Westinghouse
Electric Corporation
BCP:84-018

Advanced Power Systems
Divisions

Waste Technology Services Division

Box 10864
Pittsburgh Pennsylvania 15236-0864
(412) 892 5600

March 22, 1984

DER
MAR 26 1984
BAQM

State of Florida
Department of Environmental Regulations
Central Air Permitting Section
Bureau of Air Quality Management
2600 Blairstone Road
Tallahassee, Florida 32301

Gentlemen:

Attached are four copies of the State of Florida Department of Environmental Regulation "Application to Operate/Construct Air Pollution Sources" for the Bay County Waste-to-Energy Project being designed and constructed by Westinghouse Electric Corporation, Waste Technology Services Division. Your prompt processing of this application is requested. Any questions regarding the application contract should be addressed to:

F. S. Pollier/J. D. Phillips
Westinghouse Electric Corporation
Waste Technology Services Division
P.O. Box 10864
Pittsburgh, PA 15236

A check for the amount of $2,000.00 is enclosed as the application fee per direction of T. Moody, Florida Department of Environmental Regulation, Pensacola, Florida.

Sincerely,

Fred S. Pollier

F. S. Pollier
Project Manager
Bay County Project

Enclosures

cc: J. W. Bohlig
L. P. Duffy
J. W. Fisch
G. B. Levin
R. L. Grandy
J. D. Phillips
V. Campbell
C. J. Bailey, EPR
G. Layman, Gulf Power Co.
L. Burke, Bay County Attorney
W. May, Sanders & Thomas
W. H. Green, HBGS

AC 03-84703
AC 03-84704

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301

DER

MAR 26 1984

BAQM

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Resource Recovery Facility comprising* 2 Carbonaceous Fuel Boilers fired Primarily by Municipal Solid Waste [x] New[1] [ ] Existing[1]

APPLICATION TYPE: [x] Construction [ ] Operation [ ] Modification

COMPANY NAME: Bay County Energy Resources "A Joint Venture" 5433 Westheimer, Suite 1106, Houston, Texas 77056 c/o Environmental Resources Inc. COUNTY: Bay

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) 2 MSW-fired boilers with Electrostatic Precipitators

SOURCE LOCATION: Street U.S. Highway 231 City Panama City

UTM: East _____ North _____

Latitude 30 ° 15 ' ___ "N Longitude 85 ° 30 ' ___ "W

APPLICANT NAME AND TITLE: Bay County Energy Resources, "A Joint Venture" C.J. Bailey, Presiden

APPLICANT ADDRESS: c/o Westinghouse Waste Technology Services Division, Bay County Waste-to Energy Project, P.O. Box 10864, Pittsburgh, PA 15236, Attention: F. S. Pollier Project Manager

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Bay County Energy Resources "A Joint Venture"

I certify that the statements made in this application for an Air Pollution Sources permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: C. J. Bailey

Environmental Protection Resources, Inc., General Partner: C. J. Bailey, Jr.
Name and Title (Please Type) President

Date: 3/21/84 Telephone No. (713) 626-5691

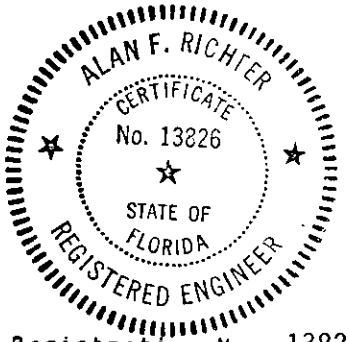
B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

* See definitions at 17-2.100(28) and (29), F.A.C.

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.



Signed _____

Alan F. Richter, P.E., President
Name (Please Type)

STV ENGINEERS, INC.
Company Name (Please Type)

11 Robinson St., Pottstown, PA 19464
Mailing Address (Please Type)

Florida Registration No. 13826 Date: 3/21/84 Telephone No. 215-326-4600

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

See Attachment II.A.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction 4th Quarter 1984 Completion of Construction 4th Quarter 1986

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

Preliminary engineering estimates for two (2) electrostatic precipitators are $1,100,000. This figure includes the cost of precipitators, transformer-rectifier units, heated-insulated ash hoppers, and controls.

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

None

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ; if power plant, hrs/yr 8760 ; if seasonal, describe:

This facility is expected to be in continuous operation except for maintenance outages. Full capacity of 350 tons per day of MSW will not normally be realized except in the summer vacation season. Wood chips will be burned as supplemental fuel.

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? No

   a. If yes, has "offset" been applied?

   b. If yes, has "Lowest Achievable Emission Rate" been applied?

   c. If yes, list non-attainment pollutants.

