# TECHNICAL EVALUATION

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# PRELIMINARY DETERMINATION

## APPLICANT

Pinellas County Board of County Commissioners
Pinellas County Department of Environment and Infrastructure
3095 114th Avenue North
St. Petersburg, Florida 33716

Pinellas County Resource Recovery Facility
Facility ID No. 1030117

## PROJECT

Project No. 1030117-012-AC
Application for Minor Source Air Construction Permit
Harmonization of Excess Emission Reporting Requirements

## COUNTY

Pinellas County, Florida

## PERMITTING AUTHORITY

Florida Department of Environmental Protection
Division of Air Resource Management
Office of Permitting and Compliance
2600 Blair Stone Road, MS#5505
Tallahassee, Florida 32399-2400

November 13, 2014

# 1. GENERAL PROJECT INFORMATION

## 1.1. Air Pollution Regulations

Projects at stationary sources with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish regulations regarding air quality as part of the Florida Administrative Code (F.A.C.), which includes the following applicable chapters: 62-4 (Permits); 62-204 (Air Pollution Control – General Provisions); 62-210 (Stationary Sources – General Requirements); 62-212 (Stationary Sources – Preconstruction Review); 62-213 (Operation Permits for Major Sources of Air Pollution); 62-296 (Stationary Sources - Emission Standards); and 62-297 (Stationary Sources – Emissions Monitoring). Specifically, air construction permits are required pursuant to Rules 62-4, 62-210 and 62-212, F.A.C.

In addition, the U. S. Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 specifies New Source Performance Standards (NSPS) for numerous industrial categories. Part 61 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) based on specific pollutants. Part 63 specifies NESHAP based on the Maximum Achievable Control Technology (MACT) for numerous industrial categories. The Department adopts these federal regulations on a quarterly basis in Rule 62-204.800, F.A.C.

## 1.2. Facility Description and Location

The Pinellas County Resource Recovery Facility (PCRRF) is an existing municipal waste resource recovery facility, which is categorized under Standard Industrial Classification Code No. 4953. The facility is owned by Pinellas County and is currently operated by Veolia ES Pinellas, Inc. The facility is located in Pinellas County at 3001 110$^{th}$ Avenue North in St. Petersburg, Florida. The UTM coordinates of the existing facility are Zone 17, 335.273 kilometers (km) East, and 3084.304 km North. The location of Pinellas County is shown in **Figure 1** while the location of the PCRRF is shown in **Figure 2**. A satellite view of the PCRRF is given in **Figure 3**. This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to state and federal Ambient Air Quality Standards (AAQS).

**Figure 1. Location of Pinellas County.**

**Figure 2. Location of the PCRRF.**

**Figure 3. Satellite View of the PCRRF.**

This facility consists of the regulated emissions units (E.U.) shown in below in **Table 1**.

**TABLE 1 – LIST OF REGULATED EMISSION UNITS AT THE PCRRF.**

| E.U. ID No. | Brief Description |
|---|---|
| *Regulated Emissions Units* | |
| 001 | Municipal Waste Combustor Unit 1 |
| 002 | Municipal Waste Combustor Unit 2 |
| 003 | Municipal Waste Combustor Unit 3 |
| 004 | Hydrated Lime Storage Silo for Water Softening |
| 005 | Residue Storage and Processing Building (RSPB) |
| 006 | Activated Carbon Storage Silo |
| 007 | Lime Storage Silo for SDA |
| 008 | Ash Conditioning Building |
| 009 | Municipal Solid Waste Landfill |
| 011 | Emergency Generator - Main Lift Station |
| 012 | Emergency Fire Pump Engine (EPA Tier 3 Certified) |
| 014 | Diesel Tub Grinder (primary engine and secondary engine) |
| 015 | Portable Emergency Generator - Pond A |
| 016 | Emergency Generator - Maintenance Building |
| 017 | Emergency Generator - Scale House (EPA Tier 3 Certified) |

| E.U. ID No. | Brief Description |
|---|---|
| 018 | Emergency Generator - Administrative Building (EPA Tier 3 Certified) |

### 1.3. Facility Regulatory Categories

- The facility is a major source of hazardous air pollutants (HAP).
- The facility has no 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 213, F.A.C.
- 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 that are subject to the New Source Performance Standards (NSPS) at 40 Code of Federal Regulations, Part 60 (40 CFR 60), and the National Emissions Standards for Hazardous Air Pollutants (NESHAP) at 40 CFR 63.

