Filename: S:\Word\Permits\TSDs\Cactus Waste\V20680R1.tsd
From: Anu Jain
Date: July 23, 2020

Technical Support Document
Title V Permit
Cactus Waste Systems, LLC
Permit #V20680.R01

Technical Support Document
Cactus Waste Systems, LLC

1. BACKGROUND

1.1 Applicant

The application has been submitted by Cactus Waste Systems, LLC, a Delaware Corporation.

Cactus Landfill is located at 22481 E. Deep Well Ranch Road, Florence, Arizona. The site is located in Sections 28 and 33 of Township 7 South, Range 10 East, and Section 4 of Township 8 south, Range 10 east of the Gila and Salt River Baseline Meridian, Pinal County, Arizona.

.

1.2 Attainment Classification

The landfill is located in an area designated non-attainment for PM_{10}.

1.3 Permitting History

The facility is owned and operated by Cactus Waste Systems LLC, an Arizona Limited Liability company. The landfill was built and initially permitted in 2004. Operations began in 2004.

Permit V20637.00 was a renewal and updated the equipment list to reflect the internal combustion equipment permitted at the facility. Other gasoline and diesel-powered engines at the facility are considered insignificant activities.

Permit Revision, V20637.R01 involved adding a generator to the equipment list, removing one generator from the equipment list and incorporating NSPS and NESHAP requirements related to the onsite stationary engines.

Permit Renewal V20680.000 incorporated the NSPS Subpart IIII and NESHAP Subpart ZZZZ requirements related to the onsite non-emergency generators.

Minor Revision V20680.R01 approved the installation and operation of a 54.6 mm btu/hr candlestick gas flare, 113 HP diesel generator, and 2,000 gallons above ground diesel storage tank.

1.4 Compliance/Enforcement History

An NOV and Order of Abatement were issued in September of 2004 for constructing and operating without an air quality permit. A fine was paid and a Supplemental Environmental Project was completed by July 2006. Both the NOV and Order of Abatement are closed.

2. PROCESS DESCRIPTION

2.1 General Process

The Cactus Landfill is a regional municipal solid waste treatment and disposal facility. No hazardous or infectious medical wastes are accepted for disposal. Incineration of wastes is not performed.

The landfill consists of approximately 805 acres of land of which 553 acres are currently permitted as landfill area. The estimated capacity of the site is approximately 224 million cubic yards.

Cactus Landfill accepts residential wastes, commercial wastes, construction debris, industrial special wastes and other acceptable non-hazardous wastes from the areas it serves. Wastes acceptable for landfilling include:

- Municipal refuse (garbage, paper products), pesticide containers (clean, rinsed, and punctured), and other wastes from households or commercial facilities;
- Vegetative (green) waste;
- Construction debris (wood, concrete, dirt, rocks, and gypsum);
- Demolition material;
- White Goods: appliances that have been certified to be chlorinated fluorocarbon (CFC) free;
- Dead animals;
- Non-friable asbestos-containing materials;
- Shredder residue;
- Incinerator ash;
- Non-infectious medical wastes;
- Water and wastewater treatment sludges which pass the paint filter test;
- Industrial waste; and,
- Other non-hazardous special wastes (i.e. petroleum contaminated soils) as approved by the Arizona Department of Environmental Quality.

The landfill is primarily operated under the area fill method of disposal. During the landfill operations, waste is evenly spread in layers and compacted. A layer of soil or approved alternate material is then spread in a layer of at least 6 inches over the waste as daily cover in accordance with the requirements of 40 CFR §258.21. Intermediate cover will be added to any area that will be idle for more than 180 days. Approved daily cover materials include petroleum contaminated soil, auto shredder fluff, wood chips, tire chips, foam and tarps.

3. EMISSIONS

TABLE 1: ACTUAL EMISSIONS (Based on 2018 emission inventory data)

Unit	VOC	PM10	PM2.5	HAPs	CO	NOx	SO2
(tpy)	17.55	8.93	3.66	2.23	2.8	12.76	0.84

TABLE 2: POTENTIAL EMISSIONS FROM THE CANDLESTICK FLARE, AND DIESEL GENERATOR

Emission Units	VOC (tpy)	PM10 (tpy)	PM2.5 (tpy)	HAPs (tpy)	CO (tpy)	NOx (tpy)	SO2 (tpy)
Candlestick Flare	5.54	4.47	4.47	2.22	74.14	16.26	34.98
Diesel Generator	0.15	<0.1	<0.1	<0.1	4.0	0.3	<0.1

