SECTION 2

SITE AND VICINITY CHARACTERIZATION

2.1 Site and Associated Facilities Delineation

2.1.1 Site Location

Drawing No. D-C-1, Plate 1 - Site Location with Easements and Property Lines of the Hilton Road Site, provides the current dimensions of the Project site. The 25 acre site is owned by Waste Management, Inc. and is located east of the Sunshine State Parkway (Florida Turnpike) and west of Powerline Road (N.W. 21st Avenue) on the south side of Hilton Road (N.W. 48th Street) in unincorporated Broward County between Deerfield Beach and Pompano Beach (Section 16, Township 48, Range 42).

2.1.2 Existing Uses

The Project site is vacant industrial property. It is bounded by a sanitary landfill to the west and the south and vacant industrial land to the east. Other uses between the Project site and Powerline Road on the south side of Hilton Road include auto salvage and repair buildings and welding and small engine repair shops. Paving and excavation operations are located on the north side of Hilton Road between the Turnpike and Powerline Road. A Florida Power and Light substation is located less than one-half mile south of the Project site. A more detailed description of transmission facilities is discussed in Section 6. An aerial photograph of the site is provided on the following page.

2.1.3 Site Modifications

The proposed site plan for the Project is shown in Figure 2.1.3.1. The Project site consists of a resource recovery facility, stormwater retention areas, an internal roadway system, administrative building, a visitor/employee parking area and appropriate perimeter landscaping. The resource recovery facility will include a gatehouse/weigh station, receiving and handling building, furnace boilers, turbine generators, ash disposal area, cooling system, and electrical substation.

As shown in Figure 2.1.3.1, the furnace, kiln and boiler areas extend rearward from the back wall of the crane building, which encloses the refuse pit and hopper floor.

The acid gas scrubbers and baghouses are located behind the boilers. The induced draft fans are located after the fabric filters, and each of the fans feed to an individual flue in a common stack. The turbine generator is enclosed within the main building, adjacent to and on the east side of the boilers. The switch yard is located directly south of the turbine generator, allowing adequate space for potential future expansion. The cooling tower is located on the same side of the boiler as the turbine generator structure and transformers in order to minimize piping and electrical interconnections. The water treatment area is also located on this side of the building, adjacent to the refuse pit. The fire protection pump house is on the east side of the cooling tower near the property line. The ash transfer conveyors and loadout facilities are located on the opposite (west) side of the boilers from the turbine generators.

Facility access will be via Hilton Road. Roadways supporting internal traffic will be designed to provide congestion-free circulation. The basic traffic flow will be east and west, to and from the receiving area. A more detailed description of the plant and its directly associated facilities is found in Section 3 of this application.

2.1.4 100-Year Flood Zone

As indicated in Figure 2.1.4.1, the proposed site is located within a 100-Year Flood Zone. Project site design criteria for this zone is elevation 14.0 MSL.

2.2 Socio-Political Environment

2.2.1 Governmental Jurisdictions

The area contained within a five-mile radius of the proposed facility is part of the metropolitan development area of Broward County and Palm Beach County.

the County staff and consultants to revise the RFP to reflect current conditions and reissue it to the three prequalified vendors.

The RFP was revised and reissued in September 1984 such that the sizing of the facilities was increased to meet solid waste disposal requirements into the early 1990's, and the County had the flexibility to award separate contracts for the northern and southern facilities. Proposals were received on November 16, 1984 from Signal RESCO and American REF-FUEL for the South Broward County Resource Recovery Project and Signal RESCO and Waste Management for the North Broward County Resource Recovery Project. On July 2, 1985, after an extensive proposal evaluation process, the Board of County Commissioners selected Signal RESCO to be the vendor for the South County Project and Waste Management as the vendor for the North County Project.

The County and an affiliate of Waste Management, Inc. entered into agreements for development and operation of the North County Project on September 30, 1986. All of Waste Management's waste-to-energy related affiliates were subsequently merged into Wheelabrator Technologies Inc. on August 12, 1988. Wheelabrator Technologies Inc. is the parent of Wheelabrator Environmental Systems Inc. Both the North and South County Projects will, therefore, be developed by affiliates of Wheelabrator Environmental Systems Inc.

