



# Florida Department of Environmental Protection

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Tallahassee, Florida 32399-2400

Rick Scott  
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## PERMITTEE

Waste Management Inc. of Florida  
2700 Wiles Road  
Pompano Beach, Florida, 33073

Authorized Representative:  
Mr. Jeff Roccapiore, District Manager

Air Permit No. 0112094-012-AC  
Permit Expires: 12/31/2017  
Minor Air Construction Permit  
Monarch Hill Landfill  
Mobile Backup Flare Project

## PROJECT

This is the final air construction permit, which authorizes the installation of a mobile, backup 3,000 standard cubic feet per minute (scfm) or smaller utility flare at the facility to be used only when one of the three existing flares are inoperable. The proposed work will be conducted at the existing Monarch Hill Landfill, which is a municipal solid waste landfill categorized under Standard Industrial Classification No. 4953. The existing facility is in Broward County at 2700 Wiles Road in Pompano Beach, Florida. The UTM coordinates are Zone 17, 583.19 kilometers (km) East, and 2908.03 km North.

This final permit is organized into the following sections: Section 1 (General Information); Section 2 (Administrative Requirements); Section 3 (Emissions Unit Specific Conditions); and Section 4 (Appendices). Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of Section 4 of this permit.

## STATEMENT OF BASIS

This air pollution construction permit is issued under the provisions of: Chapter 403 of the Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). The permittee is authorized to conduct the proposed work in accordance with the conditions of this permit. This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C. and is not subject to the preconstruction review requirements for major stationary sources in Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

Upon issuance of this final permit, any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000) and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida

*For:*

Syed Arif, P.E., Program Administrator  
Office of Permitting and Compliance  
Division of Air Resource Management

**CERTIFICATE OF SERVICE**

The undersigned duly designated deputy agency clerk hereby certifies that this Final Air Construction Permit package was sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on the date indicated below to the following persons.

Mr. Jeff Roccapriore, Waste Management: [jroccapr@wm.com](mailto:jroccapr@wm.com)

Mr. Craig Ash, Waste Management: [cash1@wm.com](mailto:cash1@wm.com)

Mr. Jim Christiansen, Carlson Environmental Consultants: [jchristi@cecenv.com](mailto:jchristi@cecenv.com)

Ms. Lindsey E. Kennelly, P.E., Carlson Environmental Consultants: [lkennelly@cecenv.com](mailto:lkennelly@cecenv.com)

Southeast District: [sed.air@dep.state.fl.us](mailto:sed.air@dep.state.fl.us)

Mr. Robert Wong, Broward County: [rwong@broward.org](mailto:rwong@broward.org)

EPA Region IV: [R4TitleVFL@epa.gov](mailto:R4TitleVFL@epa.gov)

Ms. Lynn Searce, DEP OPC: [lynn.searce@dep.state.fl.us](mailto:lynn.searce@dep.state.fl.us)

Clerk Stamp

**FILING AND ACKNOWLEDGMENT FILED**, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

## SECTION 1. GENERAL INFORMATION

### FACILITY DESCRIPTION

Monarch Hill Landfill, owned and operated by Waste Management Inc. of Florida (WMIF), is an active Class I Landfill which began receiving waste in 1965. The overall design capacity of the landfill as of 2015 is 80 million cubic yards (approximately 61 million cubic meters). There are 391.5 acres permitted to receive MSW and 44.5 acres for ash monofill. Of the 44.5 acres for the ash monofill, 31 acres are dedicated to receive construction and demolition debris (C&D). Landfill gases (LFGs) generated from waste are collected by a gas collection system and routed to enclosed flares, an open flare, or to a gas treatment plant. The LFGs from the gas treatment plant is directed to combustion turbines for subsequent use in a electrical power generation plant. Although the open flare is currently used as an aid to starting the turbines, the owner or operator has the option to use it as a primary control device if deemed necessary.

LFGs are primarily composed of methane (CH<sub>4</sub>) and carbon dioxide (CO<sub>2</sub>), but also contain non-methane organics (NMOC), volatile organic compounds (VOCs), hazardous air pollutants (HAPs), and hydrogen sulfide (H<sub>2</sub>S). Sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) are generated from the combustion of LFGs in the combustion turbines, the enclosed flares and the open flare. Particulate matter (PM) emissions result from fugitive dust from roads, earthmoving activities and waste placement and compaction activities. The existing facility consists of the following emissions units.

