TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

Omni Waste of Osceola County, LLC - JED Solid Waste Management Facility
1501 Omni Way
St. Cloud, FL 34773

JED Solid Waste Management Facility
Facility ID No. 0970079

PROJECT

Draft Permit No. 0970079-011-AC/PSD-FL-429
Application for Air Construction/Prevention of Significant Deterioration Permit

JED Solid Waste Management Facility Expansion Project

COUNTY

Osceola 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

July 30, 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 existing JED Landfill facility is located in Osceola County approximately 60 kilometers (km) (38 miles) southeast of downtown Orlando. The existing JED Landfill is located at 1501 Omni Way in St. Cloud, Florida. The location of Osceola County in Florida is shown in **Figure 1** while **Figure 2** shows a satellite view of the JED Landfill. The new landfill gas-to-energy (LFGTE) plant which will be comprised of the 12 engines will be classified under electric generation - sanitary services under Standard Industrial Classification (SIC) No. 4953. The UTM coordinates of the GED Landfill are Zone 17, 491.6 km East, and 3102.9 km North.

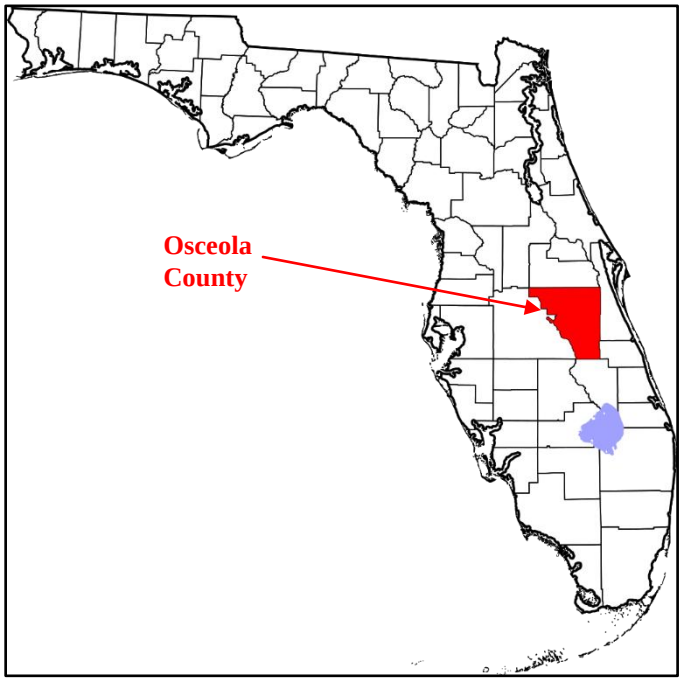


Figure 1. Location of Osceola County in Florida.

Figure 2. Satellite View of JED Landfill.

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).

The proposed project affects the following *existing* emissions units (E.U.s):

E.U. ID No.	E.U. Brief Description(s)
001	MSW Class I Landfill with Gas Extraction - Cells 1-10
002	Open Candlestick Utility Flare, Flare #1

The proposed project will add the following *new* emissions units (E.U.s):

E.U. ID No.	E.U. Brief Description(s)
005	MSW Class I Landfill (expansion) with Gas Extraction - Cells 11-23
006	LFGTE Plant - 12 LFG-fired Engines
007	4 Open Candlestick Utility Flares

1.3. Facility Regulatory Categories

- The existing facility is not classified as a Prevention of Significant Deterioration (PSD) major facility. The proposed project is subject to PSD preconstruction review in accordance with Rule 62-212.400, F.A.C.
- The existing facility is not a major source of hazardous air pollutants (HAP). However, the proposed project will cause it to become a major source of HAP.
- The existing facility is a as a Title V Source in accordance with Rule 62-210.200, F.A.C.
- The proposed project includes units subject to applicable New Source Performance Standards (NSPS) in Title 40, Part 60 of the Code of Federal Regulations.
- The proposed project includes units subject to applicable National Emissions Standards for Hazardous Air Pollutants (NESHAP) in Title 40, Part 63 of the Code of Federal Regulations.
- The proposed project includes no units subject to the acid rain or CAIR provisions of the Clean Air Act.

1.4. Application Processing Schedule

- May 12, 2014 Application for Air Construction/Prevention of Significant Deterioration Permit received on (complete application).
- July 30, 2014 Draft PSD air construction permit package posted.

{Documents specifically related to this project are posted and available on the Department's World Wide Web site at http://appprod.dep.state.fl.us/air/emission/apds/default.asp by entering the project number shown above.}

Relevant Document(s)

- Permit No. 0970079-009-AV, Most Recent Title V Air Operation Permit (a revision), issued on 07/02/2010, permit expires on 06/30/2015.

2. PSD APPLICABILITY

2.1. General PSD Applicability

For areas currently in attainment with the state and federal AAQS or areas otherwise designated as unclassifiable, the Department regulates major stationary sources of air pollution in accordance with Florida's Prevention of Significant Deterioration (PSD) preconstruction review program as defined in Rule 62-212.400, F.A.C. Under preconstruction review, the Department first must determine if a project is subject to the PSD requirements ("PSD applicability review") and, if so, must conduct a PSD preconstruction review. A PSD applicability review is required for projects at new and existing major stationary sources. In addition, proposed projects at existing minor sources are subject to a PSD applicability review to determine whether potential emissions *from the proposed project itself* will exceed the PSD major stationary source thresholds. A facility is considered a major stationary source with respect to PSD if it emits or has the potential to emit:

- 250 tons per year or more of any regulated air pollutant; or
- 100 tons per year or more of any regulated air pollutant and the facility belongs to one of the following 28 PSD-

major facility categories: fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input, coal cleaning plants (with thermal dryers), Kraft pulp mills, Portland cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants, primary copper smelters, municipal incinerators capable of charging more than 250 tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production plants, chemical process plants, fossil fuel boilers (or combinations thereof) totaling more than 250 million British thermal units per hour heat input, petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels, taconite ore processing plants, glass fiber processing plants and charcoal production plants.

Once it is determined that a project is subject to PSD preconstruction review, the project emissions are compared to the "significant emission rates" (SERs) defined in Rule 62-210.200, F.A.C. for the following pollutants: carbon monoxide (CO); NOx; sulfur dioxide (SO_2); particulate matter (PM); particulate matter with a mean particle diameter of 10 microns or less (PM_{10}); volatile organic compounds (VOC); lead (Pb); fluorides (F); sulfuric acid mist (SAM); hydrogen sulfide (H_2S); total reduced sulfur (TRS), including H_2S; reduced sulfur compounds, including H_2S; municipal waste combustor organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans; municipal waste combustor metals measured as PM; municipal waste combustor acid gases measured as SO_2 and hydrogen chloride (HCl); municipal solid waste landfills emissions measured as non-methane organic compounds (NMOC); mercury (Hg) and greenhouse gases (GHG). In addition, significant emissions rate also means any emissions rate or any net emissions increase associated with a major stationary source or major modification which would construct within 10 kilometers 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.

If the increase in emissions from the project exceeds the defined significant emissions rate of a PSD pollutant, the project is considered "significant" for the pollutant and the applicant must employ the Best Available Control Technology (BACT) to minimize the emissions and evaluate the air quality impacts. Although a facility or project may be *major* with respect to PSD for only one regulated pollutant, it may be required to install BACT controls for several "significant" regulated pollutants. **Table 1** lists the PSD SERs.

TABLE 1 - LIST OF SIGNIFICANT EMISSION RATES BY PSD-(AIR) POLLUTANT. [1]

PSD-(Air) Pollutant	SER, tons/year	PSD-(Air) Pollutant	SER, tons/year
PM	25	CO	100
PM_{10}	15	NOx	40
$PM_{2.5}$	10	Ozone [NOx] [3]	40
$PM_{2.5}$ [NOx] [2]	40	Volatile Organic Compounds (VOC)	NA [4]
$PM_{2.5}$ [SO_2] [2]	40	Ozone [VOC] [3]	40
Lead (Pb)	0.60	MSW Landfill Gases (as NMOC)	50
Mercury (Hg)	0.10		
MWC metals [measured as PM]	15	Reduced Sulfur Compounds (RSC) [H_2S]	10
CO_2e [5]	75,000	Total Reduced Sulfur (TRS) [H_2S]	10
SO_2	40	Sulfuric Acid Mist (SAM)	7
Fluorides (F)	3	HCl	NA [4]
MWC acid gases [SO_2 + HCl]	40	MWC organics [dioxins/furans]	3.5×10^{-6}

1. The Department received the authority to issue PSD permits governing GHG emissions on May 19, 2014.[1]
2. $PM_{2.5}$ is also regulated through precursors [NOx and SO_2].
3. Ozone (O_3) is regulated through precursors [VOC and NOx].
4. NA means not applicable.
5. CO_2e = equals GHG equivalents.

3. APPLICANT REQUEST – PROPOSED PROJECT

3.1. General Description

The applicant applied on May 12, 2014, to the Department for an Air Construction (AC)/Prevention of Significant Deterioration (PSD) permit. The AC/PSD permit is for the JED Solid Waste Management Facility Expansion.

Under the proposed project the existing JED Landfill will be expanded from its current (existing) capacity of 16.2 million tons to an estimated 81.5 million tons. A gas collection & control system will be installed under the expansion into additional cells. All of the landfill gas (LFG) generated will be either routed and combusted in engines or in open flares. The JED landfill currently has one 3,600 scfm open flare. Two (2) open flares with a total flaring capacity of 7,200 scfm and twelve (12) LFGTE CAT® G3520C engines will be added in PSD Phase 1. The lean-burn engine/generator sets will fire LFG to produce up to a combined nominal 19.2 megawatts (MW) of power to the electrical grid. In PSD Phase 2 (full built-out), two (2) additional open flares with a total flaring capacity of 7,200 scfm will be added.

3.2. Engines

Each of the identical CAT Model G3520C engines/generators sets will have the following specifications:

- Each engine is designed to fire low-pressure, lean fuel mixtures (lean-burn) and produce low combustion by-product emissions. Each engine is equipped with an air-to-fuel ratio controller to monitor engine performance parameters and automatically adjust the air-to-fuel ratio and ignition timing to maintain efficient fuel combustion, which also minimizes air pollutant emissions.
- Each engine will be fired exclusively with LFG generated by and received from the JED Landfill.
- Each engine will have power generation rating of 2,242 brake horsepower (bhp).
- Each engine will be connected to a 1,600 kW electrical generator.
- The maximum fuel consumption rate of each engine is 554 scfm or 33,240 scf per hour.
- Based on a LFG HHV of 500 Btu/scf, the maximum heat input rating for each engine is 16.61 million Btu per hour (MMBtu/hour) (14.96 MMBtu/hour LHV).

3.3. LFG Treatment

Prior to the LFG going to the engines it will be treated in a treatment and conditioning system. The LFG treatment and conditioning system associated with the LFGTE plant will include the following components:

- Initial gas dewatering, utilizing a moisture knock-out vessel,
- Gas compressor and blowers,
- Air-to-gas coolers and de-watering, and
- Removal of particulate matter larger than 10 microns from the LFG.

3.4. H_2S Scrubbing System

In addition, Omni Waste is proposing to install a two-stage H_2S scrubbing system for the JED LFG with the first stage constructed and operated in the first PSD phase (PSD Phase 1) and the second stage constructed and operated in the second PSD phase (PSD Phase 2). The two stages will have the following design efficiency:

- First stage – Reduce LFG H_2S concentration to <160parts per million by volume (ppmv).
- Second stage – Reduce LFG H_2S concentration to <65 ppmv.

3.5. Flares

The JED Landfill currently operates a 3,600-scfm candle type open flare. There will be no change to this flare as a result of the proposed expansion. Additional open flares similar in model and size to the existing flare are proposed. Likely two 3,600 scfm open flares are planned for PSD Phase 1 and two more 3,600 scfm open flares are planned for PSD Phase 2.

3.6. Full Build Out

After full built-out, a total of four (4) open flares will have been added in addition to the existing one open flare for a total facility-wide flaring capacity of up to 18,000 scfm. The new LFGTE plant which is comprised of the 12 engines will be classified under electric generation - sanitary services under Standard Industrial Classification (SIC) No. 4953.

3.7. PSD Applicability for Project

The existing facility (JED Landfill) is currently not a major stationary source of air emissions (PSD major source) under the new source review (NSR) Prevention of Significant Deterioration (PSD) regulations, since the facility is not one of the 28 listed source categories and the emissions of a PSD pollutant from the JED Landfill are limited to 249 tons per year (TPY) or less in a federally enforceable permit. A major stationary source (PSD major source) is defined as a source that emits 250 TPY or more of a regulated NSR pollutant, if it does not belong to the 28 listed source categories. Regulations require NSR for new or modified sources that increase air emissions above certain threshold amounts for major sources.

The application submitted for this project identified CO emissions as having the potential to emit more than 250 TPY. As a result, the proposed project is subject to NSR PSD review.

The applicant addressed PSD applicability for the project's worst-case scenarios in the permit application {see the permit application, Project Report (identified as 083-8273429) by Golder Associates dated April 2014, specifically, "Table 3-3: PSD Applicability Analyses," a hyperlink is added here for convenient reference to the permit application (Table 3-3 is on page 103 of the .pdf file)}.

The potential emissions (worst-case) for the proposed project are extracted from the applicant's Table 3-3 and are summarized here in **Table 2**. This **Table 2** includes those PSD pollutants relevant to the project.

TABLE 2 - POTENTIAL EMISSIONS UNDER THIS PROJECT.