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. No

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. No

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? No

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? No

   a. If yes, for what pollutants?

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable: N/A

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 29166.6 lbs/hr MSW and/or Wood Chips

2. Product Weight (lbs/hr): 78,000 lbs/hr Steam

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

For each of the two incinerator-boilers/stacks:

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual* T/yr			lbs/hr	T/yr	
Particulate	3.64	14.986	30% Opacity 0.2 lb/MMBtu	3.64	255	1049.9	
CO	30.125	124.03	per 17-2.600 (10)(b)2.b.	-	30.125	124.03	
NO_x	16	67.21	-	-	16	67.21	
SO_2	10	42.16	-	-	10	42.16	
HC-(non-methane)	1.7	7.3	-	-	1.7	7.3	
Lead	0.0227	187 lb/Yr			0.0227	187 lb/Yr	

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Emission, if source operated without control (See Section V, Item 3).

* Based on 94% Capacity factor.

J. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Electrostatic Precipitator	Particulate/Lead	Approximately 99%		Cooper & Clark Table 5-11

E. Fuels For each of the two units:

Type (Be Specific)	Consumption* avg/hr	Consumption* max./hr	Maximum Heat Input (MMBTU/hr)
Municipal Solid Waste	11458.3	14583.3	65.5
Wood Chip		Approx. 8000	
Natural Gas	Will be used only for startup and shutdown	60 MMCF/Hr.	

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis: For Standard MSW

Percent Sulfur: 0.16 Percent Ash: 27.58 (typical)

Density: N/A lbs/gal Typical Percent Nitrogen: None

Heat Capacity: 4500 BTU/lb N/A BTU/gal

Other Fuel Contaminants (which may cause air pollution): Primary fuel will be type III municipal solid waste. Small quantities of lead will be present. No hazardous wastes will be accepted for burning.

F. If applicable, indicate the percent of fuel used for space heating. Not applicable.

Annual Average _____ Maximum _____

G. Indicate liquid or solid wastes generated and method of disposal.

Bottom ash and fly ash to be co-mingled and transported to Bay County Landfill

All liquid wastes (cooling tower blowdown, boiler blowdown, ash quench water overflow, excess cooling water, sanitary waste, plant washdown water) will be pretreated and discharged through sanitary sewers to the Bay County sewage treatment plant.

4. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 2 stacks each 125 ft. Stack Diameter: 4 ft.

Gas Flow Rate: 29,246 ACFM 15,245 DSCFM Gas Exit Temperature: 400 °F.

Water Vapor Content: 20 % Velocity: 2500 FPM

SECTION IV: INCINERATOR INFORMATION - Not Applicable

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

escription of Waste _____

Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____

Manufacturer _____

Date Constructed _____ Model No. _____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diamter: _____ Stack Temp. _____

Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity: _____ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) _____

Brief description of operating characteristics of control devices: _____

_____

_____

_____

_____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

_____

_____

_____

_____

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]

2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.

3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).

4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)

5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency).

6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.

7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).

8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY N/A

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[ ] Yes [ ] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)

[ ] Yes [ ] No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft.

b. Diameter: ft.

c. Flow Rate: ACFM

d. Temperature: °F.

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device:

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

[1] Explain method of determining efficiency.
[2] Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

[1]Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION N/A

A. Company Monitored Data

1. _____no. sites _____ TSP _____( ) SO^2* _____ Wind spd/dir

Period of Monitoring ____/____/____ to ____/____/____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from _____/_____/_____ to _____/_____/_____
month day year month day year

2. Surface data obtained from (location)_____

3. Upper air (mixing height) data obtained from (location)_____

4. Stability wind rose (STAR) data obtained from (location)_____

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate	
TSP	_____	grams/sec
SO_2	_____	grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

ATTACHMENT II.A.

This project involves the construction of a resource recovery facility that will generate steam-electric power by burning the combustible fraction of municipal solid waste from Bay County. The project represents the Bay County Commission's response to solid waste management planning for the future. The facility will consist of two (2) O'Connor RC 100 combustor units with provision for future addition of a third unit. Initial capacity of the facility will be 350 tons per day of municipal solid waste. Wood chips will be available as a supplemental fuel to maximize plant capacity factor and revenues. Steam produced in the two incinerator-boilers will be used to produce electrical energy by turbine generators, which will be sold to Gulf Power Company. Design of the facility will provide for future steam sales for manufacturing or other uses in the adjacent industrial park.