E.U. ID No.	Brief Description
<i>Regulated Emissions Units</i>	
010	Landfill Gas (LFG)-Fired Turbines
011	MSW Class I Landfill with Gas Extraction
012	166 Horse Power (HP) Emergency Diesel Generator - Mechanic Shop
013	635 HP Emergency Diesel Generator - Desulfurization Plant
014	165 HP Emergency Diesel Generator - Area Office
015	Enclosed Flare (Enclosed Combustor) - South, 4,000 scfm
016	Enclosed Flare (Enclosed Combustor) - North, 6,000 scfm
017	Open Flare - 5,100 scfm
<i>Unregulated Emissions Units</i>	
007	Fugitive NMOC & HAP Emissions from MSW Landfill
009	Fugitive PM Emissions from Vehicular Traffic

### PROPOSED PROJECT

The applicant submitted an application to the Department on December 15, 2016, ([Link to application](#)) requesting authorization to install a mobile, backup 3,000 standard cubic feet per minute (scfm) or smaller utility flare at the facility to be used only when one of the three existing flares are inoperable.

This project will add the following emissions unit.

ID No.	Emission Unit Description
018	3,000 SCFM Mobile Backup Open Flare

### FACILITY REGULATORY CLASSIFICATION

- The facility is not a major source of HAP.
- The facility does not operate units subject to the acid rain provisions of the Clean Air Act.
- The facility is a Title V major source of air pollution in accordance with Chapter 62-213, F.A.C.

## **SECTION 1. GENERAL INFORMATION**

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- The facility is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.
- The facility operates units subject to the NSPS.
- The facility operates units subject to the NESHAP.

## SECTION 2. ADMINISTRATIVE REQUIREMENTS

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1. Permitting Authority: The permitting authority for this project is the Office of Permitting and Compliance in the Division of Air Resource Management of the Department of Environmental Protection (Department). The Office of Permitting and Compliance mailing address is 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400.
2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Broward County, Pollution Prevention Division at: One North University Drive, Suite 203, Plantation, Florida 33324-2038.
3. Appendices: The following Appendices are attached as a part of this permit: Appendix A (Citation Formats and Glossary of Common Terms); Appendix B (General Conditions); Appendix C (Common Conditions); Appendix D (Common Testing Requirements); Appendix E (NSPS Subpart A); and Appendix F (NSPS Subpart WWW).
4. Applicable Regulations, Forms and Application Procedures: Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296 and 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.
5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]
6. Modifications: The permittee shall notify the Compliance Authority upon commencement of construction. No new emissions unit shall be constructed and no existing emissions unit shall be modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]
7. Construction and Expiration: The expiration date shown on the first page of this permit provides time to complete the physical construction activities authorized by this permit, complete any necessary compliance testing, and obtain an operation permit. Notwithstanding this expiration date, all specific emissions limitations and operating requirements established by this permit shall remain in effect until the facility or emissions unit is permanently shut down. For good cause, the permittee may request that a permit be extended. Pursuant to Rule 62-4.080(3), F.A.C., such a request shall be submitted to the Permitting Authority in writing before the permit expires. [Rules 62-4.070(3) & (4), 62-4.080 & 62-210.300(1), F.A.C.]
8. Source Obligation: Authorization to construct shall expire if construction is not commenced within 18 months after receipt of the permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. This provision does not apply to the time period between construction of the approved phases of a phased construction project except that each phase must commence construction within 18 months of the commencement date established by the Department in the permit. [Rule 62-212.400(12), F.A.C.]

## SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

### A. EU 018, 3,000 SCFM Mobile Backup Open Flare

This section of the permit addresses the following emissions unit.

EU No.	Emission Unit Description
018	3,000 SCFM Mobile Backup Open Flare

This emissions unit is a 3,000 scfm (or less) mobile, backup flare to be used when one of the other three existing flares are inoperable.

*{Permitting Note: This emission unit is regulated under NSPS Subpart A (General Provisions) and NSPS Subpart WWW (Standards of Performance for Municipal Solid Waste Landfills) of 40 CFR 60, adopted and incorporated by reference in Rules 62-204.800(8)(d) and 62-204.800(b)76., F.A.C. respectively.}*

#### EQUIPMENT

1. **Mobile Backup Utility Flare:** The permittee is authorized to install a 3,000 scfm (or lesser) mobile, backup open flare. [Application No. 0112094-012-AC]

*{Permitting Note: The mobile flare may be a rental unit or a previously permitted one from another site operated by WMIF. There may be times that the mobile flare is stored at the facility when not in use. However, the piping to the flare shall be disconnected from the collection system when not in use.}*

#### PERFORMANCE RESTRICTIONS

2. **Permitted Capacity:** The mobile, backup open flare shall have a maximum flow rate of 3,000 scfm. [Rule 62-210.200(PTE), F.A.C.]
3. **Authorized Fuel:** Only landfill gas shall be fired in the flare. [Application No. 0112094-012-AC and Rule 62-210.200(PTE), F.A.C.]
4. **Restricted Operation:** The hours of operation are limited to 4,320 hours per year. [Application No. 0112094-012-AC; and Rules 62-4.070(3) & 62-210.200(PTE), F.A.C.]