PSD-(Air) Pollutant	Potential Emissions, TPY (tons/year)	PSD SER, TPY	PSD SER exceeded?
PM	78.5	25	Yes
PM_{10}	78.5	15	Yes
$PM_{2.5}$	78.5	10	Yes
NOx	230.0	40	Yes
CO	**1,312.4**	**250**	**Yes**
VOC	156.5	40	Yes
NMOC	231.9	50	Yes
SO_2	38.9 & 38.2 [1]	40	No
Total GHGs (as CO_2e)	374,085.5 [2]	75,000	Yes

1. The 250 TPY threshold applies because the JED landfill is not one of the 28 listed source categories.
2. SO_2 emissions from "Flaring Only" in the full build-out (see the applicant's Table 3-3).
3. GHGs emissions including biogenic emissions.

Based on what the applicant has provided the proposed project is therefore subject to PSD preconstruction review for CO, NOx, PM, PM_{10}, $PM_{2.5}$, VOC, NMOC and GHG emissions in accordance with Rule 62-212.400, F.A.C.

3.8. New MSW Class I Landfill (expansion) with Gas Extraction - Cells 11-23

The JED Landfill, a Municipal Solid Waste (MSW) landfill requested authorization for the full build-out of the landfill.

The JED Landfill currently includes 10 cells for Phases 1 through 3 with a maximum solid waste capacity of 16.2 million tons. Based on the currently planned waste acceptance rate, the landfill will exceed the current waste capacity limit of 16.2 million tons by mid-2015 and as a result, additional phases and cells are being developed. The full build-out is a total of 8 phases and comprising of 23 cells encompassing a total area of 360 acres.

An air construction permit is required to increase the total landfill waste capacity.

The LFG generation at the JED Landfill will increase as the amount of waste increases. Using the U.S. EPA Landfill Gas Emissions Model (LandGEM, gas curve, attached in Appendix A of the permit application), it is estimated that the landfill will generate approximately 21,130 scfm of LFG in 2041, the year when the landfill is expected to be completely built-out and capped.

The project will include installation of a gas collection & control systems (GCCS) for the additional cells and routing of LFG from the GCCS to the flares and to the CAT engines after being processed in a gas treatment & conditioning system.

The applicant is proposing to install a two-stage H_2S scrubbing system as part of the full build-out of the JED Landfill. The applicant proposed various H_2S scrubbing system technologies from which they will select one. The following types of technologies were mentioned in the application: Biological Conversion to Sulfate, Biological Conversion to Elemental Sulfur, Physical-Chemical Conversion to Elemental Sulfur (LOW-CAT™ process by Merichem, Paques/THIOPAQ® Process), Physical/Chemical Sulfur Removal System (ECO-TEC™, Nrgtek, Inc.), Sacrificial Media Systems; and, Packed Tower Chemical Scrubber.

3.9. New LFGTE Plant - 12 LFG-Fired Engines

3.9.1. Proposed BACT

The applicant used U.S. EPA's five step "top down" BACT process in the permit application {see the permit application, Project Report by Golder Associates, specifically, see Section 5.0 BACT Analysis, begins on page 36 of the Project Report}.

The applicant's specific BACT analysis for the engines can be found in Sections 5.4 & 5.5 of the Project Report {begins on page 44 & 54 of the Project Report}. The BACT analysis provided supporting information from U.S EPA's RACT/BACT/LAER Clearinghouse (RBLC).

In summary, the applicant's proposed BACT for the engines was as follows {from page 38 of the Project Report}:

The following emissions limitations were proposed as BACT by the applicant for the engines:

- NOx, CO, VOC, and NMOC emissions will be limited by combustion controls and good combustion practices with air/fuel ratio and lean burn design of the engines.
- Emissions of PM_{10} and $PM_{2.5}$ will be limited by pre-treatment of LFG to remove PM larger than 10 microns, good combustion practices and proper maintenance.
- GHG emissions will be limited by LFG collection and combustion, i.e., conversion of methane (CH_4, CO_2e = 25) to CO_2 (CO_2e = 1).

3.10. New 4 Open Candlestick Utility Flares

3.10.1. Proposed BACT

The applicant used U.S. EPA's five step "top down" BACT process in the permit application {see the permit application, Project Report by Golder Associates, specifically, see Section 5.0 BACT Analysis, begins on page 36 of the Project Report}.

The applicant's specific BACT analysis for the flares can be found in Section 5.3 & 5.5 of the Project Report {begins on page 38 & 54 of the Project Report}. The BACT analysis was provided supporting information from U.S EPA's RBLC.

In summary, the applicant's proposed BACT for the flares was as follows {from pages 37-38 of the Project Report}:

The following operating limitations were proposed as BACT by the applicant for the new open flares at the JED Landfill:

- The flares will be operated in accordance with 40 CFR 60.18(c) through (f), General Control Device and Work Practice Requirements for flares.
- The flares will be operated with a flame present at all times and/or have a constant pilot flame. The pilot flame shall be continuously monitored by a thermocouple, infrared monitor, or ultraviolet monitor. The time, date, and duration of any loss of pilot flame shall be recorded.

- The flare components will be calibrated, maintained and operated according to the manufacturer's specifications.
- The flares will be operated with air assist to ensure no visible emissions except periods not to exceed a total of five minutes during any two consecutive hours.
- Continuous monitors - A continuous flow monitor will be used to monitor LFG flow to the flares. Net heating value of the gas combusted in the flare shall be calculated according to the equation given in 40 CFR §60.18(f)(3) as amended through October 17, 2000 (65 FR 61744).

The following emissions limitations are proposed as BACT by the applicant for the new open flares at the JED Landfill:

- CO, VOC, and NMOC emissions will be limited by good combustion practices incorporating proper burner management and monitoring.
- NOx emissions will be limited by good combustion practices incorporating proper burner management and monitoring.
- Emission of PM_{10} and $PM_{2.5}$ will be limited by combusting LFG in the flares. The flares will be operated with air assist to promote proper mixing and complete combustion of LFG and reduce visible emissions. The LFG will be treated to remove particulate matter larger than 10 microns prior to combusting in the flares.
- GHG emissions will be limited by LFG collection and combustion.

4. DEPARTMENT REVIEW

4.1. Background - Project

The applicant applied on May 12, 2014, to the Department for an Air Construction (AC)/Prevention of Significant Deterioration (PSD) permit. The AC/PSD permit is for the JED Solid Waste Management Facility Expansion.

All of the LFG collected at the JED Landfill will be combusted in the landfill gas-to-energy (LFGTE) plant which is basically engines and/or the open flares. Since the flares and the engines are air pollution sources, an air construction permit is required to increase the total landfill waste capacity and install the additional flares and the LFGTE plant.

4.2. Phased Construction Project

The project was submitted as a phased construction project. Provided the requirements of Rule 62-212.400(12)(a), F.A.C. are met, no further PSD BACT analysis, proposals and determinations are necessary under the proposed project.

> *(12) Source Obligation.*
>
> *(a) 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.*

However, if the requirements of Rule 62-212.400(12)(a), F.A.C. are not met a revised PSD BACT analysis, proposals and determinations are required.

The approved phased construction project is added explicitly to the permit as a specific condition along with a requirement to report the actual commencement date of each phase of the project.

4.3. PSD Applicability for Project

The existing JED Landfill is currently <u>not</u> a major stationary source of air emissions (PSD major source). The application submitted for this project identified CO emissions as having the potential to emit more than 250 TPY. As a result, the proposed project is subject to NSR PSD review. BACT determinations are required for the project's emissions where emissions exceed the PSD major source threshold or SERs (see **Table 2**). BACT determinations are therefore required for CO, NOx, PM, PM_{10}, $PM_{2.5}$, VOC, NMOC and GHG emissions

The Department's review of the permit application indicates that PSD applicability was in fact based on the landfill's potential to emit (PTE), i.e., maximum capacity. This generally occurs at the peak LFG generation rate.

4.4. New MSW Class I Landfill (expansion) with Gas Extraction - Cells 11-23

4.4.1. Requirements

The Department authorizes the landfill expansion and includes specific conditions in the permit for the authorization.

The proposed project's worst-case emissions were based on a LFG flow of 12,245 scfm {15,845 scfm (peak landfill gas generation) - 3,600 scfm (current capacity)}, which represents the peak gas generation from the expansion (proposed project).

SO_2 emissions when combusting the LFG in the engines were estimated to be 38.9 TPY and 38.2 TPY when combusted in the flares only. These emission levels are just below the PSD SER for SO_2 emissions of 40 TPY. To ensure that PSD is avoided for SO_2 emissions from the proposed project, the permit contains specific conditions to escape-PSD.

4.4.2. H_2S Scrubbing System

The applicant proposed to install and operate an H_2S scrubbing system that will reduce LFG H_2S concentrations. Reducing the H_2S concentration in the FFG effectively reduces SO_2 emissions when the LFG is combusted in the engines and the flares. By reducing the H_2S content of the LFG and the subsequent SO_2 emissions in this project, PSD was avoided for SO_2 emissions.

The H_2S scrubbing system will have a two staged construction. The two stages shall have the following design efficiencies:

a. First stage - Reduce LFG H_2S concentration to < 160 ppmv; and,
b. Second stage - Reduce LFG H_2S concentration to < 65 ppmv.

A biological treatment system was the likely H_2S control option for the proposed project {see page 9, Section 2.2.3 on H_2S Scrubbing in the Golder Associates' Project Report.} The proposed project will likely be relying upon such a system to reduce the H_2S content in the LFG by about 90%, from about 840 ppmv to down to about 65 ppmv.

On June 5, 2014, Golder Associates on behalf of the applicant provided several brochures and vendors' information on biological treatment systems. The brochures and vendors' information for the systems indicate $\geq$90% H_2S removal in biogases.

The Department therefore has reasonable assurances that a biological treatment system can achieve the stated reduction of the H_2S concentration in LFG.

4.5. New LFGTE Plant - 12 LFG-fired Engines

4.5.1. Review of Emission Standards for Engines

There were two potentially applicable federal regulations to the proposed spark ignition LFG engines: NSPS 40 CFR 60, Subpart JJJJ; and, NESHAP 40 CFR 63, Subpart ZZZZ. Florida has no source specific emission limiting standards for engines in Chapter 62-296, F.A.C.

As the applicant indicated in the permit application (see Section 3.6.3 of the Project Report, pages 30-31) NSPS 40 CFR 60, Subpart JJJJ; and, NESHAP 40 CFR 63, Subpart ZZZZ do apply to the proposed LFG-fire engines.

4.5.1.1. *NSPS 40 CFR 60, Subpart JJJJ*

NSPS Subpart JJJJ regulations establish operating limitations and emissions standards for CO, NO_X and VOC. The applicant provided technical data sheets showing that the engines firing low energy fuel will meet the emission limits established in NSPS Subpart JJJJ. The vendor, Caterpillar, will not certify the CAT® G3520C engines when burning LFG as fuel. Based on operating identical engines firing LFG at other landfills, the applicant has proposed emission limits, as shown in **Table 3** below, to be below the emissions limits identified in NSPS subpart JJJJ for all pollutants and below engine manufacturers estimated emission standards for CO and VOC and a slightly higher emission standard for NOx emissions. As a result, the Department will require that the engines are tested to demonstrate compliance with these emissions standards.

TABLE 3 - NSPS SUBPART JJJJ AND CAT® G3520C EMISSION STANDARDS AND PROPOSED BACT EMISSION LIMITS.

Air Pollutant	NSPS Subpart JJJJ Standards	CAT® G3520C Standard	Applicant's Proposed BACT Emission Limits
CO	5.0 g/bhp-hr	4.22 g/bhp-hour	3.5 g/bhp-hr
NOx	3.0 g/bhp-hr	0.50 g/bhp-hour	0.60 g/bhp-hr
VOC	1.0 g/bhp-hr	0.56 g/bhp-hour	0.56 g/bhp-hr

4.5.1.2. *NESHAP 40 CFR 63, Subpart ZZZZ*

The JED Landfill is currently not a major source of HAP emissions. However, as shown in Table 3-3 in the permit application, the total HAP emissions from the proposed project is estimated to be more than 25 TPY and therefore, the JED Landfill facility will be a major source of HAPs after the proposed project is completed. As defined by the NESHAP regulations, the facility is therefore classified as a "major source" of HAP emissions. In accordance with 40 CFR 63.6590(b)(2), a new or reconstructed stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions which combusts landfill or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis must meet the initial notification requirements of 40 CFR 63.6645(f) and the requirements of 40 CFR 63.6625(c), 40 CFR 63.6650(g), and 40 CFR 63.6655(c).

The initial notification requirement per 40 CFR 63.6645(c):

> *(c) If you start up your new or reconstructed stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions on or after August 16, 2004, you must submit an Initial Notification not later than 120 days after you become subject to this subpart.*

The monitoring requirement per 40 CFR 63.6625(c):

> *(c) If you are operating a new or reconstructed stationary RICE which fires landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, you must monitor and record your fuel usage daily with separate fuel meters to measure the volumetric flow rate of each fuel. In addition, you must operate your stationary RICE in a manner which reasonably minimizes HAP emissions.*

According to 40 CFR 63.6650(g), an annual report must be submitted according to Table 7, Item 2 of 40 CFR 63 Subpart ZZZZ. According to 40 CFR 63.6655(c), records of daily fuel usage must be kept.

4.5.2. BACT Determinations

The Department's most recent BACT Determination for LFG-fired engines was done in the Sarasota Landfill Gas-to-Energy Project, Permit No. 1150089-008-AC/PSD-FL-422, issued on 12/18/2013 {for details, see the project files at the following web site link, by entering the project number}. The JED project's LFGTE is about three times larger than the Sarasota one [19.2 MW at the JED proposed project vs. 6.2 MW at the Sarasota project].

