000014(A)^{1.5}]$	95.57	0.05
			tons/hr	**tons/yr**			**lbs/ton**		
			32.5	1,418	100	NO_X	7.76		
			32.5	1,418	100	CO	41.06		

Landfill Cover Plant

EU	Rating (tph)	Description	Make	Model	Serial	Throughput tons/hr	Throughput tons/yr	PM_{10} EF (lbs/ton)	$PM_{2.5}$ EF (lbs/ton)	CF	Method	PM_{10} PTE lbs/hr	PM_{10} PTE tons/yr	$PM_{2.5}$ PTE lbs/hr	$PM_{2.5}$ PTE tons/yr
A128	1,800	Grizzly 3				1800.0	1,000,000	0.000016	0.0000045	1	Wet Suppression	0.03	0.01	0.01	0.01
A130	400	Grizzly 3 to Primary Crusher 2 Primary Crusher 2 [a,b] Primary Crusher 2 to Belt 64	Crush Boss	400	400504	400.0	1,000,000				Baghouse	0.069	0.09	0.07	0.09
A133	1,400	Grizzly 3 to Belt 64				1400.0	2,000,000	0.000046	0.000013	1	Wet Suppression	0.06	0.05	0.02	0.01
	1,800	2 Belt System (Belt 64 to Belt 65 and Belt 65 to Belt 66)				1800.0	3,000,000	0.000092	0.000026	1		0.17	0.14	0.05	0.04
A136	1,800	Belt 66 to Screen SC9 Belt 75 to Screen SC9 Screen SC9 Screen SC9 to Belt 67 Screen SC9 to Belt 70 Screen SC9 to Belt 72 Screen SC9 to Belt 74	Cedar Rapids	8x20 TD	46531	1800.0	3,000,000	0.000740	0.000050	1	Wet Suppression	1.33	1.11	0.09	0.08
A138	1,000	3 Belt System (Belt 67 to Belt 68, Belt 68 to Belt 69 and Belt 69 to Stacker S16)				1000.0	2,000,000	0.000138	0.000039	1	Wet Suppression	0.14	0.14	0.04	0.04
A141	1,000	Stacker S16				1000.0	2,000,000	0.000046	0.000013	1	Wet Suppression	0.05	0.05	0.01	0.01
A143	500	2 Belt System (Belt 70 to Belt 71 and Belt 71 to Stacker S17)				500.0	1,000,000	0.000092	0.000026	1	Wet Suppression	0.05	0.05	0.01	0.01
A145	500	Stacker S17				500.0	1,000,000	0.000046	0.000013	1	Wet Suppression	0.02	0.02	0.01	0.01
A147	300	2 Belt System (Belt 72 to Belt 73 and Belt 73 to Stacker S18)				300.0	500,000	0.000092	0.000026	1	Wet Suppression	0.03	0.02	0.01	0.01
A149	300	Stacker S18				300.0	500,000	0.000046	0.000013	1	Wet Suppression	0.01	0.01	0.01	0.01
A151	200	Belt 74 to Cone Crusher 2 Cone Crusher 2 Cone Crusher 2 to Belt 75	Svedala	S-3000	03JA08802	200.0	500,000				Baghouse	0.07	0.09	0.07	0.09

EU	Rating	Description	Make	Model	Serial	Throughput (holes) holes/day	Throughput (holes) holes/yr	Pollutant		EF (lb/hole)	PTE lbs/hr	PTE tons/yr		
A127	NA	Drilling				13	4,680	PM_{10}		0.68	8.84	1.59		
						13	4,680	$PM_{2.5}$		0.04	0.52	0.09		
Landfill Cover Plant Subtotal											**27.44**	**4.20**	**1.88**	**0.55**

Soil Treatment Operation (Process W)

EU	Description	Throughput (tons/yr)	PM_{10} EF (lbs/ton)	$PM_{2.5}$ EF (lbs/ton)	CF	PM_{10} PTE lbs/hr	PM_{10} PTE tons/yr	$PM_{2.5}$ PTE lbs/hr	$PM_{2.5}$ PTE tons/yr
W01	Bulk Material Unloading	20,000	0.01	0.003	0.19	14.78	0.26	4.44	0.08
	Stationary Grizzly Deck	20,000	0.08	0.024	0.12				
	Material Transfer to Soil Treatment Cell	20,000	0.08	0.024	0.12				
	Soil Transfer from Soil Treatment Cell	20,000	0.08	0.024	0.05				
Soil Treatment PM_{10} Subtotal						**14.78**	**0.26**	**4.44**	**0.08**