Wheelabrator Environmental Systems Inc. (WES)

WES, a wholly-owned subsidiary of Wheelabrator Technologies Inc., was formed to direct the development, financing, construction and operation of refuse-to-energy projects under long-term service contracts with municipalities.

WES began operations with its first project in Saugus, Massachusetts in October of 1975. Through subsidiaries and other affiliates, WES now operates nine projects which burn approximately 14,000 tons of municipal refuse per day. Of these projects, WES owns (or has a controlling interest in) and operates seven projects and operates two others under long-term contracts. In addition, WES has under construction three projects which it will own and operate, and has been selected to build three additional projects.

Based upon WES's experience in the U.S., their proposed technology has been demonstrated to be reliable for solid waste disposal and energy production.

The Henley Group Inc.

The Henley Group Inc., a Delaware corporation, actively manages a diversified portfolio of consolidated and unconsolidated businesses and other assets valued at approximately $7 billion. Henley's businesses are primarily involved in the performance of process engineering, design and construction services, the manufacture of chemicals and other industrial products, and the manufacture and distribution of health and scientific products. Henley also owns and operates various energy systems (including refuse-to-energy systems) and has subsidiaries involved in real estate and in equipment leasing and financing. Henley owns a controlling interest in Wheelabrator Technologies Inc.

Henley was spun-off by Allied-Signal Inc. to its shareholders on May 27, 1986. Allied-Signal retained all of the outstanding Convertible Preferred Stock of Henley which represented, after giving effect to the May 1986 public offering of Henley shares, 15.6 percent of Henley's equity voting rights. Henley purchased all such Convertible Preferred Stock from Allied-Signal on January 28, 1987.

Wheelabrator Technologies Inc. (WTI)

WTI is engaged in developing and operating waste-to-energy projects and providing engineering/construction services and related equipment. WTI units are closely linked and similar in terms of markets served, technology used and financing methods employed. Wheelabrator Technologies has developed significant positions in the following markets:

- Waste-to-Energy
- Utility Services/Cogeneration
- Pollution Control Equipment
- Wastewater Treatment Systems
- Factory Automation

The President and Chief Executive Officer of Wheelabrator Technologies is Rodney C. Gilbert, former President of RUST International Corporation. Wheelabrator Technologies' management team has considerable experience in project development and finance, as well as in the specific operations of the subsidiary companies.

RUST International Corporation

Based in Birmingham, Alabama, RUST International (a wholly-owned subsidiary of Wheelabrator Technologies) is one of the largest engineering construction firms in the world. RUST has provided engineering services to the pulp and paper, iron and steel, process energy production, chemical, mining and other industries. With regard to resource recovery projects, Rust has been involved with the design and/or construction of WES facilities located in Saugus, Massachusetts; Westchester County, New York; Baltimore, Maryland; Millbury, Massachusetts; and Bridgeport, Connecticut. WES has selected RUST to build the North Broward Resource Recovery facility.

3.2 Site Layout

The Facility is slated to have an initial maximum installed capacity of 2,250 tons per day and an estimated projected ultimate capacity of approximately 3,300 tons per day. Since the proposed facility will utilize mass-burn technology, there will be no preprocessing of wastes at the facility prior to combustion. Solid waste will be delivered in collection trucks to the facility. It will be dumped directly into a bunker, located entirely inside the main facility building. All waste will be stored inside the building, therefore no waste will be visible from the outside. Two overhead cranes will mix the solid waste in the bunker and load the charging hoppers as required.

Waste will enter the furnace via a charging hopper and will progress through the combustion chamber by means of a stoker system that agitates the waste providing the proper air/fuel mixture to complete the combustion process. The resulting ash will be quenched, and the heat from the furnace will be transferred through waterfilled steel tubes lining a waste heat boiler to produce steam. The steam will then be transmitted to turbine generator to produce electricity for internal use and sale to Florida Power and Light Company.

Bottom ash from the furnace and flyash from the scrubber and baghouse will be mixed prior to removal from the facility. The combined ash will comprise approximately 10 percent of the volume and 25 percent of the weight of the solid waste processed by the facility. The ash will be quenched with water to about 30 percent moisture prior to transport to the adjacent Central Disposal landfill.