The Department performed its own search of the U.S EPA's RACT/BACT/LAER Clearinghouse (RBLC) {found at this web site link to U.S EPA's web site} for LFG-fired engines. The RBLC search results continue to coincide with the Department's most recent BACT Determination for the LFG-fired engines in the Sarasota Landfill Gas-to-Energy Project.

The BACT Determination for the JED LFG-fired engines is therefore proposed to be what was basically established in the Department's most recent BACT Determination for the LFG-fired engines in the Sarasota Landfill Gas-to-Energy Project.

A new aspect in this particular BACT Determination is for the JED LFG-fired engines regarding GHG emissions. A BACT analysis was required for GHG emissions. As previously mentioned above, the applicant proposed a GHG BACT for the JED LFG-fired engines to be collection of the LFG and subsequent combustion in the engines along with the energy production facility. The U.S. EPA issued specific guidance for the selection of GHG BACT in March of 2011.[2] In this written document, EPA provides specific guidance on a BACT analysis for GHG emissions applying EPA's "top down" 5-step BACT process. On pages 44-46 of the written document, EPA specifically describes step 5 of the "top down" 5-step BACT process which is selection (proposal by the applicant) and Rationale of BACT for

GHG emissions. On the bottom of page 46 in the last paragraph, EPA states - "design, equipment, or work practice standards may not be used in lieu of a numerical emissions limitation(s) unless there is a demonstration in the record that the criteria for applying such a standard are satisfied." The applicant provided a demonstration in the permit application in its BACT analysis (see Section 5.5, pages 54-62 of the Project Report). Specifically the applicant states:

"For the project, the collection of the LFG and combustion that includes flares and an energy production facility is the most appropriate and cost effective reduction for GHG emissions and are proposed as BACT for the project. The JED landfill uses a LFG collection system that includes horizontal and vertical wells, daily landfill cover, and geosynthetic membrane for areas achieving final grade. These are recognized as achieving 75 percent capture or greater. Once LFG is collected, flares and an energy production facility will reduce GHG emissions through the combustion of CH4 in LFG by about 89 percent. Flares can be constructed to accommodate the long timeframe for the development of the landfill and LFG production and are used when the energy production facility is not operating due to maintenance. PSD Phase 1includes energy production for 55 percent of the LFG produced during the landfill development."

The Department agrees with this assessment and therefore, establishing a numerical emission limitation for CO_2e emissions is not necessary per the EPA guidance document. In addition, EPA did not find it necessary to establish a numerical emission limitation for CO_2e emissions in its example for a similar type of project (see Appendix G for a new landfill).[3]

In summary, the Department's proposed BACT for the engines is as follows:

- CO, VOC, NMOC, NOx, $PM/PM_{10}/PM_{2.5}$ and GHG: The permittee shall minimize CO, VOC, NMOC, NOx, $PM/PM_{10}/PM_{2.5}$ and GHG emissions by installing, operating and maintaining the required LFG treatment systems [H_2S scrubbing system and treatment & conditioning system] as well as maintaining the air-to-fuel ratio to ensure efficient combustion.
- CO: The advanced lean burn engine design, use of treated LFG, good combustion practices and proper maintenance minimizes CO emissions. CO emissions from each engine/generator set shall not exceed 3.5 gram per brake horsepower hour (g/bhp-hour) and 17.3 pounds/hour (lbs/hour).
- VOC: The advanced lean burn engine design, use of treated LFG, good combustion practices and proper maintenance minimizes VOC emissions. VOC emissions from each engine/generator set shall not exceed 0.56 g/bhp-hour and 0.8 lbs/hour.
- NMOC: The advanced lean burn engine design, use of treated LFG, good combustion practices and proper maintenance minimizes NMOC emissions. NMOC emissions from each engine/generator set shall not exceed 0.85 g/bhp-hour and 0.8 lbs/hour.
- NOx: The advanced lean burn engine design, use of treated LFG, good combustion practices and proper maintenance minimizes NOx emissions. NOx emissions from each engine/generator set shall not exceed 0.60 g/bhp-hour and 3.0 lbs/hour.
- $PM/PM_{10}/PM_{2.5}$: The advanced engine design, use of treated LFG, good combustion practices and proper maintenance minimizes $PM/PM_{10}/PM_{2.5}$ emissions. The LFG shall also be treated to remove PM larger than 10 microns prior to combusting in the engines. In addition, as determined by EPA Method 9, visible emissions from each engine/generator set shall not exceed 10% opacity, based on a six-minute average. Visible emissions (VE) shall serve as a surrogate for $PM/PM_{10}/PM_{2.5}$ emissions.
- VE: VE from each engine/generator set exhaust shall not exceed 10% opacity.
- GHG: The advanced engine design, use of treated LFG, good combustion practices and proper maintenance minimize GHG emissions (being primarily N_2O & CH_4). The collection of the LFG and subsequent combustion in the engines along with the energy production facility also minimize GHG emissions. NOx & CO emissions shall serve as primary surrogates for GHG emissions (being primarily N_2O & CH_4).

4.6. New 4 Open Candlestick Utility Flares

4.6.1. BACT Determinations

The Department's most recent BACT Determination for open flares was done in the OUC-Stanton IGCC Project, Permit No. 0950137-010-AC/PSD-FL-373, issued on 12/22/2006 {for details, see the project files at the following web site link, by entering the project number}.

The Department performed its own search of the U.S EPA's RACT/BACT/LAER Clearinghouse (RBLC) {found at this web site link to U.S EPA's web site} for open flares. The RBLC search results support what the applicant proposed.

BACT for the JED open flares is therefore proposed to be at a minimum what was basically established in the Department's most recent BACT Determination, based on a review of what was proposed by the applicant and the RBLC search results.

A new aspect in this particular BACT Determination is for the JED open flares regarding GHG emissions. A BACT analysis was required for GHG emissions. As previously mentioned above, the applicant proposed BACT for the JED open flares to be collection of the LFG and subsequent combustion in the flares. The U.S. EPA issued specific guidance for the selection of GHG BACT in March of 2011.[4] In this written document, EPA provides specific guidance on a BACT analysis for GHG emissions applying EPA's "top down" 5-step BACT process. On pages 44-46 of the written document, EPA specifically describes step 5 of the "top down" 5-step BACT process which is selection (proposal by the applicant) and Rationale of BACT for GHG emissions. On the bottom of page 46 in the last paragraph, EPA states - "design, equipment, or work practice standards may not be used in lieu of a numerical emissions limitation(s) unless there is a demonstration in the record that the criteria for applying such a standard are satisfied." The applicant provided a demonstration in the permit application in its BACT analysis (see Section 5.5, pages 54-62 of the Project Report). Therefore, establishing a numerical emission limitation for CO_2e emissions is not necessary per the EPA guidance document. In addition, EPA did not find it necessary to establish a numerical emission limitation for CO_2e emissions in its example for a similar type of project (see Appendix G for a new landfill).[5]

In summary, the Department's proposed BACT for the open flares is as follows:

- The permittee is authorized to install, operate and maintain four (4) open candlestick utility flares (LFG Specialties Model No. PCFT1444I12 or equivalent) that will fire LFG with the following nominal design specifications per flare: a maximum rating of 3,600 scfm; and, a maximum heat input rate of 106 MMBtu/hour, HHV from LFG.
    a. Each flare shall be equipped with an automatic propane pilot system and control panel that monitors the presence and temperature of pilot flame.
    b. The total LFG volumetric flow to each flare shall be measured using a thermal dispersion flow meter and flow shall be continuously recorded on a data recorder.
- Only H_2S scrubbed LFG shall be fired in the flares.
- The flares shall be operated with a flame present at all times, as determined by the methods specified in 40 CFR 60.18(f).
- The flares shall be operated with an exit velocity, in accordance with 40 CFR 60.18(c)(4) and (5), as determined by the methods specified in 40 CFR 60.18(f)(4) and (f)(6).
- The owner or operator shall annually determine the actual exit velocity of each flare.
- Flares used to comply with provisions of 40 CFR 60, Subpart A shall be operated at all times when emissions may be vented to them.

The following emission standards & limitations are proposed as BACT by the Department for the open flares:

- CO, VOC, NMOC, NOx & GHG: The permittee shall minimize CO, VOC, NMOC, NOx and GHG emissions by following the operational requirements of this permit. The operational requirements of this permit shall serve as a surrogate for CO, VOC, NMOC, NOx & GHG emissions.

- PM/PM_{10}/$PM_{2.5}$: The requirements previously stated for CO, VOC, NMOC, NOx and GHG emissions also apply for PM emissions. The use of treated LFG also minimizes PM/PM_{10}/$PM_{2.5}$ emissions. The LFG shall be treated to remove PM larger than 10 microns prior to combusting in the flares. The flares shall be operated with air assist to promote proper mixing and complete combustion of LFG and to reduce VE. VE shall serve as a surrogate for PM/PM_{10}/$PM_{2.5}$ emissions.
- VE: The flares shall be operated with no visible emissions (VE), except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.
- GHG: The operational requirements of this permit minimize GHG emissions (being primarily N_2O & CH_4). The collection of the LFG and subsequent combustion in the flares also minimizes GHG emissions. NOx & CO emissions shall serve as primary surrogates for GHG emissions (being primarily N_2O & CH_4).

5. AIR QUALITY ANALYSIS

5.1. Introduction

5.1.1. Project Description

Omni Waste of Osceola County, LLC (OWOC) owns and operates the J.E.D. Solid Waste Management Facility (JED Landfill) in rural Osceola County, Florida, more than 25 km from the nearest city (see **Figure 3** and **Figure 4**). As required by NSPS for a Class I Municipal Solid Waste Landfill, contained in 40 CFR 60 Subpart WWW, OWOC currently operates a LFG collection system routed to a single flare with a capacity of 3,600 scfm. The applicant is seeking authorization to install and operate four additional flares and a landfill gas-to-energy (LFGTE) plant consisting of 12 internal combustion (IC) engines capable of producing 19.2 megawatts (MW) of electricity as part of a plan to develop the landfill to full build-out, increasing in waste capacity from 16.2 million tons to 81.5 million tons by 2041. This project is designed to capture 15,845 scfm or 75% of the maximum potential LFG creation by the landfill at full capacity. Excess LFG not combusted by the IC engines, which have a nominal gross capacity of 6,600 scfm, will be flared.

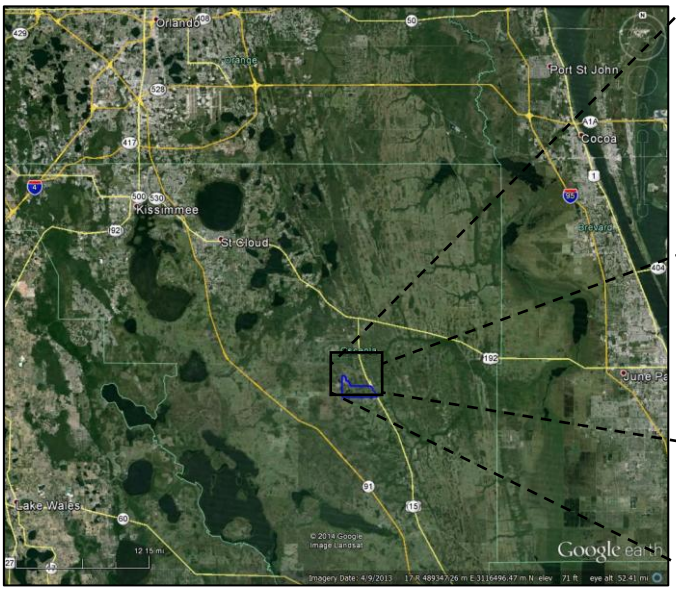


Figure 3. Satellite view of JED Landfill Site.

Figure 4. Closer View of Landfill Site.

5.1.2. PSD Applicability

Currently the JED Landfill is not a major source of new source review (NSR) regulated pollutants as defined in 40 CFR 51.166(b)(1)(i)(b). The proposed project will result in a net increase of potential emissions in exceedance of the major stationary source threshold of 250 TPY; thus, the project is subject to PSD review as described in 40 CFR 52.21 and Rule 62-212.400, Florida Administrative Code (F.A.C.).

As a part of this review, Rules 62-212.400(5) and 62-212.400(7), F.A.C. require the applicant to perform an air quality analysis and a source impact analysis for each criteria pollutant that exceeds its applicable significant emission

rate (SER) as defined in 40 CFR 52.21(b)(23)(i). The emission rates in **Table 4** are based on the worst case operating scenario for project emissions involving full operation of the LFGTE plant and flaring of the remaining LFG at full capacity and indicate that CO, NOx, PM, PM_{10}, $PM_{2.5}$, and VOC are subject to review.

In order to determine the maximum potential emissions for the project, an LFG methane content of 57% was assumed, though the actual value is expected to be lower. Since the emissions from the LFGTE plant are based on heat input, there is no change in emissions with methane content; however, a lower methane content would result in more LFG being consumed by the IC engines and less by the flares resulting in overall lower emissions. Given this conservative emissions estimate, the actual air quality impacts are expected to be less than what is presented in the following analyses. Note the CO_2e emission are not addressed in this analysis because there are no applicable ambient air quality standards.

TABLE 4 - SIGNIFICANT EMISSION RATES COMPARED TO JED LANDFILL FUTURE POTENTIAL EMISSIONS.

Pollutant	CO	NOx	PM	$PM_{2.5}$	PM_{10}	SO_2	VOC
SER (TPY)	100	40	25	15	10	40	40
Potential TPY	1,312.4	230.0	78.5	78.5	78.5	38.9	156.5
PSD Triggered?	Yes	Yes	Yes	Yes	Yes	No	Yes

5.2. Current Air Quality Analysis

An air quality analysis is required for each pollutant that exceeds its applicable SER to assess the current state of air quality in the area affected by the major stationary source.