MSWL (Process W)

EU	Description	SCC	Throughput (tons/yr)	PM_{10} EF (lbs/ton)	$PM_{2.5}$ EF (lbs/ton)	CF	PM_{10} tons/yr	$PM_{2.5}$ tons/yr
W05	Cover Material Handling, Industrial Waste Cover Material Transfer To Face Cover Material	30502512	1,090,951	0.08	0.024	0.091	3.97	1.19
	Cover Material Dumping - Bulk Materials Unloading (formerly W03)	30510499	435,000	0.01	0.003	0.20	0.44	0.13
	Transfer to Face Cover Material - Bulk Materials Conveyors (formerly W03)	30510199	435,000	0.08	0.024	0.10	1.74	0.52
MSWL PM_{10} Subtotal			**1,960,951.000**				**6.15**	**1.84**

Waste Placement Emissions

EU	Description	Throughput tons/hour	Throughput tons/yr	PM_{10} EF (lbs/ton)	$PM_{2.5}$ EF (lbs/ton)	CF	PM_{10} PTE lbs/hour	PM_{10} PTE tons/yr	$PM_{2.5}$ PTE lbs/hour	$PM_{2.5}$ PTE tons/yr
W08	Waste Placement	3,000	13,008,600	0.00016	0.00005	N/A	0.48	1.04	0.15	0.33

Stockpiles Emissions (CH2M Hill calculations based on 9% silt)

EU	Description	Throughput	PM_{10} EF (lbs/ tons)	PM_{10} EF (lbs/ tons)	CF	PM_{10} PTE		$PM_{2.5}$ PTE	
						lbs/ hour	tons/ year	lbs/ hour	tons/ year
W09	Stockpiles - Active	77.03 acres	0.01 lb/acre-hour	.003 lb/acre-hour	NA	0.77	3.37	0.23	1.01
	Stockpiles - Inactive	46.08 acres	0.001 lb/acre-hour	.0003 lb/acre-hour	NA	0.05	0.20	0.02	0.10
PM_{10} Subtotals for Stockpiles						**0.82**	**3.58**	**0.25**	**1.11**

Haul Roads Emissions

EU	Description	VMT/ hour	VMT/ year	PM_{10} EF (lbs/VMT)	$PM_{2.5}$ EF (lbs/VMT)	Method	CF	PM_{10} PTE		$PM_{2.5}$ PTE	
								lbs/hour	tons/ year	lbs/hour	tons/ year
H01	Haul Road: Paved	141.00	1,237,592	7.57	1.14	Moisture	0.02	21.35	93.69	3.21	14.11
H02	Haul Road: Unpaved	37.00	321,920	7.57	0.77	Moisture	0.10	28.01	121.85	2.84	12.35
PM_{10} Subtotal								**49.36**	**215.53**	**6.05**	**26.45**

Table V-3: LFG Fugitive Emissions (EU: W100)