TABLE 3: UNCONTROLLED POTENTIAL TO EMIT (PTE) EMISSIONS

Emission Point	VOC (tpy)	NMOC (tpy)	PM10 (tpy)	PM2.5 (tpy)	NOx (tpy)	CO (tpy)	SO_2 (tpy)	HAPs (tpy)
Landfill gas[1]	55.40	139.39	11.30	4.54	12.76	3.01	0.84	6.21

3.1 Landfill Gas and Landfill Surface

Landfill gases are generated by the decomposition of solid waste. The duration of the decomposition can vary from a few years to over 100 years depending on the amount of oxygen present, refuse moisture, pH and temperature. Some of the decomposition by-products are: carbon dioxide, methane, water, organic acids, nitrogen and ammonia. Also some small quantities of air toxics will be emitted.

3.1.1 NMOCs

The landfill gas generation rate was estimated using the EPA Landfill Gas Model (LANDGEM) Emissions of landfill gas, site-specific concentrations determined during 2013 Tier 2 sampling and parameters recommended in Ap-42 Section 2.4-4

3.1.2 VOCs and HAPs

HAP and VOC emissions were calculated using also AP-42 Tables 2.4-1 and 2.4-2. The landfill gas generation rate used for such calculations was 600 standard cubic feet per minute (scfm).

3.2 Haul Roads/Landfill Surface Dust Emissions (including stockpiles)

These section does not address emissions from the access road from Highway 79 to the landfill. This 7 mile road has been paved since the original permit for the landfill was issued, and is now a County road.

Dust is generated by the operation of vehicles on the landfill surface and is reported as PM10 and PM2.5. Dust emissions at this landfill will be controlled by:

- Watering and proper maintenance of haul roads, and/or application of chemical dust suppresant;
- Water spraying of soil cover areas when conditions exist that may result in the formation of fugitive dust;
- Applying water or planting temporary vegetation on intermediate soil cover, as needed; and
- Planting and maintaining a vegetative cover on completed fill and excavation slopes[5].

3.2.1 Haul Roads and Cover Operations

AP-42 methodology was used for calculating emissions from the traffic on landfill surface. It was estimated that 63 vehicle miles traveled (VMT) are accumulated per day by landfill equipment operations and 10.8 VMT are accumulated per day by haul trucks.

[1] These emissions were calculated using 538 scfm of landfill gas expected to be generated in 2024 (twice the permit term of 5 years), which is the first year that NMOC is projected to exceed 50 Mg.yr .

[5] This is anticipated in the future. The landfill is still too new for completed fills.

$E = k(s/12)^a (W/3)^b \times (365-p)/365$
(From Eqtn. 1a, AP42 13.2.2.2)

Additionally emissions from the storage of daily cover material and the loadout of daily cover material were calculated. Wind erosion emissions from 5 acres of cover storage piles and emissions from 16,598 tons of annual loadout were estimated. The wind erosion emission factor was obtained from the Factor Information and Retrieval System (FIRE) database (SCC 30501049 – Industrial Processes; Mineral Products; Coal Mining, Cleaning and Material Handling; Wind Erosion; Exposed Areas). The loadout emission factor was calculated using the methodology in AP-42 Section 13.2.4.3, Equation 1.

3.3 Internal Combustion Sources

There are 4 stationary internal combustion engines (2 generators, IC-2 and IC-5, an air compressor IC-4, and a tipper engine IC-1) on site. Engines with less than 325 hp and used less than 72 hours per year are considered Insignificant Activities and are not included in the PTE calculations. Insignificant activities includes a 15 HP diesel powered light plant engine and a 20 HP gasoline powered pressure washer.

The previous permit revision had incorrectly removed a Spectrum Detroit Model 150 0S60 generator and left a Caterpillar Olympian, Model XQ125 as the unit being operated. Following a site visit to confirm which unit was operational the Spectrum unit has been put back into the permit and the Caterpillar unit will be removed. This permit renewal also updates the tipper engine as a different unit will be installed in late 2014.

Emission factors from AP-42 Tables 3.3-1 through 3.3-3 and potential operations of 24 hrs/day and 365 days/yr were used in calculating emissions from the permitted stationary internal combustion engines.