#### EMISSIONS STANDARDS

5. **Visible Emissions (VE):** The flare shall be designed for, and operated with, no visible emissions as determined by the methods specified in **Specific Condition 14** of this subsection, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. [Rule 62-204.800(8)(d), F.A.C., and 40 CFR 60.18(c)]

#### OPERATIONAL PROCEDURES

6. **Operational Standards:**
  - a. The flare shall be non-assisted.
  - b. The flare shall be operated with a flame present at all times.[Rule 62-204.800(8)(d), F.A.C., and 40 CFR 60.18(c)]
7. **Heat Content Specifications:**
  - a. Flares shall be used only with the net heating value of the gas being combusted is 7.45 mega joules per standard cubic meter (MJ/scm) and 200 British thermal units per standard cubic feet (Btu/scf) or greater if the flare is non-assisted. The net heating value of the gas being combusted in a flare shall be calculated by the following equation:

### SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

#### A. EU 018, 3,000 SCFM Mobile Backup Open Flare

$$H_T = K \sum_{i=1}^n C_i H_i$$

where:

$H_T$  = Net heating value of the sample, MJ/scm; where the net enthalpy per mole of off gas is based on combustion at 25°C and 760 millimeters (mm) mercury (Hg), but the standard temperature for determining the volume corresponding to one mole is 20°C;

$$K = \text{Constant}_{1.740 \times 10^{-7}} \left( \frac{1}{\text{ppm}} \right) \left( \frac{\text{g mole}}{\text{scm}} \right) \left( \frac{\text{MJ}}{\text{kcal}} \right)$$

where the standard temperature for  $\left( \frac{\text{g mole}}{\text{scm}} \right)$  is 20°C

$C_i$  = Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by American Society for Testing and Materials (ASTM) D1946–77 or 90 (Reapproved 1994) (Incorporated by reference as specified in 40 CFR 60.17); and

$H_i$  = Net heat of combustion of sample component i, kcal/g mole at 25°C and 760 mm Hg. The heats of combustion may be determined using ASTM D2382–76 or 88 or D4809–95 (incorporated by reference as specified in 40 CFR 60.17) if published values are not available or cannot be calculated.

- b. The actual exit velocity of a flare shall be determined by dividing the volumetric flow rate (in units of standard temperature and pressure), as determined by Reference Methods 2, 2A, 2C, or 2D as appropriate; by the unobstructed (free) cross sectional area of the flare tip.
- c. The maximum permitted velocity,  $V_{\max}$ , for flares complying with 40 CFR 60.18 (c)(4)(iii) shall be determined by the following equation:

$$\log_{10}(V_{\max}) = (H_T + 28.8)/31.7$$

where,

$V_{\max}$  = Maximum permitted velocity, m/sec

28.8 = Constant

31.7 = Constant

$H_T$  = The net heating value as determined in 40 CFR 60.18 (f)(3).

[Rule 62-204.800(8)(d), F.A.C., and 40 CFR 60.18(c) & (f)]

8. **Maximum Tip Velocity Specifications:** Non-assisted flares shall be designed for and operated with an exit velocity, as determined by the methods specified in 40 CFR 60.18(f)(4), less than 18.3 m/sec (60 feet/sec), except as provided in **Specific Conditions 8.a** and **8.b** below:

- a. Nonassisted flares designed for and operated with an exit velocity, as determined by the methods specified in paragraph 40 CFR 60.18(f)(4), equal to or greater than 18.3 m/sec (60 ft/sec) but less than 122 m/sec (400 ft/sec) are allowed if the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1,000 Btu/scf).
- b. Nonassisted flares designed for and operated with an exit velocity, as determined by the methods specified in paragraph (f)(4), less than the velocity,  $V_{\max}$ , as determined by the method specified in paragraph 40 CFR 60.18 (f)(5), and less than 122 m/sec (400 ft/sec) are allowed.