While the proposed facility will have ultimate design capacity of approximately 3,300 tpd and four boiler units, its maximum initial installed capacity will be 2,250 tpd and three boiler units. Each boiler unit operates independently from the others. It will, therefore, be possible to routinely shut down units for periods of maintenance and inspection and still continuously operate the facility.

3.2.1 Site Selection

The Broward County Board of County Commissioners selected the Hilton Road site for the North Broward County Resource Recovery Project site on August 13, 1985 after a lengthy and comprehensive site selection process that began in 1981. A detailed account of the site selection process is presented in Section 8.1, "Alternative Sites".

3.2.2 Resource Recovery Facility

As illustrated on Figure 2.1.3.1 and described in Section 2, Site and Vicinity Characterization, the resource recovery facility will be developed such that:

- The main on-site roadway will provide two-way traffic (north and south).
- A visitor parking area and administrative building will be located west of the main facility building.
- Vehicles entering the site will be weighed at the scalehouse/weigh station located between the main facility building and site entrance.
- A receiving area including an enclosed turning platform, tipping floor, overhead crane, and refuse pit will be located on the north side of the main facility building.
- The furnace/boilers and auxiliary equipment will be located south of the receiving area.
- The turbine generator will be located adjacent to the furnace/boilers.
- The scrubbers and baghouses (air pollution control equipment) will be located south of the boilers, adjacent to the ash handling area and directly in front of the plant's stack.
- The electrical substation necessary to tie into the Florida Power and Light grid system will be located just east of the facility stack.

The following figures and descriptions have been included to provide an overview of the resource recovery facility's operations. The figures were supplied by Rust International Inc. and Figure 3.2.1.1 presents a cross sectional view of the facility.

Plant Design

The Plant is designed to be architecturally pleasing and take into account existing site conditions. With the low site elevation large volumes or fill are required to raise the finished grade above the 100-year flood plain. The low site elevations also make it impractical and inordinately costly to build substantial structures, such as the waste storage pit, below grade level. Therefore, the design elevation of the slab for the plant floor and pit base is only a few feet below finished grade in contrast to a more conventional pit design where the base is often extended well below grade. The tipping floor is approximately 20 feet above finished grade and vehicle access is by fill-supported elevated ramps. The pit is approximately 35 feet deep, 350 feet long and 70 feet wide. This wide, shallow pit design avoids the complications and expense of elevating the tipping floor and access ramps to the high elevation that would be required by the typical deep, narrow pit.

Processible waste delivered to the Plant will be dumped directly into the waste storage pit. The waste storage pit is sized to hold a four-day volume of waste generation. The pit also provides surge capacity and waste storage for operations during periods when waste is not delivered to the Plant. Waterline volume of the pit is 32,000 cu. yards. Materials in the pit which are not appropriate for processing, such as white goods and potentially hazardous materials, are removed from the pit using the overhead crane. These materials are placed via a bypass bay located at one end of the hopper floor into trucks for transport to the landfill.

Processible waste is removed from the pit and fed to the charging hopper of each individual process line (Figure 3.2.1.2). The cranes are operated from the control room from which the entire pit can be viewed. The entire tipping area is enclosed and combustion air necessary for furnace operation is drawn from this part of the building. This design configuration maintains a slight negative pressure which effectively prevents odor and dust from escaping the tipping building. An additional odor scrubbing system is not deemed necessary due to the multiple number of operating lines where at least one will always be operating.

Combustion System

Each of the furnaces is equipped with a charging hopper into which the crane deposits waste. The hoppers are designed for even flow of waste into the charging chute and are equipped with a closed circuit television system to permit close monitoring of waste feeding operations. The chute is equipped with a damper which can be used to seal the furnace. Normally the refuse in the chute provides an air seal to the furnace which is under negative pressure, thus enabling close control of furnace air flows.

From the lower section of the charging chute the waste flows evenly onto the grates. The von Roll furnace utilizes a transverse reciprocating type grate, inclined at an angle of 18^o from the horizontal, with alternating stationary and reciprocating transverse grate rows. There are three separate grate systems in the von Roll furnace. The refuse is dried and partially ignited on the first grate section (the drying zone), and as it moves forward into the furnace, the rocking motion of the grate sections cause it to tumble, thus ensuring thorough mixing and drying. From the drying grate the refuse drops down onto the burning grate (the combustion zone) where complete ignition of the refuse takes place. The refuse then falls onto the second burning grate on which the volatile material is burned out (the burnout zone). At the grate transitions, additional tumbling of the refuse takes place, ensuring that refuse is brought to the surface, ignited and burned. The action of the von Roll grate system also provides for an effective lifting and shearing movement, particularly of the lowest refuse layers, and ensure effective distribution of the combustion air. The von Roll system employs proprietary self-cleaning grate bars which are efficiently cooled and easily interchangeable.