Electrostatic precipitators are proposed for control of particulate emissions from the incinerator-boilers. This choice is based upon successful operating experience with this control technology in resource recovery facilities utilizing waterwell boilers for the incineration of municipal solid waste in Nashville, Tennessee; Saugus, Massachusetts, Hampton, Virginia; and Pinellas County, Florida. The design criteria for particulate emissions from the precipitators will be 0.02 grains per standard cubic foot, corrected to 12% CO_2. This represents a particulate removal efficiency of approximately 99%.

The use of baghouse technology has been rejected for this project in view of the baghouse failure at Gallatin, Tennessee and the lack of experience with baghouses on existing municipal solid waste incinerator-boilers. The early failure involving the use of a wet scrubber at the Nashville facility, and the lack of successful operating experience on waterwall boilers equipped with dry scrubbers in the U.S.A., form the basis of the decision not to utilize scrubber technology for this project.

As proposed, this project will result in full compliance with all applicable requirements of Florida Administrative Code Chapter 17-2.

BASIC DATA
RESOURCE RECOVERY PLANT
BAY COUNTY, FLORIDA

Introduction

This document presents design criteria on the proposed Bay County project. Plant capacity will be 350 tons per day of municipal solid waste. Data from scales at the Majette Tower Landfill indicate a maximum of 350 TPD, a minimum of 250 TPD, and an annual 100,000 tons of MSW. Supplemental wood chip fuel will be available to maximize plant capacity and revenues. The plant will be designed with two O'Connor RC 100 Combustor units with provision for future addition of one additional unit. Energy produced by turbine generators will be sold to Gulf Power Company. Future steam sales will be provided for in plant design.

Site

The plant site will be in an Industrial Park approximately eight miles from the center of Panama City on U.S. Highway 231. Gulf Power has a 115 kV line adjacent to the site.

Architectural and Civil

The plant will be designed to present an aesthetically attractive grouping of buildings and equipment. MSW is to be weighed on automatic scales and tipped on a reinforced concrete slab in a 140' x 260' rigid frame building. Reclaiming of waste will be with a rubber tired front end loader to two (2) four feet (4') wide pan conveyors. Each conveyor is 90 feet long and transfers material to a second conveyor which terminates at the hopper of each combustor train. Floor storage in the center of

the building, away from all walls, will accommodate over 1000 tons of MSW and still leave room for truck traffic. An additional reclaiming with a knuckle boom loader will be provided in the center of the building. The building will be designed for access by 18 wheel semi-trailers now in service from the two transfer stations in Panama City. Provision for individuals in small vehicles is to be provided. Elevation is to be compatible with conveyor runs to the power train and power train elevation. Center line of the conveyors to the combustor hoppers is 35 feet. A building extension over the conveyors is to be provided, along with walkways by each conveyor. A gravity roof ventilator is to be provided. In addition, combustion air is to be ducted from the building extension to the forced draft fans.

No additional equipment is proposed for acceptance of wood chips. They will be stored as is MSW and mixed by the operator in the storage building.

All equipment foundations will be on piling. Designers will provide soil borings as required.

An office building will be designed for four day personnel, a conference room, and a change room for plant operating and maintenance personnel. Visual access from the office building to the scale is required. Parking is required. Roads will be provided. Property is to be fenced with chain link galvanized fencing.

A building to enclose the power train is to match the refuse storage building.

Sewer and water to the site are to be provided by others.

Process Train

The process train from the hopper on the combustor to the stack will be designed by Westinghouse. It is intended to have a left hand and a right hand boiler with soot blowers offset and in the center between the units. The stack will be four feet in diameter, self supporting, with a ladder to an E.P.A. test platform. Copper bearing steel is to be used to minimize corrosion. Stack height is to be a nominal 125 feet. No taper or high velocity nozzles are to be on the stacks.

Mechanical

Equipment design for plant is to include:

Turbine Generators

Condensers - with Appurtenances

Cooling Tower

Circulating Water Pumps

Boiler Feed Pumps

Deaerating Heater and Storage Tank

Condenser Water Pumps

Switchgear

Ash Hopper - Boiler

Ash Hopper - Siftings

Ash Conveyors

Instrument and Control System

Air Compressor(s)

Boiler Blowdown Flash Tank

Support Facilities for air emission equipment. It is

intended to use an electrostatic precipitator for control of particulate emissions.

Boiler water treatment facilities are to be designed for 100% makeup.

All support facilities for the power plant are to be provided. Items such as P.A. systems, CCTV, sump pumps and any item not listed but required in the proper operation of the plant is to be a part of this scope.

Pretreatment of quench water prior to discharge to sewer is required.