5.2.1. State Level

The State of Florida has generally good ambient air quality and is currently in attainment of all national ambient air quality standards (NAAQS) for the pollutants that are subject to review in this project. As can be seen in **Figure 5** below, Florida's air monitor design values are well within attainment of the NAAQS for each pollutant. Urban areas are shaded in the figure. Air pollutant emissions have seen a significant decrease in the past fifteen years (see **Figure 6** below). In **Figure 6**, CO, SO_2, and NOx are on the left-hand scale while VOC and PM are on the right-hand scale. Emissions of all pollutants have decreased significantly since 2000.Statewide actual annual emissions from stationary sources of SO_2 have decreased 81%, NOx 69%, PM 59%, VOC 47%, and CO 44% since 2000 while the population of Florida has increased by over three million, or nearly 17%, through the same period. A variety of national rules that are currently being implemented are expected to contribute to the continuation of this downward trend in the foreseeable future.

5.2.2. County Level

Osceola County, population 298,504, is a mostly rural yet rapidly growing county. Over the past decade, the population has increased more than 50% and the northern part of the county contains parts of the third largest metro area in Florida: Orlando-Kissimmee with a population of over two million. Despite this growth and proximity to highly urbanized areas, the pollutant emissions in Osceola County have mirrored the overall Florida trends. As can be seen in **Table 5** below, all criteria pollutants have decreased in total actual emissions from stationary sources since 2002.

TABLE 5 - ACTUAL ANNUAL EMISSIONS OF CRITERIA POLLUTANTS BY STATIONARY SOURCES IN FLORIDA IN 2002 AND 2012.

Pollutant	2002 Actual Emissions (TPY)	2012 Actual Emissions (TPY)	Percent Change
CO	202.22	194.70	- 3.72%
NOx	1,150.45	308.33	- 73.20%
PM	122.51	94.42	- 22.93%
SO_2	302.69	13.90	- 95.41%
VOC	249.66	68.69	- 72.49%

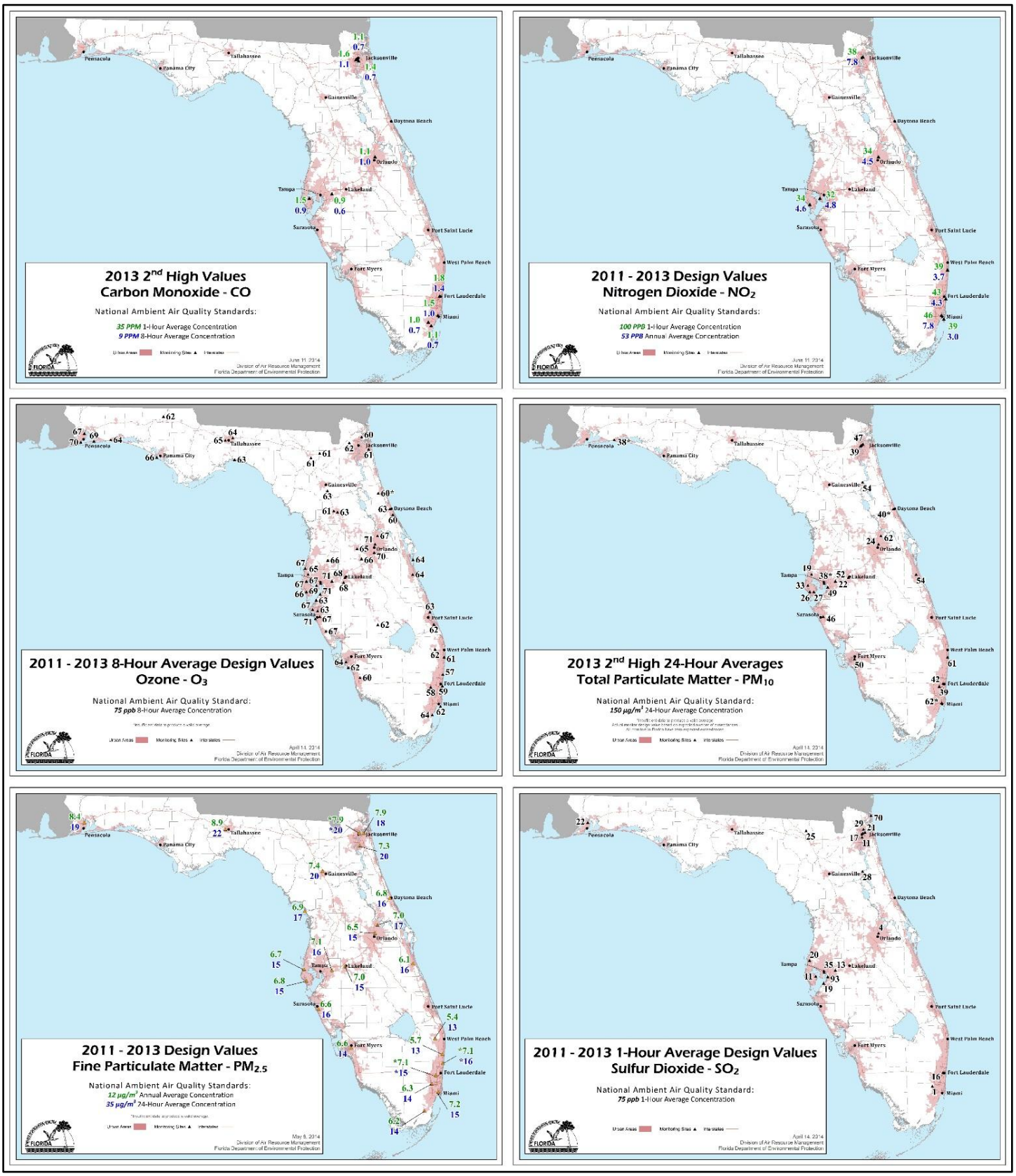


Figure 5. State of Florida Ambient Air Monitoring Network Design Values for 2011-2013 for Each of the Criteria Pollutants.

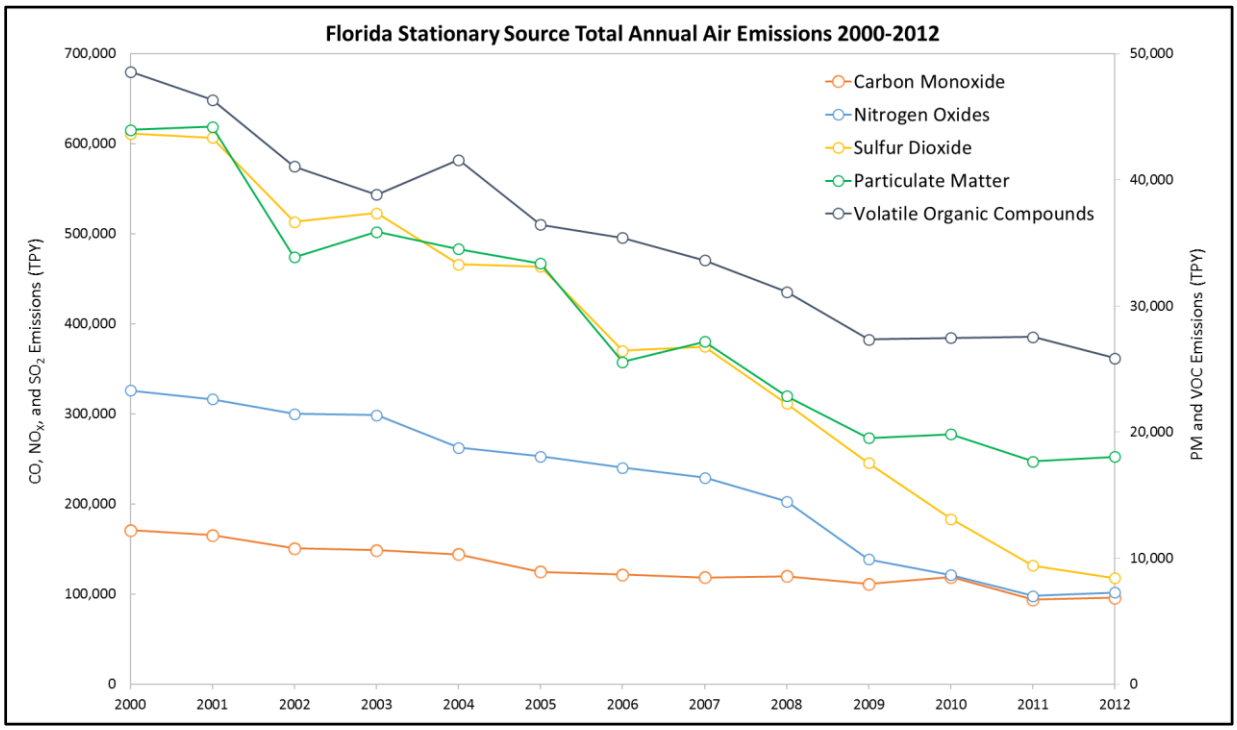


Figure 6. Actual Annual Emissions of Criteria Air Pollutants by Stationary Sources in Florida from 2000-2012.

5.2.3. Nearby Sources

Rural Osceola County contains very few stationary sources of air pollutants. The sources chosen to be explicitly modeled in the refined NAAQS and increment analyses (see **Section 5.3.4.5**) are shown in **Figure 7**. Only sources included in the refined NAAQS and increment analyses are shown in **Figure 7**.

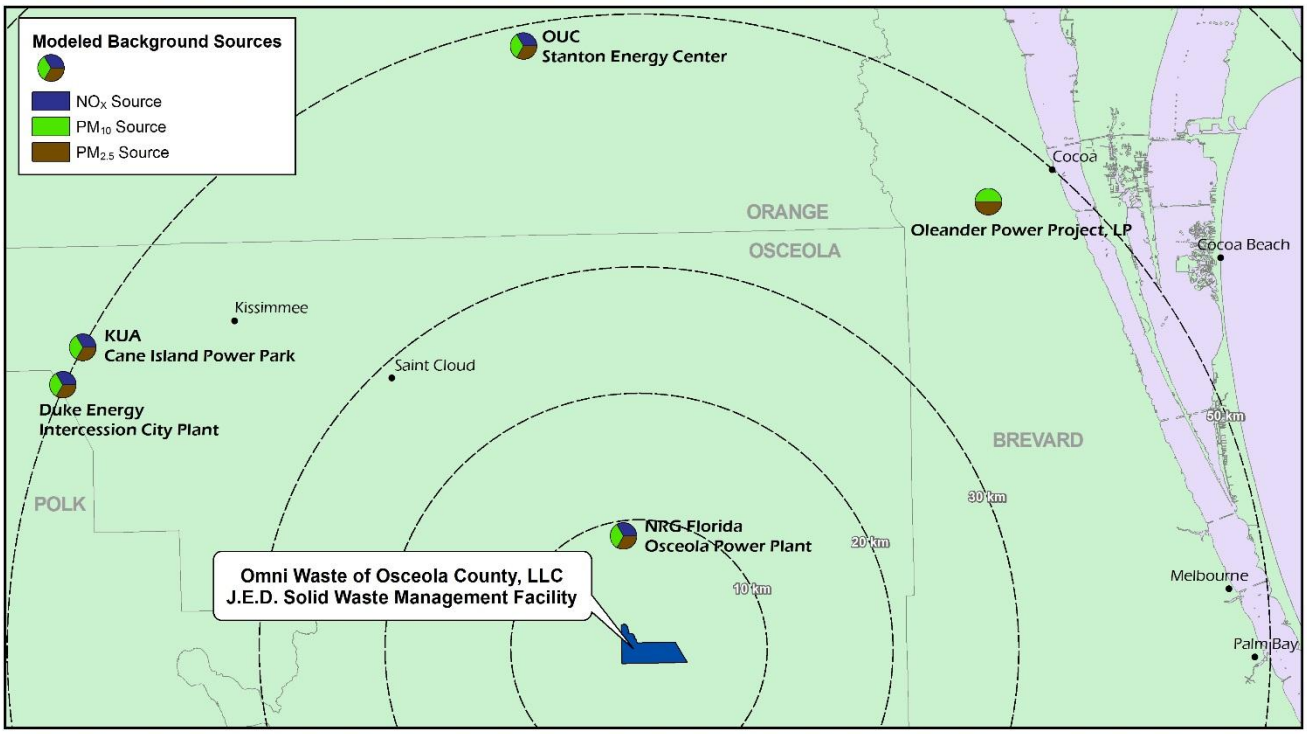


Figure 7. Sources of PM and NOx near the JED Landfill Project Site in Osceola County, Florida.

Table 6 through **Table 10** provide some perspective on the relative size of the project and nearby sources by comparing its potential future emissions with the actual 2012 emissions from the four largest sources in Osceola County and the largest source in each of Brevard, Orange, and Polk Counties. As the data show, the JED Landfill project's potential to emit is dwarfed by the actual emissions of facilities in neighboring counties. The existing sources within Osceola County are small and outside of population centers providing for exceedingly clean ambient air.

TABLE 6 - ACTUAL 2012 EMISSIONS OF NO_X FROM THE LARGEST STATIONARY SOURCES NEAR THE JED LANDFILL PROJECT SITE IN OSCEOLA COUNTY, FLORIDA.