The heat for drying and ignition of the waste is supplied partly by the flue gases generated by the combustion of the refuse and partly by heat radiation from the hot refractory walls of the furnace structure. No auxiliary fuel is used during operation except during start-up and shut down. The temperature of the flue gases exiting the combustion zone are maintained at approximately 1800^{o}F +/-50^{o}F. The refractory lining ensures an even distribution of radiant heat over the grate and acts as a "thermal flywheel" in maintaining a stable level of combustion on the grate.

Each furnace is equipped with a separate primary air fan (Figure 3.2.1.2). Combustion air is drawn from the upper pit area and fed under the grates, from where it flows up between the grate bars to be distributed evenly throughout the grate area. Primary air flow can be regulated from the control room as can the distribution of air to each individual grate section.

Each furnace is also equipped with a secondary air fan, (Figure 3.2.1.2) which injects secondary air into the furnace above the grates and through the back wall of the furnace. Secondary air is required to secure effective burnout of the flue gas and acts as control on the combustion temperature. The entire furnace volume is maintained under negative pressure by the induced draft fan which draws the generated combustion flue gases through the system.

Steam Generation System

Above the grate and refractory lined waterwall section, the hot flue gases flow through a bare tube waterwall boiler section which is designed exclusively for refuse combustion service (Figure 3.2.1.2).

The boilers are equipped with a three-element feedwater system. All water flows into the boiler are totalized and compared to the steam output flow. A control function is provided to equalize these two flows. The boiler drum level also is measured and a control function is provided to change the set point of the water flow control function. This system ensures a constant drum level under all operating conditions. In addition, all flows are monitored, and the steam output is integrated and totalized.

The drum is equipped with safety valves, pressure gauges, gauge glasses, and remote level indicators as required by Section I of the ASME Boiler Code. One remote level indicator is located in the central control room and one at the feedwater control valve. The feedwater valve is equipped with a handwheel and bypass for emergency operation.

The final outlet steam temperature from the secondary superheater is monitored; a control is provided to operate the set point of the secondary superheater inlet temperature control. This control modulates the temperature valve to control the cooling water used to reduce the steam temperature and to maintain the desired final superheater outlet steam temperature. Superheated steam is generated at 900 psig/830°F at the superheater outlet.

The outlet steam header is protected with a safety valve and is monitored for flow, temperature, and pressure. Output steam flow is integrated and totalized.

Low gas velocity is maintained in the boiler which results in less erosion from fly ash. The gas flow patterns within the boiler are such that a large part of the coarse fly ash is disentrained and collected in ash hoppers below the boiler. The steam generator and economizer each have collection hoppers that discharge fly ash through double dump valves into an ash expeller.

A feedwater system consisting of turbine and motor-driven pumps, heaters, and necessary controls, supply treated feedwater to the boiler at 300°F. In order to provide water quality sufficient to insure optimum performance of the boiler and to minimize corrosion, a make-up water treatment system is included in the design. The process water from the available county water system is demineralized and inhibited by the addition of chemicals. The high temperature boiler/turbine system requires high-purity water to protect the boiler tubes and turbine surfaces from corrosion and scaling. A single bed cation/anion ion-exchanged system is provided for this purpose. The water treatment system provided in the design will produce the high quality boiler makeup water required and will thus reduce boiler blowdown requirements.

Ash Handling System

Ash from the combustion process falls from the end of the final grate into a quench trough from which it is removed by a hydraulic ram to a vibrating conveyor (Figure 3.2.1.3). For reliability, the conveyor system is fully duplicated. The makeup water required for the quench trough is supplied from boiler and cooling tower blowdown. The cooled ash is transported to the enclosed ash loadout area behind the Plant.