POTENTIAL TO EMIT ESTIMATES FOR THE LANDFILL (LFG)
APEX REGIONAL LANDFILL
LAS VEGAS, NEVADA

CAS NUMBER	COMPOUNDS	Molecular Weight (g/Mol)	Ave. Concentration of Compounds Found in LFG (ppmv)[b]	Total Pollutant Flow Rate (tons/yr)[c]	LFG Collection System Efficiency (%)[d]	Pollutant Flow Rate to Control Device (tons/yr)	Pollutant Emission Rate from Landfill (tons/yr)	Pollutant Emission Rate from Landfill (lbs/yr)	Pollutant Emission Rate from Landfill (lbs/day)
Hazardous Air Pollutants (HAPs)[a]									
71-55-6	1,1,1-Trichloroethane (methyl chloroform)*	133.41	0.105	3.93E-02	75.0%	2.95E-02	9.82E-03	1.96E+01	5.38E-02
79-34-5	1,1,2,2-Tetrachloroethane*	167.85	0.0001	3.77E-05	75.0%	2.82E-05	9.42E-06	1.88E-02	5.16E-05
75-34-3	1,1-Dichloroethane (ethylidene dichloride)*	98.97	0.130	3.61E-02	75.0%	2.71E-02	9.02E-03	1.80E+01	4.94E-02
75-35-4	1,1-Dichloroethene (vinylidene chloride)*	96.94	0.145	3.94E-02	75.0%	2.96E-02	9.86E-03	1.97E+01	5.40E-02
107-06-2	1,2-Dichloroethane (ethylene dichloride)*	98.96	0.140	3.89E-02	75.0%	2.91E-02	9.72E-03	1.94E+01	5.32E-02
78-87-5	1,2-Dichloropropane (propylene dichloride)*	112.99	0.125	3.96E-02	75.0%	2.97E-02	9.90E-03	1.98E+01	5.43E-02
107-13-1	Acrylonitrile*	53.06	0.240	3.57E-02	75.0%	2.68E-02	8.93E-03	1.79E+01	4.89E-02
71-43-2	Benzene*	78.11	2.200	4.82E-01	75.0%	3.62E-01	1.21E-01	2.41E+02	6.60E-01
75-15-0	Carbon disulfide*	76.13	0.185	3.95E-02	75.0%	2.96E-02	9.88E-03	1.98E+01	5.41E-02
56-23-5	Carbon tetrachloride*	153.84	0.085	3.67E-02	75.0%	2.75E-02	9.17E-03	1.83E+01	5.02E-02
46-358-1	Carbonyl sulfide	60.07	0.183	3.08E-02	75.0%	2.31E-02	7.71E-03	1.54E+01	4.22E-02
108-90-7	Chlorobenzene*	112.56	0.125	3.95E-02	75.0%	2.96E-02	9.87E-03	1.97E+01	5.41E-02
75-00-3	Chloroethane (ethyl chloride)*	64.52	0.195	3.53E-02	75.0%	2.65E-02	8.82E-03	1.76E+01	4.83E-02
67-66-3	Chloroform*	119.39	0.115	3.85E-02	75.0%	2.89E-02	9.63E-03	1.93E+01	5.28E-02
106-46-7	Dichlorobenzene (1,4-Dichlorobenzene)*	147.00	0.0001	3.71E-05	75.0%	2.78E-05	9.28E-06	1.86E-02	5.08E-05
75-09-2	Dichloromethane (Methylene Chloride)*	84.94	0.165	3.93E-02	75.0%	2.95E-02	9.83E-03	1.97E+01	5.39E-02
100-41-4	Ethylbenzene*	106.16	2.200	6.55E-01	75.0%	4.91E-01	1.64E-01	3.28E+02	8.97E-01
106-93-4	Ethylene dibromide (1,2-Dibromoethane)	187.88	0.046	2.42E-02	75.0%	1.82E-02	6.06E-03	1.21E+01	3.32E-02
110-54-3	Hexane*	86.18	0.470	1.14E-01	75.0%	8.52E-02	2.84E-02	5.68E+01	1.56E-01
2148-87-8	Hydrogen Sulfide(e)	34.08	1200.000	1.15E+02	75.0%	8.60E+01	2.87E+01	5.74E+04	1.57E+02
7439-97-6	Mercury (total)(f)	200.61	0.0003	1.64E-04	75.0%	1.23E-04	4.11E-05	8.22E-02	2.25E-04
78-93-3	Methyl ethyl ketone*	72.11	35.000	7.08E+00	75.0%	5.31E+00	1.77E+00	3.54E+03	9.70E+00
108-10-1	Methyl isobutyl ketone*	100.16	1.900	5.34E-01	75.0%	4.00E-01	1.33E-01	2.67E+02	7.31E-01
127-18-4	Perchloroethylene (tetrachloroethylene)*	165.83	0.085	3.95E-02	75.0%	2.97E-02	9.88E-03	1.98E+01	5.42E-02
108-88-3	Toluene*	92.13	11.000	2.84E+00	75.0%	2.13E+00	7.11E-01	1.42E+03	3.89E+00
79-01-6	Trichloroethylene (trichloroethene)*	131.40	0.105	3.87E-02	75.0%	2.90E-02	9.67E-03	1.93E+01	5.30E-02
75-01-4	Vinyl chloride*	62.50	0.225	3.94E-02	75.0%	2.96E-02	9.86E-03	1.97E+01	5.40E-02
1330-20-7	Xylenes*	106.16	5.600	1.67E+00	75.0%	1.25E+00	4.17E-01	8.34E+02	2.28E+00
Totals: HAPs				**14.0**			**3.60**	**7,002.26**	**19.18**
Totals: H2S				**114.7**			**28.88**	**57,364.78**	**157.14**
Criteria Air Pollutants									
	Total Non-Methane Organics (NMOCs) as Hexane (g	86.18	1,600	386.76	75.0%	290.07	96.69	193,381.57	529.81
	VOCs (h)	86.18	624	150.84	75.0%	113.13	37.71	75,418.81	206.63