Owner	Facility Name	County	2012 NOx Emissions (TPY)
Orlando Utilities Commission	Stanton Energy Center	Orange	3,307.8
Lakeland Electric	C.D. McIntosh Jr. Power Plant	Polk	1,823.0
Omni Waste	JED Landfill Expansion	Osceola	230.0
Duke Energy	Intercession City Plant	Osceola	126.9
Kissimmee Utility Authority	Cane Island Power Park	Osceola	87.8
US Air Force	Cape Canaveral AF Station	Brevard	73.6
NRG Florida	Osceola Power Plant	Osceola	63.9
Omni Waste	JED Landfill Existing Flare	Osceola	21.2

TABLE 7 - ACTUAL 2012 EMISSIONS OF PM FROM THE LARGEST STATIONARY SOURCES NEAR THE JED LANDFILL PROJECT SITE IN OSCEOLA COUNTY, FLORIDA.

Owner	Facility Name	County	2012 PM Emissions (TPY)
Orlando Utilities Commission	Stanton Energy Center	Orange	216.2
Lakeland Electric	C.D. McIntosh Jr. Power Plant	Polk	170.2
Omni Waste	JED Landfill Expansion	Osceola	78.5
Kissimmee Utility Authority	Cane Island Power Park	Osceola	66.5
Brevard County	Central Disposal Facility	Brevard	30.0
Omni Waste	JED Landfill Existing Flare	Osceola	4.2
Duke Energy	Intercession City Plant	Osceola	4.0

Cargill	Cargill Animal Nutrition	Osceola	3.7

TABLE 8 - ACTUAL 2012 EMISSIONS OF SO_2 FROM THE LARGEST STATIONARY SOURCES NEAR THE JED LANDFILL PROJECT SITE IN OSCEOLA COUNTY, FLORIDA.

Owner	Facility Name	County	2012 SO_2 Emissions (TPY)
Mosaic Fertilizer	New Wales Facility	Polk	7,104.4
Orlando Utilities Commission	Stanton Energy Center	Orange	1,986.0
Omni Waste	JED Landfill Expansion	Osceola	38.9
Brevard County	Central Disposal Facility	Brevard	26.2
Kissimmee Utility Authority	Cane Island Power Park	Osceola	6.0
Omni Waste	JED Landfill Existing Flare	Osceola	3.8
Duke Energy	Intercession City Plant	Osceola	2.3
NRG Florida	Osceola Power Plant	Osceola	1.3

TABLE 9 - ACTUAL 2012 EMISSIONS OF VOC FROM THE LARGEST STATIONARY SOURCES NEAR THE JED LANDFILL PROJECT SITE IN OSCEOLA COUNTY, FLORIDA.

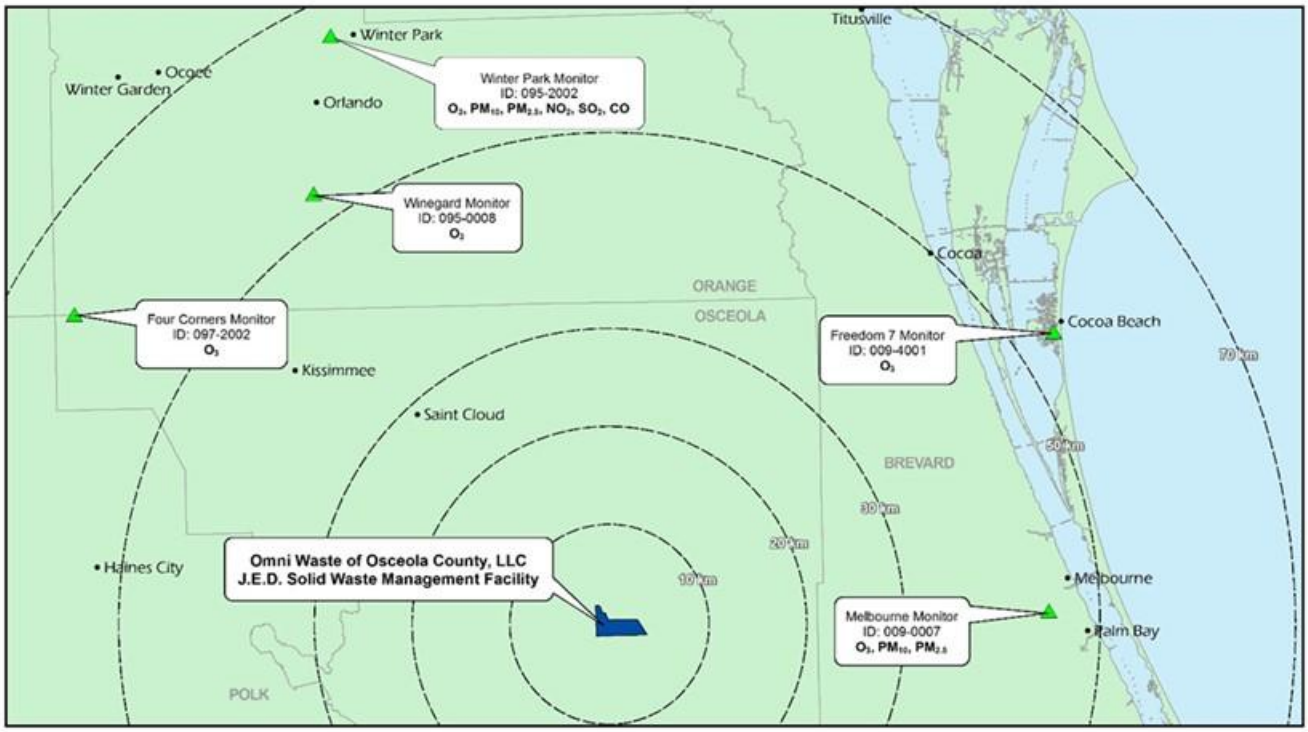
Owner	Facility Name	County	2012 VOC Emissions (TPY)
Cutrale Citrus Juices	Cutrale Citrus	Polk	607.6
Omni Waste	JED Landfill Expansion	Osceola	156.5
Seaport Canaveral Corp.	Seaport Canaveral Terminal	Brevard	119.8
Nautique Boat Company	Nautique Boat	Orange	118.2
Windsor Metal Specialties	Windsor Metal	Osceola	32.4
Kissimmee Utility Authority	Cane Island Power Park	Osceola	12.3
Omni Waste	JED Landfill Existing Flare	Osceola	11.8
Duke Energy	Intercession City Plant	Osceola	4.6

TABLE 10 - ACTUAL 2012 EMISSIONS OF CO FROM THE LARGEST STATIONARY SOURCES NEAR THE JED LANDFILL PROJECT SITE IN OSCEOLA COUNTY, FLORIDA.

Owner	Facility Name	County	2012 CO Emissions (TPY)
Omni Waste	JED Landfill Expansion	Osceola	1,312.4
Cutrale Citrus Juices	Cutrale Citrus	Polk	1,007.6
Orlando Utilities Commission	Stanton Energy Center	Orange	842.8
Brevard County	Central Disposal Facility	Brevard	348.9
Omni Waste	JED Landfill Existing Flare	Osceola	95.6
Duke Energy	Intercession City Plant	Osceola	58.5
Kissimmee Utility Authority	Cane Island Power Park	Osceola	18.0
NRG Florida	Osceola Power Plant	Osceola	1.6

5.2.4. Monitors

Florida has a robust ambient air monitoring network operated by the Florida Department of Environmental Protection (DEP) and its partners (local air pollution control programs). The network monitors concentrations of each of the criteria pollutants and includes monitors in Florida counties containing 92% of the population. The monitors shown



in **Figure 8** are conservatively representative of the project site and are used to evaluate the existing air quality in the area. Given that the project site is rural with few nearby sources and that each of these monitors is located in an urban setting, it can be estimated that the actual air quality near the JED Landfill is significantly better. The monitors with the highest design values in the area are described in **Table 11**. These conservative monitors are used to satisfy the preconstruction monitoring requirements for PSD review contained in Rule 62-212.400(7), F.A.C. Most design values at these monitors are less than half of the applicable NAAQS.

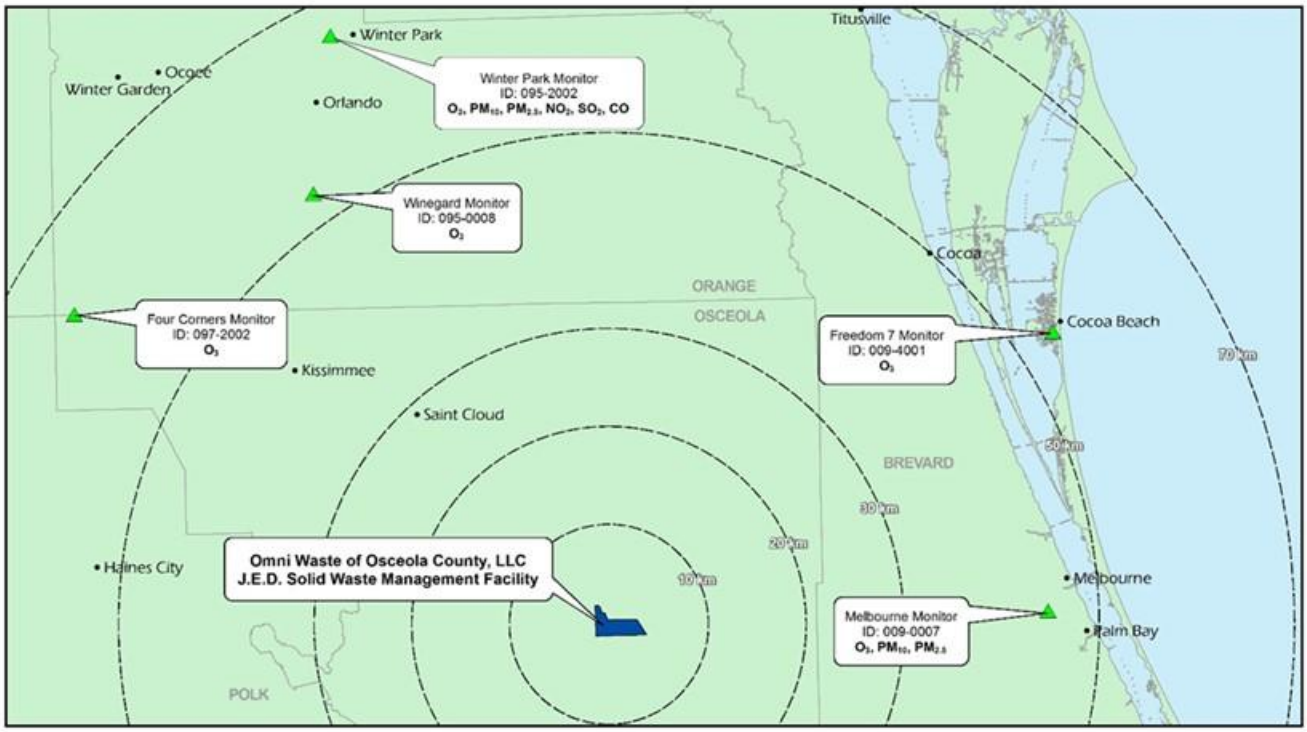


Figure 8. Map of Ambient Air Monitors in the Vicinity of the JED Landfill Project Site in Osceola County, Florida.

TABLE 11 - CRITERIA POLLUTANT DESIGN VALUES FOR EACH FLORIDA DEP AMBIENT AIR MONITOR CHOSEN CHARACTERIZE THE JED LANDFILL PROJECT AREA.

Pollutant	Location (Site Number)	Averaging Period	Ambient Concentration			
			Compliance Period	Value	Standard	Units [a]
PM_{10}	Brevard Co (009-0007)	24-hour	2011-2013	76[i]	150[b]	$\mu g/m^3$
		Annual	2013	14.2[i]	50[c]	$\mu g/m^3$
$PM_{2.5}$	Orange Co (095-2002)	24-hour	2011-2013	15	35[d]	$\mu g/m^3$
		Annual	2011-2013	6.5	15[e]	$\mu g/m^3$
NO_2	Orange Co (095-2002)	Annual	2013	4.5	53[c]	ppb
		1-hour	2011-2013	34	100[f]	ppb
CO	Orange Co (095-2002)	1-hour	2013	1.2[i]	35[g]	ppm
		8-hour	2013	1.0[i]	9[g]	ppm
Ozone	Orange Co (095-2002)	8-hour	2011-2013	0.071	0.075[h]	ppm

a. Units are in: micrograms per cubic meter (µg/m3); parts per billion (ppb); or parts per million (ppm).
b. Not to be exceeded more than once per year on average over a three-year period.
c. Arithmetic annual mean, not to be exceeded.
d. Three year average of the 98th percentile of daily 24-hour average concentrations.
e. Three year average of the arithmetic annual means.
f. Three year average of the annual 98th percentile maximum daily 1-hour concentrations.
g. Not be exceeded more than once per year.
h. Three-year average of the annual 98th percentile maximum daily 8-hour concentrations.
i. Exceedance based standard – All monitors in Florida have zero expected exceedances. Maximum 2013 concentration given for comparison.

5.3. Source Impact Analysis

A source impact analysis is required by Rule 62-212.400(5), F.A.C. to demonstrate that allowable emission increases from the proposed project will not cause or contribute to a violation of any NAAQS or PSD increment as defined in 40 CFR Part 50 and 40 CFR 52.21(C) respectively. This analysis is performed using approved air quality models and analysis techniques as described in Appendix W (Guideline on Air Quality Models) of 40 CFR 51.