Air compressors should be designed for air puff sootblowers. This is an interface item with Westinghouse.

Electrical

Maximum energy efficiency in the plant is to be provided. Energy efficient electric motors are to be designed into the plant. Lighting is to be high pressure sodium vapor.

The four fan drive motors are to be AFAC (adjustable frequency/alternating current).

Interface with Gulf Power and Southern Services will be required. Possible subcontract to Southern Services for generator terminals to switchyard is pending.

Maximum usage of cable trays for all electrical and instrument lines is required. Minimum conduit.

Southern Services will design 115/12 kV substation on a one acre site between the plant and their 115 kV line. Their substation will be sized for future growth in the Industrial Park.

Particulate Emissions
(Controlled)

Bay County, Florida
Resource Recovery Plant

Particulate Emission Factors
Kure City, Japan
Electrostatic Precipitator

.5#/Ton MSW Input

$$\frac{.5 \times 350}{2 \times 24} = 3.64 \text{ \#/Hr/Stack}$$

$$3.64 \times 24 \times 365 \times .94 = 29{,}973 \text{ \#/Yr/Stack}$$

$$\frac{29{,}973}{2000} = 14.986 \text{ Tons/Yr/Stack}$$

Ref.: Table 5-11

Cooper & Clark Report
Kure City, Japan
1981

TABLE 5-11
PARTICULATE EMISSION FACTORS AND ESP EFFICIENCY

Feed Rate		Unabated Emissions		Abated Emissions		ESP Efficiency	
% Design	Tm/PH	EPA BAAQMD Lbs./T	Other Calif. Lbs./T	EPA BAAQMD Lbs./T	Other Calif. Lbs./T.	EPA BAAQMD %	Other Calif. %
88	5.5	37.85	•	0.307	0.473	99.19	98.83
89	5.56	28.29	30.25	--	--	--	--
101	6.33	25.99	•	0.405	0.564	98.44	97.90
109	6.8	32.75	33.82	--	--	--	--
Average of all tests		31.22	32.04	0.356	0.518	98.82	98.35
U.S. EPA Method 5-8 Average		30.52	32.04	0.356	0.518		
Average Lbs./10^6 Btu of all tests		5.58	5.72	0.064	0.092		
U.S. EPA Method 5-8 Lbs./10^6 Btu Average		5.45	5.72	0.064	0.092		

CO Emissions

Bay County, Florida
Resource Recovery Plant

CO per million Btu input =

Emission Factor		Tons/Day		10^6 BTU	=	
.459 #co/10^6BTU	x	350	x	9 BTU/Ton		1446 #/Day 60.25 #/Hr. 30.125 #/Hr/Stack

#/Day		Days		Plant Availability			
1446	x	365	x	.94	=	248.06	tons/year
		2000					

Reference: Table 5-37
Cooper Engineers Report
Gallatin, Tennessee
December 1983

Assumptions: Typical MSW - 4500 Btu/#
Plant Availability - 94%

TABLE 5-37

CO EMISSIONS FACTORS USING EPA F-FACTOR
CALCULATED FROM CEM DATA TAKEN DURING SAMPLING

$$E = Cd\ Fd \left(\frac{20.9}{20.9 - \%O_2} \right)$$

E = Pollutant Emission Rate, $lb/10^6$ Btu

Cd = Pollutant Concentration (dry) lb/scf
= ppm CO x 0.7276×10^{-7}

% O_2 = 7% O_2 dry

Date	CO Conc. at 7% O_2	Cd x 10^{-7} (lb/scf)	Fd (scf/10^6 Btu)	E (lb/10^6 Btu)
2/7/83 1050 to 1437	254	184.81	8,875	0.247
2/8/83 0855 to 1150	928	675.21	9,019	0.916
2/8/83 1320 to 1500	150	109.14	9,973	0.164
2/8/83 1647 to 1825	222	161.53	9,168	0.223
2/9/83 0940 to 1215	482	350.70	7,803	0.411
2/11/83 1552 to 1735	650	472.94	11,395	0.810
AVERAGE	448	325.96	9,372	0.459