Notes:

(a) List of hazardous air pollutants was from Title III Clean Air Act Amendments, 1990, and include compounds found in landfill gas, as determined from a list in AP-42 Tables 2.4-1 ("Default Concentrations for Landfill Gas Constituents, 11/98") but limited to what is defined as a HAP per EPA list (Section 112(b)).

(b) Average concentration of compounds found in LFG denoted by (*) based on LFG analysis from May 16, 2019. If not from LFG analysis, "Waste Industry Air Coalition Comparison of Recent Landfill Gas Analyses with Historic AP-42 Values" were used.

(c) Total pollutant emission rate based on estimated LFG generation rate.

(d) Per current permit, approximately 75% of the LFG generation assumed to be collected from a comprehensive gas system.

(e) Concentration of hydrogen sulfide based on highest observed within last year by site personnel.

(f) Concentration of Mercury based on EPA AP-42 Section 2.4 Table 2.4-1 (11/98).

(g) Concentration of NMOC from LFG analysis from May 16, 2019.

(h)VOCs assumed to be 39% of NMOCs.

(i) LFG generation modeling was performed using the U.S. Environmental Protection Agency (EPA) LandGEM model to estimate the amount of LFG being generated from the landfill in a 5 year period from 2019-2023. The year 2023 generation represents worst-case. LandGEM modeled using actual tonnage disposed from 1993-2018, and estimated tonnage disposed from 2019-2023.

(j) LFG Generation rate updated using an adjustment factor accounting for actual recovery at landfill. LandGEM generation overestimated due to very dry climate and all waste considered MSW. Adjusted emissions based on ratio of average of last three years (2017-2019) of actual recovery and modeled recovery assuming 75% collection efficiency.

Variables:

MODEL INPUT VARIABLES:		
Methane Concentration (%)	50%	
Adjusted LFG generation rate (year 2023) (i)(j)	4,110	SCFM
LFG Collection System efficiency (d)	75%	

CONVERSIONS

ton conversion	2000 lbs
lb conversion	453.6 g
hour conversion	60 min
day conversion	24 hrs
12 months	365 days
mol conversion	24.04 L @ STP
cf conversion	28.32 L
mmbtu conversion	1,000,000 btu

EXAMPLE CALCULATIONS

(HAPS AND VOCS)

Total Pollutant Flow Rate (To Collection Device)= ((Molecular Weight of Compound[g/mol])*(Concentration of Compound[ppm]/1,000,000)*(Total LFG to Collection Device [cfm]) *(60min*24hr*365 days)*(1ton/2000 lb)*(1lb/453.6g)*(1mol/24.04L @ STP)*(28.32L/1cf)

Pollutant Flow rate = (Total pollutant flow rate [tons/yr])*(Collection efficiency)

Pollutant Emissions through landfill = (Total pollutant flow rate [tons/yr]) * (1 - collection efficiency)

Table V-4: PTE of Insignificant Emission Units (tons per year)