Fine particles which fall through the grates will be collected in hoppers below the grates and transported by enclosed conveyors to the quench trough, where it is mixed with ash from the bottom grates. The fly ash collected in the boiler sections is conveyed by means of rotary valve and conveyors to this area also. The fly ash separated in the scrubber and baghouse is also transported via conveyors to the bottom ash collection area. The fly ash collected in the boilers, scrubber and baghouse is combined with the bottom ash before leaving the Plant area. The *combined ash stream is anticipated to be accepted for* unrestricted landfilling. Generally, combustible material remaining in the ash is typically less than 2% of the total ash content, depending on the test method used. Putrescibles remaining in ash are generally less than 0.2%. The ash is approximately 5 to 10% by volume and 30% by weight of the raw waste.

Environmental Control System

Each furnace line is equipped with a scrubber to remove acid gases and baghouse to remove the fly ash from the flue gases. The baghouse is designed to limit particulate matter emissions to 0.015 grains/dscf corrected to 12% CO_2, maximum. Based upon good engineering practices and experience at other waste incineration facilities, the other regulated pollutants are expected to be within an acceptable range of emissions.

The flue gases flow through a duct from the boiler to the spray dryer absorber/baghouse system (see Figure 3.2.1.1). The spray dryer absorber/baghouse combines two technologies which have had numerous commercial applications. Spray dryers/baghouses have been used for several years as flue gas desulfurization (FGD) technology on coal-fired utility boilers, mainly firing low sulfur coals. Several recent mass-fired resource recovery projects have been constructed with this control system for acid gas/particulate removal.

This system consists of a spray dryer upstream from a baghouse. In the first stage, the flue gas enters the dryer and flows concurrent with a finely atomized spray of scrubbing solution containing an alkali slurry. The atomized droplets of the alkali slurry will contact and absorb SO_2 and HCl in the gas stream. The moisture in the droplets rapidly evaporates in the spray dryer to produce a cooled and partially humidified, particulate-laden gas. The mixture of fly ash, reaction products, and unreacted sorbent is collected on the filter media in the baghouse. The material collected on the filter media provides enhanced removal of SO_2 and HCl.

Lime (CaO) sorbent is preferred for combined SO_2 and HCl removal from the flue gases from mass-fired boilers.

The basic baghouse components include a filter medium (typically a coated fiberglass cylindrical bag), tube sheet to support the bags, gas-tight enclosure, and a mechanism to remove accumulated dust from the bags.

The particulate-laden gas stream enters the lower portion of the baghouse in the vicinity of the collection hoppers. The gas then passes upward through the device on the outside of the bag. The baghouse mainly serves as the support structure for the dust mat. Periodically, the accumulated dust is removed from the bags, dropped by gravity to the hoppers, and is removed for disposal (See Figure 3.2.1.4). The bags will be cleaned by a shake and deflate cycle.

The two major design and operational parameters which determine baghouse performance are the air-to-cloth ratio and pressure drop. In general, lower air-to-cloth ratios are used in the collection of fine particles. The pressure drop across the filter media must be eliminated to avoid operational problems.

Operational experience on baghouses indicates they are susceptible to certain problems resulting from upset conditions of gas temperatures such as:

1. Short-term temperature excursions which may cause overheating of the bags.
2. Gas temperature below the acid or moisture dew point which may clog the filter media.

The design and operating procedures of the fabric filter system for North Broward have incorporated features which prevent these problems from occurring.

The baghouse system is designed to achieve a particulate matter emission limit of 0.015 grain per dry standard cubic foot (dscf) corrected to 7 percent oxygen.

Environmental monitoring equipment will be installed to insure continuous optimum operation. This equipment will be installed at the stack and data will be recorded and reported to a computerized system within the plant's control room. A single stack with four steel flues, including one for future use, will be provided to convey exhaust gases to a height where sufficient dispersion can take place. The stack will be self-supporting on its own foundation.

Power Generation System

Steam generated in the boilers is piped to a fully-condensing turbine-generator, nominally sized at approximately 68.5 MW, where electricity is generated. A portion of the power generated is directed by appropriate switchgear to meet in-plant requirements. The remaining electric power is stepped-up to transmission line voltage for sale to Florida Power and Light Company.