5.3.1. Dispersion Modeling Approach

Dispersion modeling for the source impact analysis typically occurs in six steps:

1. Class II SIL Analysis: Initial modeling is performed to determine if the maximum predicted concentrations due to the new source(s) alone are likely to cause a significant impact on ambient air quality. Modeling is performed using five years of actual meteorological data and the highest resultant concentrations are compared to the EPA suggested SILs for each pollutant that is subject to PSD review. For each pollutant that is less than the SIL, steps two and three are skipped. For all others, refined NAAQS and Class II increment analyses are required.
2. NAAQS Analysis: Cumulative source modeling is performed for each pollutant and averaging time that exceeded the Class II SIL. This analysis includes modeled emissions from all nearby sources that are considered to have a significant impact and a non-modeled background concentration intended to represent all other sources of pollutants. The resulting concentrations are evaluated on a receptor-by-receptor basis for comparison to each NAAQS using the following methods:
   - CO 1-Hour Average: Highest of yearly 2nd-high concentrations for each of five years;
   - CO 8-Hour Average: Highest of yearly 2nd-high concentrations for each of five years;
   - NO_2 1-Hour Average: 5-year average of the yearly 8th-high daily maximum 1-hour average concentration;
   - NO_2 Annual Average: Highest annual mean over five years;
   - PM_{10} 24-Hour Average: 6th-high 24-hour concentration over five years;
   - $PM_{2.5}$ 24-Hour Average: 5-year average of the yearly 8th-high 24-hour average concentration; and
   - $PM_{2.5}$ Annual Average: 5-year average of the annual mean.
3. Class II Increment Analysis: Cumulative source modeling is performed with nearby PSD increment consuming or expanding sources. For annual averaging periods, the highest five-year annual average is compared to the increment. For all other short-term averaging periods, the 2nd-highest concentration from each of five years is compared.
4. Class I SIL Analysis: A Class I analysis is typically required if a source is within 200 km of a Federal Class I area. Almost all of Florida is within this distance of at least one Class I area and therefore an analysis is always required. This analysis is identical to the Class II SIL analysis except that the SILs are smaller and only evaluated within the boundaries of the Class I area.
5. Class I Increment Analysis: For those pollutants that exceed the applicable Class I SIL, an increment analysis is required. Again this analysis mirrors the Class II increment analysis except with smaller increments that are only evaluated within the Class I area.
6. Class I Visibility and Deposition Analysis: A visibility and deposition analysis is required for any Class I area that does not pass the screening criteria detailed in **Section 5.3.5**. This analysis is typically performed with CALPUFF.

5.3.2. Models

There are two EPA-approved air quality models that are generally used to assess source impacts: AERMOD and CALPUFF.

The AERMOD (AMS (American Meteorological Society)/EPA Regulatory Model) modeling system is a near-field, Gaussian, steady-state plume dispersion model that simulates pollutant dispersion methods based on planetary boundary layer turbulence structure and scaling concepts, including the treatment of both surface and elevated sources, and both simple and complex terrain. The system is comprised of the AERMET meteorological processor, the AERMAP terrain processor, and the actual AERMOD model. AERMOD was commissioned by EPA for regulatory use and was developed by AERMIC (AMS/EPA Regulatory Model Improvement Committee) from 1991 to 2005 when EPA officially promulgated it as the preferred regulatory model. Between 2005 and 2014 the program

has undergone ten major updates. It is the recommended model for assessing air quality impacts up to 50 km from the source.

CALPUFF is a multi-layer, multi-species non-steady-state puff dispersion model that simulates the effects of time- and space-varying meteorological conditions on pollution transport, transformation and removal. It is capable of evaluating sub-grid scale effects as well as longer range effects such as pollutant removal, chemical transformation, and visibility. It is approved for use on scales of tens to hundreds of kilometers and is generally utilized for long-range transport between 50 and 300 km from the source. In Florida, this model is typically only used for Class I analyses as most sources are more than 50 km from any Class I area.

For the JED Landfill project, CALPUFF was used to evaluate the $PM_{2.5}$ 24-hour average Class I SIL and AERMOD was used for all other analyses.

5.3.3. Class II SIL Analysis

The general modeling approach for the SIL, NAAQS, and PSD increment analyses followed current EPA and DEP modeling guidance. Multiple scenarios involving different stages of project development were modeled by the applicant. The worst case scenario involving full operation of the LFGTE plant and all four flares is summarized here. The applicant used a series of specific model features recommended by EPA that are referred to as the regulatory options and the latest version (v.) of each model component available at the time of the analysis.

5.3.3.1. *Meteorological Data*

The AERMET v.13350 meteorological input used with the AERMOD v.13350 model consisted of a concurrent 5-year period of hourly surface-weather observations from the National Weather Service (NWS) Automated Surface Observing System (ASOS) station at Orlando International Airport (MCO) and upper air sounding (RAOB) data from Tampa International Airport (TBW). This data was compiled by DEP for the period 2008 – 2012 and included land cover and land use parameters derived from the 1992 National Land Cover Database (NLCD) by AERSURFACE v.13016 and 1-minute ASOS wind data extracted by AERMINUTE v.11059 with a minimum wind speed threshold of 0.5 meters per second (m/s). The ASOS station at MCO is located approximately 45 km NW of the JED Landfill project site and is the closest primary weather station. **Table 12** summarizes the annual average land use parameters for the project site and the ASOS location. These parameters were derived seasonally and for twelve 30-degree wind direction sectors. Given the similarity of the land surrounding both sites, the ASOS data are considered to be representative of the project site. Furthermore, because the MCO ASOS station is only 45 km from the project site, both sites are approximately the same distance from the coastline, and the terrain between the two sites is mostly flat, the wind direction and wind speed frequencies measured at the ASOS location are likely to be very similar to those experienced at the project site.

TABLE 12 - ANNUAL AVERAGE LAND USE PARAMETER COMPARISON BETWEEN THE MCO ASOS STATION AND THE JED LANDFILL PROJECT SITE.

Location	Albedo	Bowen Ratio	Surface Roughness
MCO ASOS Station	0.16	0.58	0.073
JED Landfill Project Site	0.16	0.46	0.118

5.3.3.2. *Building Downwash*

Building downwash effects were simulated for four future buildings associated with the LFGTE plant. For each stack, direction-specific building heights and maximum projected widths were calculated by the Building Profile Input Program (BPIP v.04274) incorporating the Plume Rise Model Enhancement (PRIME) algorithm developed by the Electric Power Research Institute (EPRI). This wind direction-specific information was then output to AERMOD which simulates aerodynamic downwash based on stack and building locations and heights.

5.3.3.3. *Receptors and Terrain*

A combination of fence line, near-field, and far-field receptors was chosen for predicting maximum concentrations in the vicinity of the project for comparison to the Class II SILs. Receptor locations used in the modeling analysis were based on Universal Transverse Mercator (UTM) coordinates from Zone 17 North, North American Datum 1983

(NAD83). The modeling domain was set as a 20 km X 20 km grid centered at UTM 17N east and north coordinates of 491,500 and 3,102,900 meters, respectively. A discrete Cartesian grid of 4,717 receptors was located at the following intervals and distances:

- 50 m spacing along the property boundary and fence line;
- 100 m spacing from the fence line to 2,500 m from the domain origin;
- 250 m spacing from 2,500 m to 5,000 m from the domain origin;
- 500 m spacing from 5,000 m to 10,000 m from the domain origin.

This receptor placement is considered to be sufficient to resolve the areas of highest concentration in Florida's flat terrain.

Base elevations were extracted from the US Geological Survey's (USGS) 1-second National Elevation Dataset (NED) by AERMOD's terrain processor AERMAP v.09040 for all receptors and sources.

5.3.3.4. *Onsite Modeled Sources*

The SIL analysis evaluates whether the increase in potential emissions from the new project alone are capable of significantly contributing to a modeled NAAQS exceedance. For the JED Landfill, the four new flares and twelve new IC engines were modeled. These sources are summarized in **Table 13** below.

TABLE 13: MODELING PARAMETERS FOR NEW SOURCES ASSOCIATED WITH THE JED LANDFILL PROJECT.

Source	Height (m) [A]	Diameter (m) [B]	Temperature (K) [C]	Flow Rate (acfm)	Velocity (m/s) [D]
Engines 1-12	18.29	0.406	757	12,723	46.31
Flares 2-5	25.8	1.93	1273	3,506	17.87

A. Effective release height flares.
B. Effective diameter for flares.
C. EPA default exhaust temperature for flares.
D. Flare exhaust velocity calculated based on design LFG flow and actual flare tip diameter.

There are a variety of methods for modeling special sources such as flares since AERMOD has no specific provision for such sources. The four flares in this project were input as point sources with effective release heights and diameters calculated using the method outlined by the Oklahoma Department of Environmental Quality in their *Air Quality Modeling Guidelines*. DEP has reviewed these guidelines and approves their use in this analysis.

5.3.3.5. *Results*

The results of the SIL modeling that are summarized in **Table 14** indicate that refined cumulative source modeling is needed for PM_{10}, $PM_{2.5}$, and NO_2 to demonstrate compliance with the NAAQS for each pollutant.

TABLE 14 - MAXIMUM PREDICTED AIR QUALITY IMPACTS FOR THE JED LANDFILL PROJECT COMPARED TO THE CLASS II SILS.

Pollutant	Averaging Time	Max Impact (μg/m^3)	SIL (μg/m^3)	Significant Impact?
PM_{10}	Annual	0.78	1	No
	24-Hour	13.09	5	**Yes**
$PM_{2.5}$	Annual	0.68	0.3	**Yes**
	24-Hour	8.44	1.2	**Yes**
NO_2	Annual	1.52	1	**Yes**
	1-Hour	45.56	7.6	**Yes**
CO	8-hour	279.9	500	No
	1-hour	342.0	2,000	No

5.3.4. Cumulative Dispersion Modeling

Cumulative source modeling that evaluates whether the combined air quality impacts from all nearby significant sources will comply with the NAAQS and increment for each pollutant is performed for each pollutant that exceeds the SIL. In order to assess cumulative impacts, the potential emissions from the most significant nearby sources are

added to the modeling platform developed for the SIL analysis. A monitored background concentration intended to represent all non-modeled anthropogenic and natural pollutant sources is then added to the results which are then compared to the NAAQS.

5.3.4.1. *Significant Impact Area*

Receptor placement and the choice of which sources to explicitly model are based on the establishment of a significant impact area (SIA). The SIA is the area in which the proposed project has the potential to significantly contribute to a NAAQS exceedance, i.e. a circular area with a radius equal to the distance from the source to the most distant receptor with a modeled SIL violation. The SIA for each pollutant and averaging time for this project is:

- NO_2 1-hour impact: 10 km
- NO_2 annual impact: 1 km
- $PM_{2.5}$ 24-hour and annual and PM_{10} 24-hour impacts: 6 km

5.3.4.2. *Background Source Choices*

Background source emission data were obtained from the DEP ARMS database, DEP permit files, and recent PSD permit reviews. EPA recommends that the list of explicitly modeled sources should remain small and that professional judgment should be used in the decision process. The applicant utilized a simple screening technique developed by North Carolina to eliminate many sources. The "20D Approach" calculates a Q value that is equal to twenty times the facility distance from the project site, D, minus the SIA (20 x (D-SIA) = Q). Most facilities with annual emissions in TPY that are less than Q are eliminated. The combination of the "20D Approach" and professional judgment resulted in a list of background sources that are detailed in **Figure 7** and **Table 15**. Following EPA guidance, there are fewer sources for 1-hour NO_2 than for annual NO_2 since most sources beyond 10 km would not be expected to significantly impact the modeled area over such a short time period.

TABLE 15 - EXPLICITLY MODELED BACKGROUND SOURCES OF PM AND NOx FOR THE JED LANDFILL CUMULATIVE MODELING EXERCISE.

Facility ID	Name	Annual Potential Emissions (TPY) (If Modeled)					D (km)
		NO_2 1-Hr	NO_2 Ann	$PM_{2.5}$ 24-HR	$PM_{2.5}$ Ann	PM_{10}	
0110037	Existing Omni JED	218	218	4.2	4.2	4.2	0.0
0970071	NRG Osceola	363	363	81	81	81	9.2
0090180	Oleander	-	-	112	112	112	45.0
0950137	OUC Stanton	-	16,371	852	852	852	48.2
0970043	KUA Cane Island	-	1,632	322	322	322	50.2
0970014	Duke Int. City	-	15,765	1,323	1,323	1,323	50.8

5.3.4.3. *Background Development and Monitors*

The background concentration is based on monitoring data and is designed to take into account all existing natural or anthropogenic sources that are not explicitly modeled. There are a variety of ways to develop a background concentration that differ in complexity and conservatism. For this project, the least complex, most conservative method was utilized.

The background concentration added to the model results for each pollutant was simply the design value for the highest monitor in the area. These values are summarized in **Table 11** and **Table 16**. Since no attempt was made to remove the impact that each of the explicitly modeled sources had on the monitored background levels, there is likely a certain level of 'double-counting' occurring and thus this method is considered to be a conservative approach.

5.3.4.4. *NO_2 NAAQS*

The NO_2 NAAQS analysis is more complex than for other pollutants. This is mainly due to the fact that the emitted pollutant, NOx, is not the controlled pollutant, NO_2. NOx is the sum of the nitrogen-oxide species NO and NO_2. In general, a large portion of the NOx emitted from sources is NO. Once the plume leaves the stack, oxidation reactions between NO and ozone in the ambient air convert a certain amount of the NO to NO_2. EPA guidance acknowledges the complexity and issues involved with this analysis and recommends a three tiered approach to determining the ratio of NO_2 to NOx both in-stack and in the ambient air:

- Tier 1: 100% conversion of NO to NO_2.

- Tier 2: 80% ambient conversion of NO to NO_2 on an hourly average and 75% on an annual average.
- Tier 3: Default in-stack ratios of 50% conversion (or lower if defensible) with up to 90% ambient conversion utilizing either the ozone limiting method (OLM) or plume volume molar ratio method (PVMRM) algorithms.

For this analysis, the Tier 2 method was utilized.

The results of the NAAQS analysis (see **Table 16**) demonstrate that the JED Landfill is not expected to cause or significantly contribute to an exceedance of a NAAQS.