Description	Rating	PM10	PM2.5	NOx	CO	SOx	VOC	HAP
Portable Heater 1	150,000 Btu/hr	0.00188	0.00188	0.08000	0.02000	0.00100	0.00335	0.00000
Portable Heater 2	150,000 Btu/hr	0.00188	0.00188	0.08000	0.02000	0.00100	0.00001	0.00000
Portable Heater 3	110,000 Btu/hr	0.00138	0.00138	0.06000	0.02000	0.00073	0.00005	0.00000
Portable Heater 4	210,000 Btu/hr	0.00263	0.00263	0.12000	0.03000	0.00140	0.04000	0.00000
Portable Heater 5	215,000 Btu/hr	0.00269	0.00269	0.12000	0.03000	0.00143	0.04000	0.00000
Welder1	442 hp	0.4300	0.4300	6.0000	1.2900	0.4000	0.4900	0.0088
Welder2	272 hp	0.2600	0.2600	3.6900	0.8000	0.2400	0.3000	0.0054
Welder3	27 hp	0.0900	0.0900	1.3000	0.8200	0.0700	1.7700	0.0053
Air Compressor 1	49 hp	0.2100	0.2100	2.6500	1.9400	0.4400	2.6500	0.0000
Air Compressor 2	14 hp	0.0400	0.0400	0.6700	0.4300	0.0400	0.9200	0.0028
Air Compressor 3	13 hp	0.0400	0.0400	0.6300	0.4000	0.0300	0.8500	0.0026
Air Compressor 4	11.7 hp	0.0400	0.0400	0.5600	0.3600	0.0300	0.7700	0.0023
Light Plant 1	6.7 hp	0.04000	0.04000	0.36000	0.39000	0.06000	0.36000	0.00133
Light Plant 2	6.7 hp	0.04000	0.04000	0.36000	0.39000	0.06000	0.36000	0.00133
Light Plant3	6.7 hp	0.04000	0.04000	0.36000	0.39000	0.06000	0.36000	0.00133
Light Plant 4	6.7 hp	0.04000	0.04000	0.36000	0.39000	0.06000	0.36000	0.00133
Light Plant 5	6.7 hp	0.04000	0.04000	0.36000	0.39000	0.06000	0.36000	0.00133
Light Plant 6	6.7 hp	0.04000	0.04000	0.36000	0.39000	0.06000	0.36000	0.00133
Light Plant 7	10.72 hp	0.06000	0.06000	0.58000	0.62000	0.10000	0.58000	0.00212
Light Plant 8	10.72 hp	0.06000	0.06000	0.58000	0.62000	0.10000	0.58000	0.00212
Light Plant 9	10.72 hp	0.06000	0.06000	0.58000	0.62000	0.10000	0.58000	0.00212
Light Plant 10	8.04 hp	0.05000	0.05000	0.43000	0.47000	0.07000	0.43000	0.00159
Light Plant 11	8.04 hp	0.05000	0.05000	0.43000	0.47000	0.07000	0.43000	0.00159
Light Plant 12	8.04 hp	0.05000	0.05000	0.43000	0.47000	0.07000	0.43000	0.00159
Light Plant 13	10.72 hp	0.06000	0.06000	0.58000	0.62000	0.10000	0.58000	0.00212
Diesel Heater 1	200,000 Btu/hr	0.00250	0.00250	0.11000	0.03000	0.00133	0.00446	0.00000
Diesel Heater 2	200,000 Btu/hr	0.00250	0.00250	0.11000	0.03000	0.00133	0.00446	0.00000
Diesel Heater 3	200,000 Btu/hr	0.00250	0.00250	0.11000	0.03000	0.00133	0.00446	0.00000
Diesel Heater 4	200,000 Btu/hr	0.00250	0.00250	0.11000	0.03000	0.00133	0.00446	0.00000
Power Washer 1	11.7 hp	0.04000	0.04000	0.56000	0.36000	0.03000	0.77000	0.00232
Power Washer 2	19.9 hp	0.06000	0.06000	0.96000	0.61000	0.05000	1.31000	0.00394
Power Washer 3	20.8 hp	0.07000	0.07000	1.00000	0.63000	0.05000	1.37000	0.00412
WaterPump1	7 hp	0.02000	0.02000	0.34000	0.21000	0.02000	0.46000	0.00139
WaterPump2	4.4 hp	0.01000	0.01000	0.21000	0.13000	0.01000	0.29000	0.00087
WaterPump3	7 hp	0.02000	0.02000	0.34000	0.21000	0.02000	0.46000	0.00139
Totals		**1.98**	**1.98**	**25.58**	**14.66**	**2.41**	**18.28**	**0.06**