The turbine-generator is provided with all appurtenances required for proper operations, including cooling system, exciter and voltage regulation system, and electrohydraulic control systems. Three extraction points are provided deaeration and feedwater heating. A dump condenser is provided to receive and dissipate heat from the full flow of steam in the event that the turbine-generator is out of service. The extensive power distribution system includes all switchgear, transformers, controls and accessories required for effective power distribution.

A circulating water system provides cooling water to the condenser. After service in the condenser, circulating water is cooled in a multi-cell mechanical draft cooling tower.

Control System

Plant operations are monitored and controlled from the central control room. Each furnace line has a main control board fully instrumented and equipped with processed controls to monitor waste combustion, steam production, and other process variables. An automatic combustion control system monitors flue gases and furnace temperature at several locations within the furnaces and modulates combustion air feed. Control of the electrical generation facility is also accomplished from the central control room. The design has extensive microprocessing capability to compile data, alarm deviations, and display control function readouts, permitting computer assisted Plant operation.

Support Facilities

The proposed Project design utilizes centralized administration and control facilities thereby affording coordinated and cost effect project management. The administrative facilities located adjacent to the main building will house plant management, plant supervisory personnel, County personnel, a visitors' center, and a conference room. Offices within the plant accommodate plant operating and maintenance personnel. All support facilities are illustrated on Figure 2.1.3.1. Typical west, south and north elevation views of the facility are provided in Figures 3.2.1.5 (south) and 3.2.1.6 (east and west) respectively. As these views illustrate, the facility will be designed to provide a pleasing aesthetic appearance.

3.2.3 Contingency Disposal

Contingency plans have been formulated to address periods during which raw refuse processing capability is unavailable due to either scheduled or unscheduled downtime at the proposed facility. Basically, the overall contingency plan consists of a multi-phased approach. We wish to note that the processing capacity of the proposed facility has been selected based, in part, on a projected annual availability factor of at least 85 percent. This factor includes scheduled downtime for routine maintenance activities as well as unscheduled downtime for unforeseen circumstances based on operating experience at other similar facilities.

The first phase of the contingency plan is the storage capacity of the receiving pit and multiple, redundant processing units at the proposed facility. A minimum four-day pit capacity represents one of the facility design criteria. While the primary purpose of this requirement is to assure adequate on-site storage of refuse to sustain plant operations over a weekend, the excess pit capacity that will normally be available could be used to store incoming refuse for one to three days when the facility is down for scheduled or unscheduled maintenance. Thus, during such periods refuse delivery to the facility will proceed uninterrupted.

The following three cases have been prepared to illustrate the waste processing capabilities of the plant with one or more units out of operation.

[Figures 3.2.1.7 through 3.2.1.10 are deleted and not replaced.]

The Site

2. The site for the proposed RRF is a 25-acre parcel of land situated on the south side of Northwest 48th Street (Hilton Road), midway between the Florida Turnpike and Powerline Road; an unincorporated area of Broward County. As sited, the RRF would lie within an area already used for the disposal of solid waste, and within the main industrial corridor designated by the Broward County Land Use Plan.

3. The site is owned by Waste Management, Inc. It is *bounded on the east, south and west by lands currently used by* Waste Management for solid waste disposal. The lands abutting the site's east boundary, as well as lands south of the existing southerly landfill, are approved for expansion of Waste Management's landfill operation. On the south side of Hilton Road, between the Florida Turnpike and Powerline Road, are welding shops, engine repair shops, and automobile salvage yards. Located north of Hilton Road is an industrial zoned area which includes an asphalt batching plant and other industrial uses.

The Facility

4. The facility proposed by the Applicants will consist of a gatehouse/weigh station, receiving and handling building, furnace boilers, turbine generators, ash disposal area, cooling system, stormwater runoff control pond, and an electrical substation. When completed, the facility will have a capacity of 2,250 tons per day (TPD) of waste and 68.5 megawatts of electrical power. The ultimate capacity of the facility will be 3,300 TPD of waste and 83.25 megawatts of electricity.

The Need for the Facility

5. By Order Number 15858, issued March 19, 1986, the Florida Public Service Commission (PSC) concluded that a need existed for the electrical generating capacity to be supplied by the proposed facility. That finding of need has not been contested in these proceedings.