TABLE 16 - CUMULATIVE MODELING RESULTS FOR THE JED LANDFILL PROJECT COMPARED TO THE NAAQS.

Pollutant	Averaging Time	Maximum Concentration (µg/m^3)			NAAQS (µg/m^3)	Percent of NAAQS
		Sources	Background	Total		
NO_2	1-Hour	34.2	64	96.4	189	51.0%
	Annual	2.0	8.5	10.5	100	10.5%
$PM_{2.5}$	24-Hour	4.2	15	19.2	35	54.9%
	Annual	0.8	6.5	7.3	12	60.8%
PM_{10}	24-Hour	6.2	76	82.2	150	54.8%

5.3.4.5. *Class II Increment Analysis*

The PSD increment represents the limit above an established baseline concentration that new sources may increase the local ambient ground level concentrations of a pollutant. PSD increment modeling is similar to NAAQS modeling in that it is a cumulative analysis that takes into account the impact from nearby increment consuming sources, only a background concentration is not added. For this project, the list of explicitly modeled sources was identical to that in the NAAQS analysis. The highest second-high predicted short-term average concentration for each year 2008-2012 was calculated and is compared to the applicable PSD increments in **Table 17**. A PSD increment has not yet been established for the 1-hour NO_2 standard.

TABLE 17 - CUMULATIVE MODELING RESULTS FOR THE JED LANDFILL PROJECT COMPARED TO PSD INCREMENTS.

Pollutant	Avg. Time	Max Modeled Impact (µg/m^3)	PSD Increment (µg/m^3)	Increment Consumed
NO_2	Annual	2.0	25	8%
$PM_{2.5}$	Annual	0.88	4	22%
	24-hour	8.3	9	92%
PM_{10}	24-hour	8.2	30	27%

5.3.5. Class I Analysis

All areas not explicitly designated as Class I in 40 CFR 81 Subpart D (such as national parks and wilderness areas) are considered Class II areas. While the NAAQS apply to all areas equally, more stringent SILs and increments exist for Class I areas. A Class I analysis is required for any project that may affect a Federal Class I area. The only Class I area within 200 km of the JED Landfill is the Chassahowitzka National Wildlife Refuge (CNWR) 163 km to the northwest on the Gulf of Mexico (see

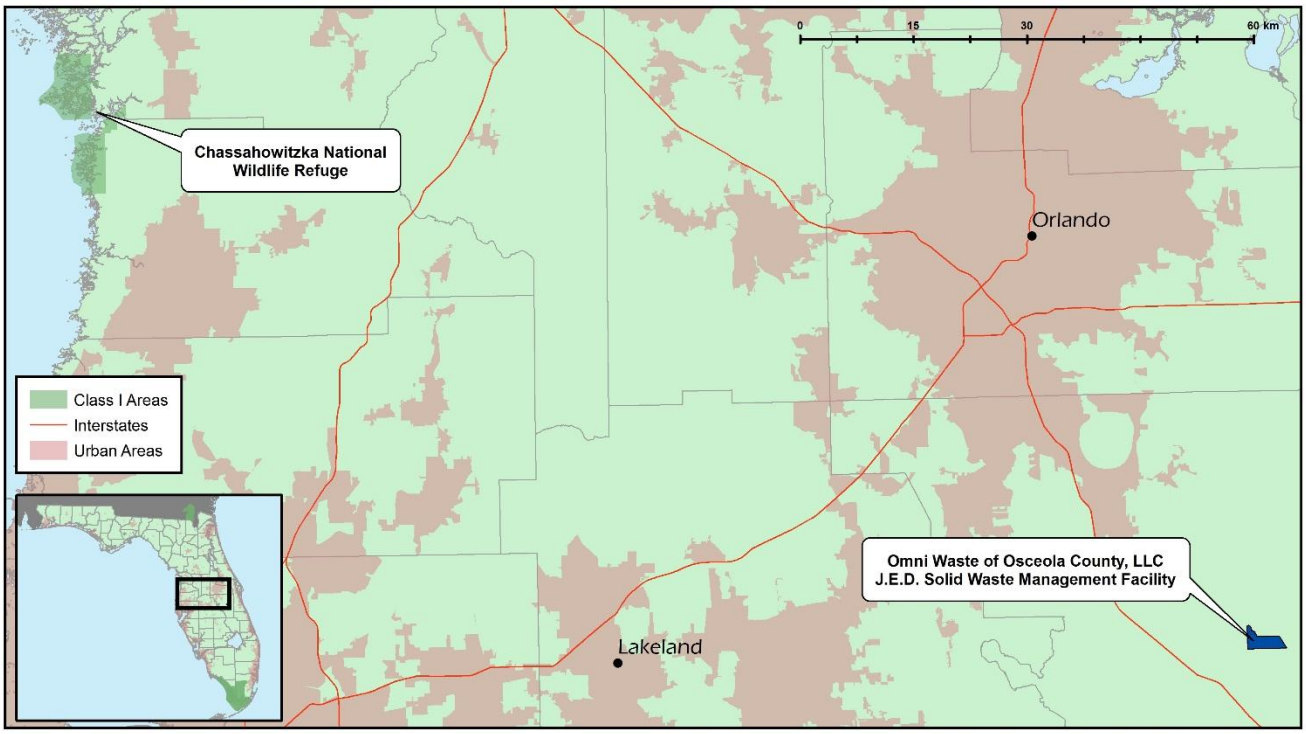


Figure 9).

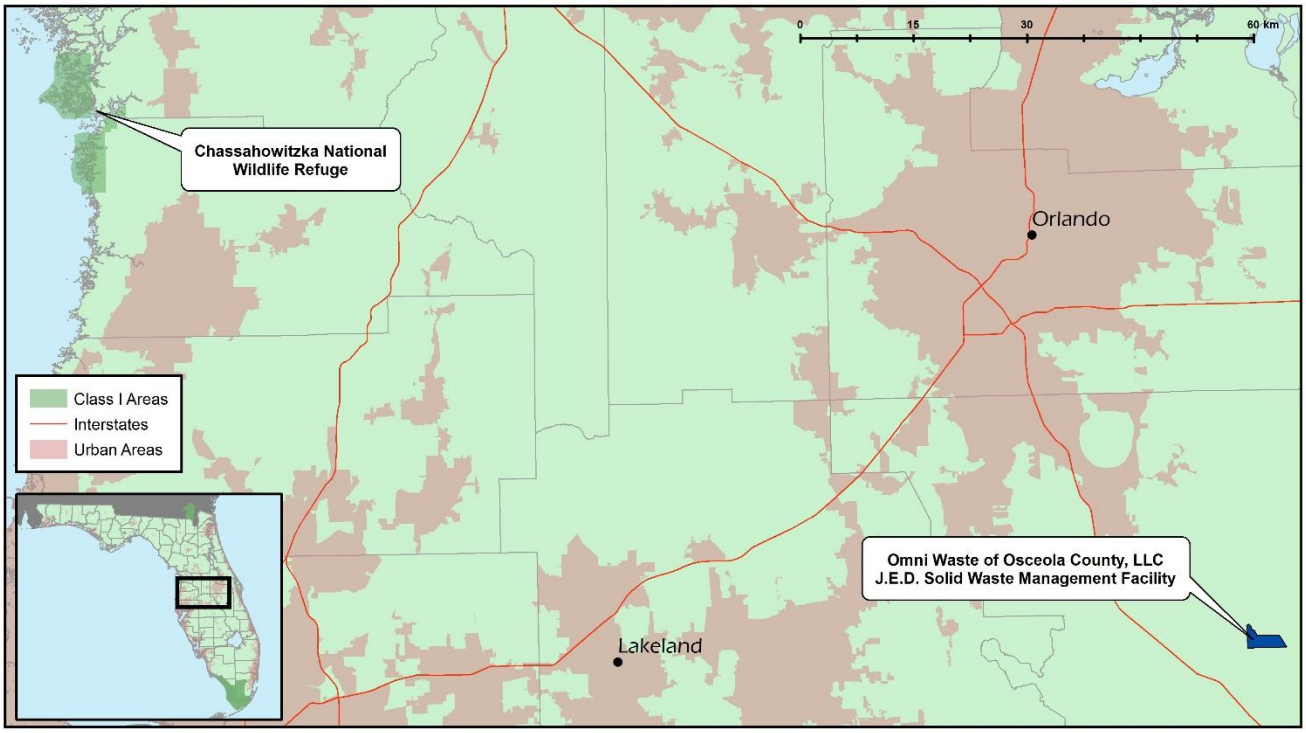


Figure 9. Map of Federal Class I Areas near the JED Landfill Project.

Generally Class I analyses are performed with the CALPUFF modeling system since most projects are more than 50 km from Class I areas; however, AERMOD can also be utilized as a screening model to avoid using the more computationally intensive CALPUFF. For this project, AERMOD was used to evaluate the Class I SILs at 50 km from the project site. CALPUFF was then used to evaluate the long-range impacts on the Class I SILs in the CNWR for each pollutant that exceeded the SIL in the screening analysis.

5.3.5.1. *Class I SIL Analysis*

The same modeling platform for the Class II SIL analysis was used to evaluate the Class I SILs with the exception of the receptor grid. 360 receptors with a 1 degree interval were placed on a circle with a 50 km radius centered on the project site. The results of this conservative screening method are compared to the Class I SILs in **Table 18**. The maximum predicted impacts from nearly all pollutants are orders of magnitude smaller than the SIL at just 30% of the minimum distance to the CNWR.

TABLE 18 - MAXIMUM PREDICTED AIR QUALITY IMPACTS FOR THE JED LANDFILL PROJECT FROM THE AERMOD SCREENING ANALYSIS ARE COMPARED TO THE CLASS I SILS.

Pollutant	Averaging Time	Max Impact (μg/m^3)	SIL (μg/m^3)	Significant Impact?
PM_{10}	Annual 24-Hour	0.0096 0.282	0.2 0.3	No No
$PM_{2.5}$	Annual 24-Hour	0.0096 0.282	0.06 0.07	No **Yes**
NO_2	Annual	0.026	0.1	No

Using the AERMOD screening method, the $PM_{2.5}$ 24-hour impact was higher than the Class I SIL so a more refined SIL analysis was conducted for this pollutant using CALPUFF.

5.3.5.2. *CALPUFF Modeling*

CALPUFF v.5.8.4 was processed with a CALMET dataset developed by the FLMs and provided by DEP. This dataset is comprised of a domain encompassing all of Florida with a 4 km horizontal resolution and spans the years 2001-2003. Post-processing was performed with CALPOST v.6.221. All regulatory options and building downwash were utilized. The receptor grid was created and provided by the FLM and includes 113 receptors in the CNWR. The results are shown in **Table 19**.

TABLE 19 - MAXIMUM PREDICTED AIR QUALITY IMPACTS FOR THE JED LANDFILL PROJECT FROM THE REFINED CALPUFF MODELING ARE COMPARED TO THE CLASS I SILS.

Pollutant	Averaging Time	Max Impact (μg/m^3)	SIL (μg/m^3)	Significant Impact?
$PM_{2.5}$	24-Hour	0.012	0.07	No

Based on the SIL analysis results, a Class I increment analysis is not required.

5.3.6. Ozone Analysis

Projects with VOC or NOx potential emissions increases of 40 TPY or greater are required to perform a source impact analysis for ozone. The applicant estimated annual potential VOC and NOx emissions from the project to be 156.5 and 230 TPY respectively and is therefore required to provide an analysis for ozone; however, ozone site-specific modeling is not typically completed for single source permitting because of its complexity involving computationally intensive models such as the Community Model for Air Quality (CMAQ).

Ozone is a secondarily formed pollutant that is known to be caused by the regional emissions of VOC and NOx in combination with certain meteorological parameters (temperature, humidity, solar insolation, etc.). Ambient ozone levels in Osceola County are well within attainment of the NAAQS and as previously described in **Figure 5**, actual emissions of ozone precursors have declined dramatically over the past ten years despite significant increases in population and motor vehicle activity (see **Figure 6**). Ambient levels of ozone have also decreased over the last 15 years due to improvements in motor vehicle emissions rates and the implementation of national rules such as the Clean Air Interstate Rule (CAIR) aimed at reducing emissions of the precursors of regional haze (see **Figure 10**). Continued reductions in both average motor vehicle fleet emissions and stationary source emissions are expected to further improve ozone air quality.

Based on its small size, the JED Landfill is not expected to have a significant effect on regional air quality with respect to ozone and DEP has reasonable assurance that the project will not significantly contribute to or cause any violation of the ozone NAAQS.