### 1.4. Project Description

On September 9, 2014, the Pinellas County Department of Environment and Infrastructure, Division of Solid Waste, submitted an application to the Department. This application requested a harmonization of the reporting requirements in the PCRRF air construction permit (Permit No. 1030117-009-AC) and the facility's Title V operating permit (Permit No. 1030117-008-AV). The applicant has requested that the air construction permit be modified to align with the reporting requirements in the Title V operating permit regarding excess emissions. Under the Title V permit, facility malfunctions are to be reported immediately to the Department, while excess emissions related to malfunctions are to be reported on a quarterly basis, and excess emissions from other causes are to be reported semiannually.

### 1.5. Processing Schedule

9/9/2014 Received the application for a minor source air pollution construction permit, application complete.

11/13/2014 Draft permit package issued.

## 2. GENERAL PROJECT INFORMATION

### 2.1. Facility Description

A thorough description of the municipal waste combustion process at the facility is given in the technical evaluation for the facility's original air construction permit (Permit No. 1030117-009-AC). This previous analysis included determinations of Best Available Control Technology (BACT) for CO, $SO_2$, particulate matter, and acid gases.

Briefly, the PCRRF consists of three municipal waste combustors (MWC) with auxiliary burners, lime storage and processing facilities, an activated carbon storage facility, ash storage and processing facilities, a metals recovery system, a cooling tower, ancillary support equipment, and a contiguous municipal solid waste landfill (Bridgeway Acres). The capacity of the Facility is greater than 1,000,000 tons/year of solid waste fuel. The Bridgeway Acres landfill has a capacity of approximately 8.4 million megagrams (metric tonnes) and accepts municipal solid waste and ash from Units 1, 2 and 3.

### 2.2. Pollution Control Equipment and Emissions Monitoring

Each furnace is equipped with a urea injection system based on the principle of selective non-catalytic reduction (SNCR) for nitrogen oxides ($NO_X$) control. After heat recovery for electrical energy production, the exhaust gas from each furnace is further cooled by injection of water and slaked lime slurry in a spray dryer absorber (scrubber) where acid gases react with lime and are converted to solid reaction products.

Activated carbon is injected after the scrubber to bind with mercury and dioxin/furan. Fly ash, including reaction products from the scrubber and the spent activated carbon are removed in a fabric filter baghouse. The exhaust

from each unit is conveyed via an induced draft fan into a flue located within the facility stack. The fly ash, stoker grate bottom ash and other wastes are combined and disposed in the on-site landfill.

Odors are minimized by keeping the truck access doors closed during non-use and maintaining negative pressure on the garbage tipping floor and using the collected air to support combustion.

The facility is equipped with continuous emission system (CEMS) for carbon monoxide (CO), sulfur dioxide ($SO_2$) and $NO_X$, and a continuous opacity monitoring systems (COMS) for visible emissions. Annual stack testing is required for particulate matter (PM), hydrogen chloride (HCl), mercury, dioxin/furan, cadmium and lead.

## 3. PSD APPLICABILITY

### 3.1. General PSD Applicability

The Department regulates major stationary sources in accordance with Florida's PSD program pursuant to Rule 62-212.400, F.A.C. PSD preconstruction review is required in areas that are currently in attainment with the state and federal ambient air quality standards (AAQS) or areas designated as "unclassifiable" for these regulated pollutants. The project is located in Pinellas County, which is in an area that is currently in attainment with the state and federal AAQS or otherwise designated as unclassifiable.

The key requirement of a PSD review include: employment of Best Available Control Technology; a demonstration that the project will not cause or contribute to a violation of a state of federal AAQS or increment; and a demonstration that the project will not cause adverse impacts to Air Quality Related Values (AQRVs) such as visibility, soils and vegetation.