3.4 Greenhouse Gases

Following a June 2014 U.S. Supreme Court decision related to Greenhouse Gas permitting USEPA has stated that it will not apply or enforce federal regulations or provisions in the EPA-approved PSD or Title V programs that require a stationary source obtain a PSD or Title V permit solely because the source emits or has the potential to emit GHGs above the major source threshold. On November 19, 2014, the EPA's framework for assessing biogenic CO2 emissions stated that the biogenic CO2 coming from MSW have a biogenic assessment factor (BAF) of zero, meaning CO2 from LFG is fully biogenic and should not be regulated under the CAA. Therefore, this renewal will simply serve to quantify only the regulated GHG emissions for this facility.

TABLE 4: GHG EMISSIONS

Emissions	**Short Tons CO2e**
IC Engines	2,037
~~AOS~~ Open Flare	159.50
Total GHG	2,197

4. REGULATORY REQUIREMENTS AND MONITORING

4.1 Title V/PSD Review

In accordance with 40 CFR 60.752(b), any landfill with a design capacity over 2.5 million megagrams by mass or 2.5 million cubic meters by volume is subject to Part 70 permitting (Title V).

Potential emissions of any criteria pollutant are below PSD review thresholds.

4.2 NSPS and NESHAP Requirements

This facility is subject to the requirements of 40 CFR 60 Subpart WWW, Standards of Performance for Municipal Solid Waste Landfills. This standard requires that a calculation of NMOC emissions be made annually. When the emissions equal or exceed 50 megagrams per year, a gas collection and control system is required to be installed. The applicant does not expect to reach that level of emissions during the term of this permit, and therefore a capture/control system has not been included in this renewal.

The April 1, 2006 model year or later Compression Ignition (CI) Internal Combustion Engines (ICE) are subject to NSPS, 40 CFR 60 Subpart IIII,.

Earlier than April 1 2006 model year Stationary Reciprocating Internal Combustion Engines (RICE) are subject to NESHAP, 40 CFR 63 Subpart ZZZZ.

4.3 Other Regulatory Emissions Limitations

4.3.1 Opacity and Reasonable Precautions

The facility must meet the federally enforceable 40% opacity limitation. For this purpose the permit also requires that reasonable precautions be taken, and it includes a list of the methods to employ.

While PCAQCD has a locally enforceable 20% opacity standard (§2-8-300), it does not apply to fugitive sources, sources which already have another opacity standard under PCAQCD rules, or have an applicable NSPS. Therefore, 20% does not apply to the fugitive emissions from the landfill surface or the generators.

4.3.2 Soil Moisture Content

Since the soil moisture content used for emissions calculations is from AP-42 and not site specific, PCAQCD requires that a sampling program be conducted when the tipping rate exceeds 750 tons per day. The soil moisture content obtained will be used for determining the emissions under AP-42 Section 13.2.4-6.

5. COMPLIANCE ASSURANCE MONITORING (CAM)

The requirements of 40 CFR 64 do not apply to this facility, since this no single emission unit satisfies the criteria of §64.2(a)(3). No single unit has pre-control device emissions of 100 tpy or more.

6. LIST OF ABBREVIATIONS

AP-42 ..... "Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources", 5th Edition
CAA ..... Clean Air Act
CAM ..... Compliance Assurance Monitoring

CFR ..... Code of Federal Regulations
CO ..... Carbon Monoxide
Eqtn ..... Equation
FIRE ..... Factor Information and Retrieval System
hp ..... horsepower
hr ..... Hour
lb ..... Pound
LLC ..... Limited Liability Company
MACT ..... Maximum Achievable Control Technology
Mg ..... Megagrams
MMBTU ..... Million British Thermal Units
NESHAP ..... National Emission Standard for Hazardous Air Pollutants
NOV ..... Notice of Violation
NOX ..... Nitrogen Oxides
NSPS ..... New Source Performance Standard
NSR ..... New Source Review
PCAQCD ..... Pinal County Air Quality Control District
PCS ..... Petroleum Contaminated Soils
PGCAQCD ..... Pinal-Gila Counties Air Quality Control District
PM10 ..... Particulate Matter nominally less than 10 Micrometers
PM2.5 ..... Particulate Matter less than 2.5 Micrometers
PSD ..... Prevention of Significant Deterioration
SIC ..... Standard Industrial Code
SOX ..... Sulfur Dioxide
tpy ..... tons per year
TSD ..... Technical Support Document
VMT ..... Vehicle Miles Traveled
VOC ..... Volatile Organic Compound
yr ..... year