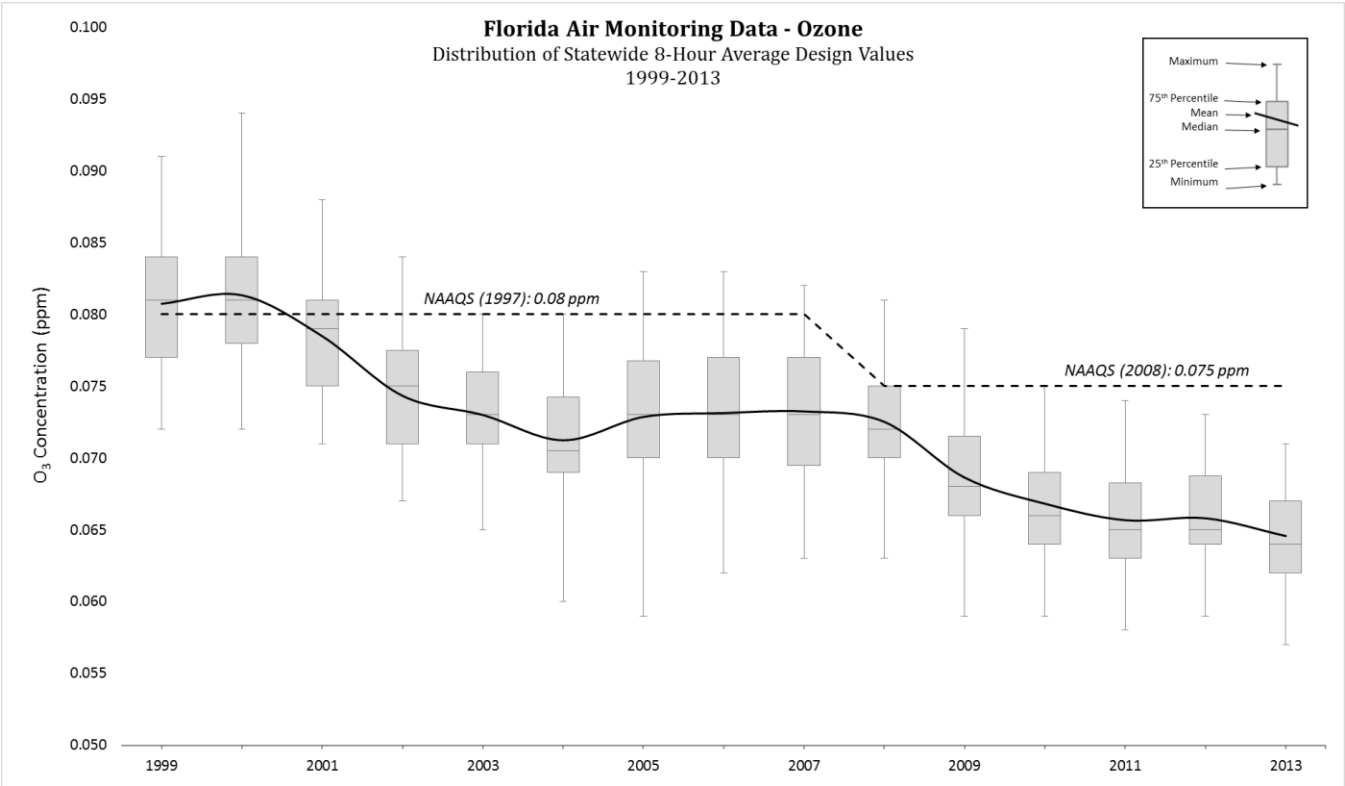


Figure 10. Distribution of Florida Ambient Air Monitor Ozone Design Values from 1999 to 2013.

5.3.7. Secondary $PM_{2.5}$ Analysis

Secondary $PM_{2.5}$ is formed through chemical reactions between gaseous precursors such as SO_2 and NOx. Projects that involve a potential increase in these precursor pollutants above their SER require an analysis of the potential impact of secondary $PM_{2.5}$ formation; however, current regulatory air dispersion and transport models, such as the EPA recommended AERMOD modeling system used in this analysis, do not account for these processes. Per EPA guidance, for projects "where precursor emissions levels are marginally higher than the level of the SERs, monitored background levels are very low, and the primary $PM_{2.5}$ impacts are also very low or not correlated in space and time with secondary formation such that the combination of the background and primary impacts are still well below the level of the NAAQS" a qualitative assessment of secondary $PM_{2.5}$ formation is sufficient.

The JED Landfill project may increase emissions of SO_2 by 38.9 TPY, NOx by 230 TPY, and VOC by 156.5 TPY. The formation of secondary $PM_{2.5}$ from these increased emissions is expected to be minimal. Secondary $PM_{2.5}$ formation occurs slowly through time causing the impact to be more widespread and diffuse than the impact from direct $PM_{2.5}$ emissions. The air quality, with respect to particulate matter, in rural Osceola County is very good and the JED Landfill project is not expected to have a significant negative impact for several reasons: as previously mentioned, statewide emissions of NOx and SO_2 have decreased dramatically in the past decade and **Figure 6** shows that these decreases are orders of magnitude larger than the small increase in emissions from the proposed JED Landfill project; the monitored $PM_{2.5}$ design values in the vicinity are well within attainment (see **Table 11**); statewide monitored concentrations have fallen significantly in the past decade (see **Figure 11**); and finally, the modeling results from the $PM_{2.5}$ NAAQS analysis show that emissions from the project are not correlated in time or space with the few other major sources in the area. Given these factors, DEP has reasonable assurance that the proposed JED Landfill project will not significantly contribute to or cause any violation of a NAAQS or increment with respect to secondary $PM_{2.5}$ formation.

Given these factors, DEP has reasonable assurance that the proposed JED Landfill project will not significantly contribute to or cause any violation of a NAAQS or increment with respect to secondary $PM_{2.5}$ formation.

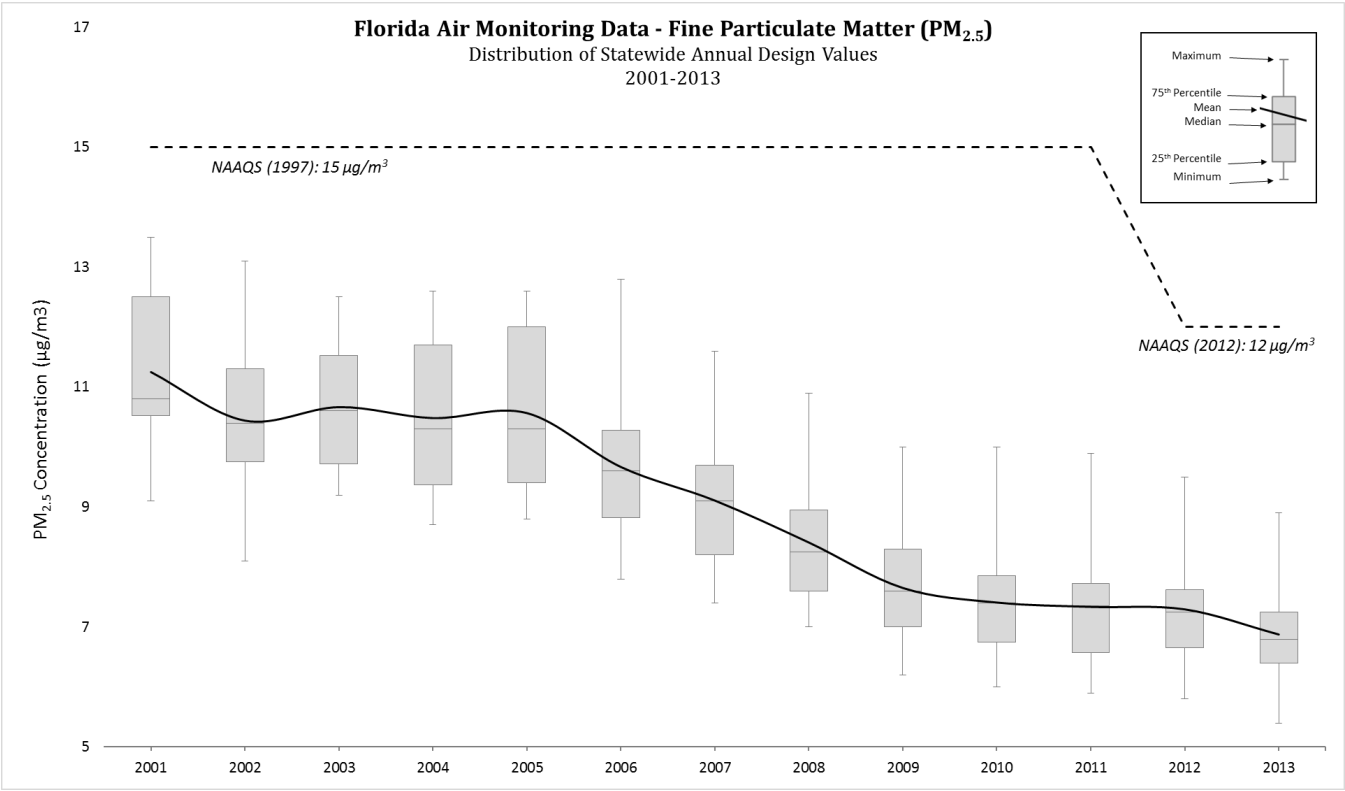


Figure 11. Distribution of Florida Ambient Air Monitor PM2.5 Design Values from 1999 to 2013.

5.4. Additional Impacts Analysis

The applicant is required by Rule 62-212.400(0), F.A.C. to provide an analysis of the project's potential impacts on visibility, soils, vegetation, and wildlife due to the proposed project or any general commercial, residential, or industrial growth associated with the project.

5.4.1. Growth

According to the applicant, growth associated with the construction of the LFGTE plant and flares will be negligible. A small number construction workers will commute to the site during the initial 18 month construction period and again during a shorter period in 2024. The number of temporary workers will be small compared to the active workforce already at the site. The increased traffic on area roads will be a small fraction of the current levels. The electricity generated by the LFGTE plant will be distributed to the overall electricity grid to satisfy existing demand and therefore no secondary growth effects are expected.

5.4.2. Soils, Vegetation, and Wildlife

Emissions of pollutants have the potential to negatively affect soils, vegetation and wildlife near sources. For this project, these effects are expected to be mitigated by a pattern of occasional, short-term episodes of relatively high pollutant concentrations interspersed with long periods of extremely low ground-level concentrations. In addition, secondary NAAQS have be set to protect against visibility impairment and damage to animals, crops, vegetation, and buildings. All ambient air quality impacts from the JED Landfill project have been predicted to remain well below the applicable secondary NAAQS and therefore the impact on soils, vegetation, and wildlife is expected to be negligible.

5.4.3. Class I AQRV

The Federal Land Manager (FLM) for every Class I area that may be affected by a source is charged with protecting all air quality related values (AQRV), including visibility, of that area. An AQRV analysis is generally required for all PSD projects; however, a screening procedure exists that may exempt a small and/or distant source from performing such an analysis. The FLMs' AQRV Workgroup (FLAG): Phase I Report – Revised 2010 describes this procedure. According to the FLAG document, any source whose total annual emissions increase of SO_2, NOx, PM_{10},

and sulfuric acid mist (SAM) (TPY based on 24-hour maximum allowable emissions), divided by the minimum distance to the Class I area, in km, is less than 10 is not expected to have a significant impact on AQRV in that Class I area. **Table 20** summarizes this screening analysis for the CNWR. The Q/d value of 2.13 for this project is significantly less than ten; therefore, this project is not expected have a significant impact on AQRV in the CNWR.

TABLE 20 - FLAG 2010 AQRV SCREENING ANALYSIS FOR THE CHASSAHOWITZKA NATIONAL WILDLIFE REFUGE.

Project Potential Emissions increase (TPY)					Class I Area	Minimum Distance (d) in km	FLAG Ratio Q/d	Greater than 10?
NO_x	SO_2	SAM	PM_{10}	Total (Q)				
230.0	38.9	0	78.5	347.4	CNWR	163	2.13	No
					Everglades NP	212	1.64	No

5.5. Conclusion

The permitting authority confirmed that the air dispersion modeling used the worst-case emission rates. Based on the results presented in the air quality impact analysis, DEP has reasonable assurance that the increased pollutant emissions associated with the JED Landfill project will not cause or significantly contribute to any violation of a NAAQS or PSD increment; in addition, DEP finds that there will be no adverse impact on soils, vegetation, wildlife, or AQRVs in Class I areas.

6. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state rules 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. An air quality modeling analysis was required because the project does result in a significant increase in emissions. Mr. Brian Himes is the Department's meteorologist responsible for reviewing and approving the ambient air quality analyses. Additional details on these analyses may be obtained by contacting him by telephone at 850/717-9005 or by email at brian.himes@dep.state.fl.us.

Mr. Scott M. Sheplak, P.E. is the Department's permit processor responsible for reviewing the application and drafting the permit. Additional details on the permit may be obtained by contacting him by telephone at 850/717-9074 or by email at scott.sheplak@dep.state.fl.us in the Department's Office of Permitting and Compliance at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

References

[1] Federal Register / Vol. 79, No. 96 / Monday, May 19, 2014 / Rules and Regulations. U.S. Government Printing Office (GPO) World Wide Web Site: http://www.gpo.gov/fdsys/pkg/FR-2014-05-19/pdf/2014-11211.pdf. Accessed on 05/30/2014.

[2] U.S. EPA: PSD and Title V Permitting Guidance for Greenhouse Gases. EPA-457/B-11-001, March 2011 by U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Air Quality Policy Division, Research Triangle Park, NC. U.S. EPA Region 4 World Wide Web Site: http://www.epa.gov/region4/air/permits/GHGPermittingGuidance%20_March2011.pdf. Accessed in 07/17/2014.

[3] U.S. EPA: PSD and Title V Permitting Guidance for Greenhouse Gases. EPA-457/B-11-001, March 2011 by U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Air Quality Policy Division, Research Triangle Park, NC. **Appendix G. BACT Example - Municipal Solid Waste Landfill, pages G-1 - G-3.** U.S. EPA Region 4 World Wide Web Site: http://www.epa.gov/region4/air/permits/GHGPermittingGuidance%20_March2011.pdf. Accessed in 07/17/2014.

[4] U.S. EPA: PSD and Title V Permitting Guidance for Greenhouse Gases. EPA-457/B-11-001, March 2011 by U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Air Quality Policy Division, Research Triangle Park, NC. U.S. EPA Region 4 World Wide Web Site: http://www.epa.gov/region4/air/permits/GHGPermittingGuidance%20_March2011.pdf. Accessed in 07/17/2014.

[5] U.S. EPA: PSD and Title V Permitting Guidance for Greenhouse Gases. EPA-457/B-11-001, March 2011 by U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Air Quality Policy Division, Research Triangle

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