6. As designed, the proposed facility will save at least 640,000 barrels of crude oil each year and more than 12.8

13. Pertinent to this proceeding, the pollutants subject to NSR requirements are the criteria pollutants particulate matter (PM), sulfur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO), and lead (Pb), and the non-criteria pollutants fluoride (F), sulfuric acid mist, beryllium (Be), and mercury (Hg.[3]

14. To predict the impact of the proposed facility on air quality, the Applicants used DER and Environmental Protection Agency (EPA) approved air quality dispersion models.[4] These models are used to predict maximum and average ground level concentrations for gaseous and fine particulate emissions that travel as gases, and maximum and average deposition concentrations for heavy particulates which settle out. The concentration values, as modeled, represent conservative scenarios.[5]

15. The Applicants' atmospheric dispersion modeling established that the emission rate of the criteria pollutants pertinent to this proceeding (PM, SO_2, No_x, CO, and Pb), will not cause or contribute to a violation of primary or secondary AAQS.[6] The modeling further established that the emissions from

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3/ DER and EPA designate geographic areas which meet AAQS for a pollutant as "attainment", and those areas which do not meet AAQS as "nonattainment". Broward County is designated as an attainment area for all criteria pollutants except ozone. Under such circumstances the applicants would normally be required to undergo "non-attainment-new source review" for the pollutant ozone. However, where as here, less than 100 TPY of volatile organic compounds (the controlling pollutant for ozone) will be emitted, non-attainment review is unnecessary and such pollutant is not pertinent to these proceedings.

4/ The applicants used the EPA-approved Industrial Source Complex Short-term (ISCST) atmospheric dispersion model to complete its air quality impact analysis. The model incorporates elements for plume rise, transport by the mean wind, Gaussion dispersion, atmospheric transformation or deposition, building wake downwash, and various other features.

5/ For modeling purposes, the facility was assumed to operate for short periods of time (24 hours or less) at 115 percent of the nameplate capacity of 2,250 TPD, and on an annual basis the model assumes 85 percent operation.

6/ Federal and state laws establish primary AAQS to protect the public health and secondary AAQS to protect the public interest in animal and plant life, property, visibility and atmospheric clarity.

Facility-wide Averaging

28. With regard to the emission limits to be established for PM, Pb and SO_2, the Applicants submitted an alternative emission limit based on a facility-wide average of the emissions from each incineration unit. DER opposes facility-wide averaging, and asserts that emission limits must be established for each unit. The proof establishes that facility-wide averaging is not appropriate, and that the limits heretofore established for PM, Pb, and SO_2 must be applied to each unit.

29. Chapter 17-2, Florida Administrative Code, mandates that each "source" or "stationary source" must obtain a permit, comply with the standards for new stationary sources, and demonstrate compliance under established stationary point source emission test procedures. Rules 17-2.210, 17-2.660, and 17-2.700, Florida Administrative Code. "Source" and "Stationary Source" are defined by Rule 17-2.100(150), Florida Administrative Code, as:

> An identifiable piece of equipment (or the smallest integral combination of pieces of equipment, structures, and necessary appurtenances) that is used as a complete unit to accomplish a specific purpose or to produce a specific product; and which:
> (a) Includes at least one activity or operation which is the point of origin of an air pollutant from process or other materials or accomplishes the conversion of all or part of various materials or fuels into a pollutant;
> (b) Has at least one emission or discharge point; and
> (c) Exists at or is designed to be operated as a unit at a fixed location, although parts of the source may move while the source is in operation.

30. The facility proposed by the Applicants will initially consist of three incinerators, and ultimately four incinerators, each designed as a complete unit capable of processing 750 tons of MSW per day. Each unit will be vented through its own flue, which will rise within a common stack. Consequently, each unit is a "source" or "stationary source" of air pollution, and each unit must comply with the emission limits established for each pollutant.

C. Reporting

1. Notice of commencement of construction shall be submitted to the Southeast District Office and SFWMD within 15 days of initiation. Starting three (3) months after construction commences, a quarterly construction status report shall be submitted to the Southeast District Office. The report shall be a short narrative describing the progress of construction.

2. Upon or immediately prior to completion of construction of the resource recovery facility or a phase thereof, the Southeast District Office and SFWMD will be notified of a date on which a site or facility inspection should be performed in accordance with Condition V, and the inspection shall be performed within fourteen (14) days of the date of notification by the Permittee.