[Rule 62-204.800(8)(d), F.A.C., and 40 CFR 60.18(c)]

### SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

#### A. EU 018, 3,000 SCFM Mobile Backup Open Flare

##### 9. Design Specifications:

- a. The flare has the option to meet **Specific Conditions 7. and 8.**, or shall meet the following design specifications: have a diameter of 3 inches or greater; are non-assisted; have a hydrogen content of 8% (by volume), or greater; and are designed for and operated with an exit velocity less than 37.2 m/sec (122 feet/sec) and less than the velocity,  $V_{max}$ , as determined by the following equation:

$$V_{max} = (X_{H_2} - K_1) * K_2$$

where:

$V_{max}$  = Maximum permitted velocity, m/sec.

$K_1$  = Constant, 6.0 volume-% hydrogen.

$K_2$  = Constant, 3.9(m/sec)/volume-% hydrogen.

$X_{H_2}$  = The volume-% of hydrogen, on a wet basis, as calculated by using the ASTM Method D1946-77. (Incorporated by reference as specified in 40 CFR 60.17).

- b. The actual exit velocity of a flare shall be determined by the method specified in 40 CFR 60(f)(4).

[Rule 62-204.800(8)(d), F.A.C. and 40 CFR 60.18(c)]

#### MONITORING REQUIREMENTS

10. Monitoring of Operations – Open Flare: Each owner or operator seeking to comply with 40 CFR 60.752(b)(2)(iii) using an open flare shall install, calibrate, maintain, and operate according to the manufacturer's specifications the following equipment:

- a. A heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame.
- b. A device that records flow to or bypass of the flare. The owner or operator shall either:
- (1) Install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes; or
  - (2) Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

[Rule 62-204.800(b)76., F.A.C., and 40 CFR 60.756(c)]

#### TESTING REQUIREMENTS

11. Initial Compliance Tests: The emissions unit shall be tested to demonstrate initial compliance with the emissions standards for VE. The initial tests shall be conducted within 60 days after achieving permitted capacity, but not later than 180 days after initial operation of the unit. [Rules 62-4.070(3) and 62-297.310(8)(b)1, F.A.C.]
12. Annual Compliance Tests: During each calendar year (January 1<sup>st</sup> to December 31<sup>st</sup>), the emissions unit shall be tested to demonstrate compliance with the emissions standards for VE. [Rule 62-297.310(8)(a)1, F.A.C.]
13. Test Requirements: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix D (Common Testing Requirements) of this permit. [Rule 62-297.310(9), F.A.C.]
14. Test Methods: Required tests shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
22	Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares



### SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

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#### A. EU 018, 3,000 SCFM Mobile Backup Open Flare

The above methods are described in Appendix A of 40 CFR 60 and are adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Rules 62-204.800, F.A.C.; and Appendix A of 40 CFR 60]

15. Visible Emissions: The test method for visible emissions shall be EPA Method 22 of Appendix A of 40 CFR 60. The observation period shall be 2-hours. [Rule 62-204.800(8)(d), F.A.C. and 40 CFR 60.18(f)(1)]

#### RECORDS AND REPORTS

16. Flare Records: Except as provided in 40 CFR 60.752(b)(2)(i)(B), each owner or operator of a controlled landfill shall keep up-to-date, readily accessible records for the life of the control equipment of the following data as measured during the initial performance test or compliance determination. Records of subsequent tests or monitoring shall be maintained for a minimum of 5 years. Records of the control device vendor specifications shall be maintained until removal. Where an owner or operator subject to the provisions of NSPS Subpart WWW seeks to demonstrate compliance with 40 CFR 60.752(b)(2)(iii)(A) through use of an open flare, the flare type (i.e., non-assisted), all visible emission readings, heat content determination, flow rate or bypass flow rate measurements, and exit velocity determinations made during the performance test as specified in 40 CFR 60.18; continuous records of the flare pilot flame or flare flame monitoring and records of all periods of operations during which the pilot flame of the flare flame is absent. [Rule 62-204.800(b)76., F.A.C., and 40 CFR 60.758(b)]
17. Notification of Flare Arrival: The permittee shall notify both the Permitting Authority and the Compliance Authority of the make, model, and the date of arrival of the mobile flare, within 30 days of the unit arriving at the facility. [Application No. 0112094-012-AC]
18. Records of Flare: The permittee shall keep records of hours of operation of this emissions unit to demonstrate compliance with **Specific Condition 4**. [Application No. 0112094-012-AC]