Commonly addressed PSD pollutants include: carbon monoxide (CO), nitrogen oxides ($NO_X$), particulate matter (PM), PM with a mean diameter of 10 micron or less ($PM_{10}$), PM with a mean diameter of 2.5 microns or less ($PM_{2.5}$), sulfur dioxide ($SO_2$), volatile organic compounds (VOC), sulfuric acid mist (SAM), lead (Pb), fluorides (F), and mercury (Hg). Additional PSD pollutants that are more common to certain other industries include: hydrogen sulfide ($H_2S$), TRS including $H_2S$, reduced sulfur compounds (RSC) including $H_2S$, municipal waste combustor (MWC) organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans (dioxin/furan), MWC metals measured as PM; MWC acid gases measured as $SO_2$ and hydrogen chloride (HCl), and municipal solid waste (MSW) landfill emissions as non-methane organic compounds (NMOC).

Greenhouse gases (GHGs) is defined at section 40 CFR 86.1818-12(a) as the aggregate group of gases including $CO_2$, nitrous oxide ($N_2O$), methane $CH_4$, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride ($SF_6$). GHGs is expressed as $CO_2$-equivalent ($CO_2e$).

### 3.2. Definition of a Major Stationary Source

As defined in Rule 62-210.200(Definitions), F.A.C., a stationary source is a "major stationary source" (major PSD source) if it emits or has the potential to emit (PTE):

- 250 tons per year (tons/year) or more of any PSD pollutant; <u>or</u>
- 100 tons/year or more of any PSD pollutant <u>and</u> the facility belongs to one of the 28 listed PSD major facility categories;
- For the special case of greenhouse gases (GHGs), the facility must first be shown to emit or have a PTE of 100,000 tons/year of GHGs as carbon dioxide equivalent ($CO_2e$) to (possibly) be subject to regulation.[1]

The listed PSD major facility categories includes "municipal incinerators capable of charging more than 250 tons of refuse per day". The given category applies to the PCRRF. PCRRF is a major stationary source based on actual emissions of and potential to emit 100 tons/year or more of several individual PSD pollutants.

[1] In making this calculation, the values listed in 40 CFR 98, Subpart A, Table A-1 are used to weight emissions by their respective Global Warming Potential (GWP). For example, the current GWP factors for four of the GHGs are: $CO_2$ = 1; $CH_4$ = 25; $N_2O$ = 298 and $SF_6$ = 22,800.

If emissions of GHGs expressed as $CO_2e$ emissions are greater than 100,000 tons/year, then the total (unweighted) GHGs mass emissions are compared with the 100 and 250 tons/year thresholds to determine whether the source is a major stationary source.[2]

Once a new facility is considered a major stationary source based on one PSD pollutant, then other PSD pollutants are reviewed for PSD applicability based on the respective Significant Emission Rate (SER) defined and specified in Rule 62-210.200, F.A.C. Each pollutant projected to be emitted at a rate equal to or greater than its respective SER is also considered to be "*significant*" and subject to PSD preconstruction review, including a BACT determination.

Refer to Table 2. Although a new stationary source may be "major" for a single PSD pollutant, the project must include BACT controls for any PSD pollutant that exceeds the corresponding significant emission rates (SERs) listed in the table below.

### 3.3. Definition of Major Modification

"Major modifications" at major stationary sources are also subject to PSD review. According to Rule 62-210.200(Definitions), F.A.C., Major Modification (of a Major Stationary Source) is defined as follows:

(a) Any physical change in or change in the method of operation of a major stationary source that would result in a significant emissions increase of a PSD pollutant and a significant net emissions increase of that pollutant from the major stationary source. (Refer to Table 2 below.)

(b) Any significant emissions increase from any emissions units or net emissions increase at a major stationary source that is significant for volatile organic compounds or nitrogen oxides shall be considered significant for ozone. (Refer to Table 1 below.)

(c) through (d). These paragraphs are not relevant to this review

For a major modification of an existing major stationary source, the review must include a BACT determination for any PSD pollutant that exceeds the respective SER. The review must include demonstrations that the project will not cause or contribute to a violation of an AAQS or increment and that the project will not adversely affect AQRVs.