XIV. OPERATION

A. Air

The operation of the Resource Recovery Facility shall be in accordance with all applicable provisions of Chapter 17-2, 17-5, and 17-7, Florida Administrative Code. In addition to the foregoing, the Permittee shall comply with the following specific conditions of certification:

1. Emission Limitations upon Operation of Units 1-3

a. Stack emissions from each unit shall not exceed the following, assuming a Btu content of 4500 Btu/lb of MSW:

(1) Particulate matter: 0.015 grains per standard cubic foot dry gas corrected to 12% CO_2.

* (2) SO_2: 0.55 lbs/MBtu average heat input for each unit. Compliance with SO_2 emission limits shall be determined by annual stack tests and by averaging three or more stack test runs for each unit.

(3) Nitrogen Oxides: 0.56 lbs/MBtu heat input

(4) Carbon Monoxide: 400 ppmvd corrected to 7% O_2, 8 hour average, 130 ppmvd corrected to 7% O_2, 4 day average

(5) Lead: 0.00056 lbs/MBtu heat input

* (6) Mercury: 9.2 x E-4 lb/Mbtu

(7) Odor: there shall be no objectionable odor at the site boundary.

(8) Visible emissions: opacity shall be no greater than 15% except that visible emissions with no more than 20% opacity may be allowed for up to three consecutive minutes in any one hour except during start up or upsets when the provisions of 17-2.250, FAC shall apply. Opacity compliance shall be demonstrated in accordance with Florida Administrative Code Rule 17-2.700(6)(a)9, DER Method 9.

* (9) Fluoride: 0.018 lb/MBtu heat input

(10) Beryllium: 9.3xE-7 lb/MBtu heat input

(11) VOC: 0.013 lb/MBtu heat input

(12) Arsenic: 3.1 x E-5 lb/MBtu heat input

* (13) Sulfuric Acid Mist: 4.7 x E-2 lb/MBtu heat input

b. The height of the boiler exhaust stack shall not be less than 200 feet above grade.

c. The incinerator boilers shall not be loaded in excess of their rated nameplate capacity of 67,200 pounds of MSW or 302.5 x 10^6 Btu per hour each.

d. The incinerator boilers shall have a metal nameplate affixed in a conspicuous place on the shell showing manufacturer, model number, type waste, rated capacity and certification number.

e. Compliance with the limitations for particulates, sulfur oxides, nitrogen oxides, carbon monoxide, fluoride,

* Subject to change in accordance with current state rulemaking for resource recovery facilities or by petition under 403.516.

sulfuric acid mist, VOC and lead shall be determined in accordance with Florida Administrative Code Rule 17-2.700, DER Methods 1, 2, 3, 4, and 6 and 40 CFR part 60, Appendix A, Methods 5, 7, 8, (modified with prefilter), 10, 12, 13A or 13B (or modified method 5 for fluorides), and 18 or other methods as approved by the DER. The stack test for each unit shall be performed at +/-10% of the maximum heat input rate of 302.5 x 10^6 Btu per hour or the maximum charging rate of 67,200 pounds of MSW per hour. Compliance with the beryllium emission limitation shall be determined in accordance with 40 CFR part 61, Method 103 or 104, Appendix B. Particulate testing shall include one run during representative soot blowing which shall be averaged proportionally to normal daily operations. Visible emission testing shall be conducted simultaneously with soot blowing and non-soot blowing runs. Compliance with the opacity limit shall be demonstrated in accordance with Florida Administrative Code Rule 17-2.700(6)(a)9, DER Method 9.

f. Combustion efficiency calculated by: $\%CE = (1/(1+(CO/CO_2))) \times 100$ shall be at least 99.8% for an 8 hour average.

2. Emission Control Equipment

a. The boiler particulate emission control devices shall be designed and constructed to achieve a maximum emission rate of 0.015 grains per dscf corrected to 12% CO_2. All other particulate control devices shall be designed to meet the provisions of section 17-2.610.

b. The Facility shall be designed to allow installation of an acid gas scrubbing system if such a system should become required by regulation.

c. The Permittee must submit to the Department within thirty (30) days after it becomes available, copies of technical data pertaining to the selected emissions control systems. These data should include, but not be limited to, guaranteed efficiency and emission rates, and major design parameters. The data shall be processed and approved or denied in accordance with F.S. 120.60.