**TABLE 2 – LIST OF SIGNIFICANT EMISSION RATES BY PSD-POLLUTANT. [1]**

| Pollutant | SER (tons/year) | Pollutant | SER (tons/year) [4] |
|---|---|---|---|
| CO | 100 | $NO_X$ | 40 |
| $PM/PM_{10}/PM_{2.5}$ | 25/15/10 | Ozone (VOC) [2] | 40 |
| $PM_{2.5}$ ($NO_X$) | 40 | $PM_{2.5}$ ($SO_2$) | 40 |
| Ozone ($NO_X$) [2] | 40 | SAM | 7 |
| $SO_2$ | 40 | Pb | 0.6 |
| Hg | 0.1 | Fluoride (F) | 3 |
| MWC metals as PM | 15 | MWC acid gases as $SO_2$ & HCl | 40 |
| MWC organics as dioxin/furan | $3.5 \times 10^{-6}$ | GHGs (total mass basis) | 0 [3] |

1. Excluding pollutants specific to the Pulp and Paper industry and MSW landfills.
2. Ozone ($O_3$) is regulated by its precursors (VOC and $NO_X$). PSD for $PM_{2.5}$ can be triggered by its precursors ($NO_X$ and $SO_2$).
3. Pursuant to 40 CFR 52.21(b)(23)(ii), pollutants with no SER listed at 40 CFR 52.21(b)(23)(i) have a SER of zero tons/year.
4. SER also means any emissions rate or any net emissions increase associated with a major stationary source or major modification which would construct within 10 km of a Class I area and have an impact on such area equal to or greater than 1 $\mu g/m^3$, 24-hour average.

[2] This procedure was held to be invalid at the federal level due to a U.S. Supreme Court opinion dated June 23, 2014. Link to Supreme Court Opinion The Department is reviewing the effects of the decision on its own rules. EPA issued guidance regarding implementation of the decision on July 24, 2014. The guidance implies that 75,000 TPY of $CO_2e$ should be treated as an SER until further clarification is provided by the EPA. Link to EPA Guidance

GHGs becomes subject to regulation at a major modification if project emissions as $CO_2e$ are greater than 75,000 tons/year and mass GHGs exceed zero tons/year. The effects of the Supreme Court opinion about this provision on the Department's rules are also under review.

### 3.4. Previous PSD Review

The PCRRF underwent a PSD review for its current air construction permit, Permit No. 1030117-009-AC. This previous analysis included determinations of Best Available Control Technology (BACT) for CO, $SO_2$, particulate matter, and acid gases. This air construction permit, extended by Permit No. 1030117-010-AC (PSD-FL-420A), is in effect until December 31, 2016.

### 3.5. PSD Applicability for the Project

This project consists of only a minor change in reporting requirement timeframes. No changes in emissions from PCRRF are requested or expected. Therefore, projected actual emissions and baseline actual emissions are equal to one another for all PSD pollutants, and there are no increases greater than the SERs in **Table 2**. Consequently, this project does not trigger a PSD review.

## 4. APPLICANT REQUEST AND DEPARTMENT RESPONSE

### 4.1. Applicant Request

The Title V operating permit for the PCRRF (Permit No. 1030117-008-AV) requires reporting excess emissions to the Compliance Authority on either a quarterly or semiannual basis. Excess emissions due to malfunctions must be reported quarterly (if requested by the Compliance Authority), while excess emissions due to other purposes, such as startups and shutdowns, must be reported semiannually. Additionally, the permittee must notify the Compliance Authority immediately (generally on the same day, or the next business day) when a malfunction leading to excess emissions occurs.

The current air construction permit for the PCRRF, Permit No. 1030117-009-AC, contains slightly different reporting timeframes. It requires quarterly reporting for all excess emissions, along with immediate notification (generally on the same day, or the next business day) of malfunctions.

The applicant has requested that the timeframes for reporting given in the air construction permit be brought in line with the timelines in the Title V permit.

### 4.2. Department Response

The permittee reports emissions information regularly to the Department, generally on a semi-annual or annual basis. Additionally, the permittee is not requesting any change in the reporting requirements related to malfunctions. The provisions regarding immediate notification about malfunctions, and quarterly reporting of excess emissions from malfunctions, remain intact, as there is no discrepancy between the air construction permit and the operating permit on these items. Bringing the air construction permit in line with the operating permit will reduce the administrative burden on the permittee, while having no adverse impact on air quality. Consequently, the Department grants the permittee's request.

## 5. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the Draft Permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the Draft Permit. John Dawson is project engineer responsible for preparing the draft permit and technical evaluation. Details of the analyses may be obtained by contacting John Dawson by email at john.dawson@dep.state.fl.us or by phone at 850-717-9085.