Lead Emissions

Bay County, Florida
Resource Recovery Plant

Lead as Wt. % of Particulate

Kure City, Japan	0.754%
Gallatin, Tenn.	0.626%

Particulate

$$\frac{3.64 \text{ \#/Hr/Stack} \times .626}{100} = 0.227 \text{ \#/Hr/Stack}$$

$$\frac{14.986 \text{ Tns/Yr} \times .626}{100} = .0938 \text{ Tons/Yr/Stack}$$

$$.0938 \times 2000 = 187 \text{ \#/Yr/Stack}$$

Particulate - Unabated

Bay County, Florida
Resource Recovery Plant

Particulate - Potential Emission Uncontrolled

Particulate Emission Factors
Kure City, Japan
ESP

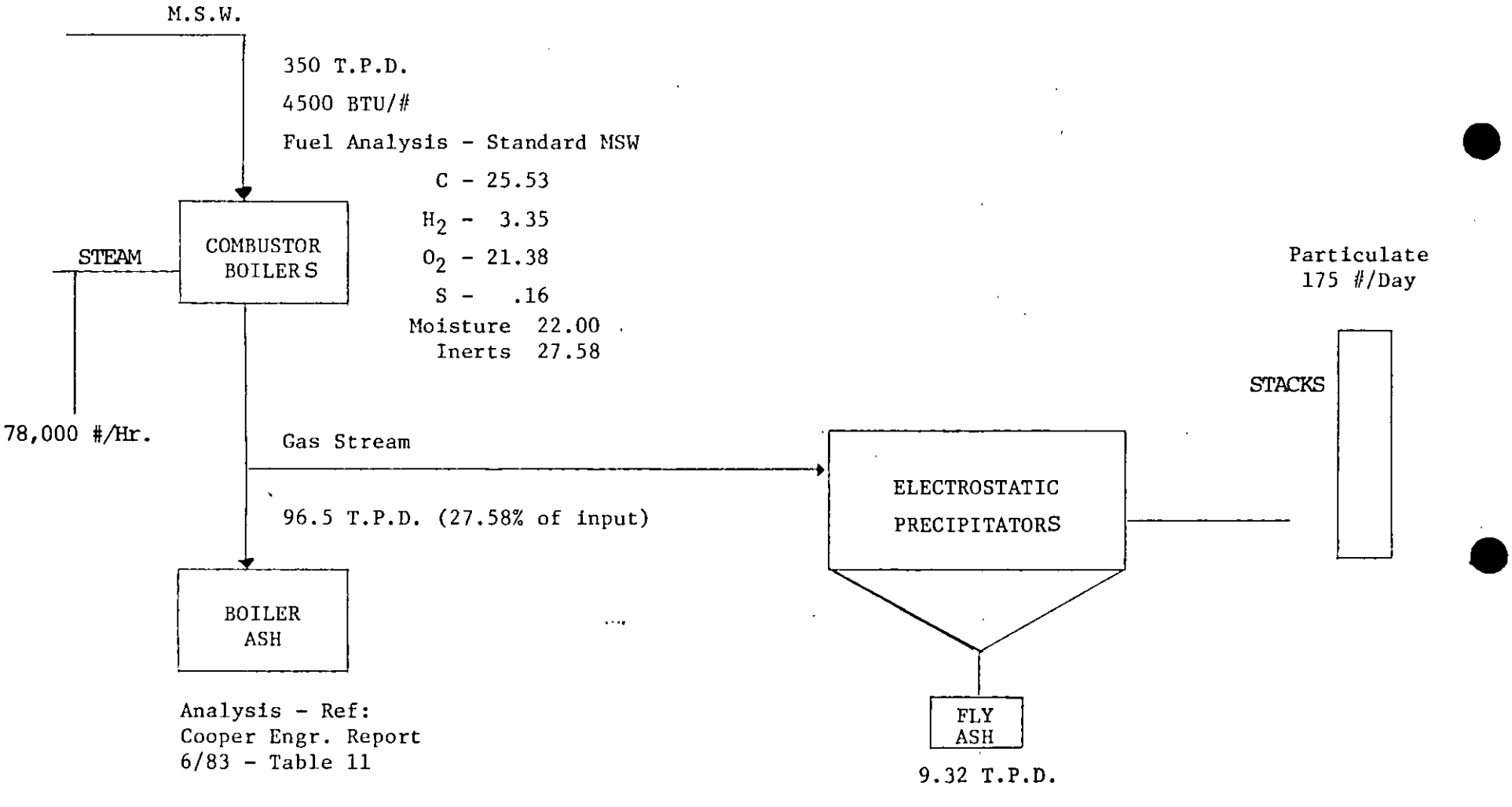
35#/Ton MSW input

$$\frac{35 \times 350}{2 \times 24} = 255 \text{ \#/Hr/Stack}$$

$$255 \times 24 \times 365 \times .94 = 2{,}099{,}772 \text{ \#/yr/stack}$$

$$\frac{2{,}099{,}772}{2000} = 1049.9 \text{ tons/yr/stack}$$

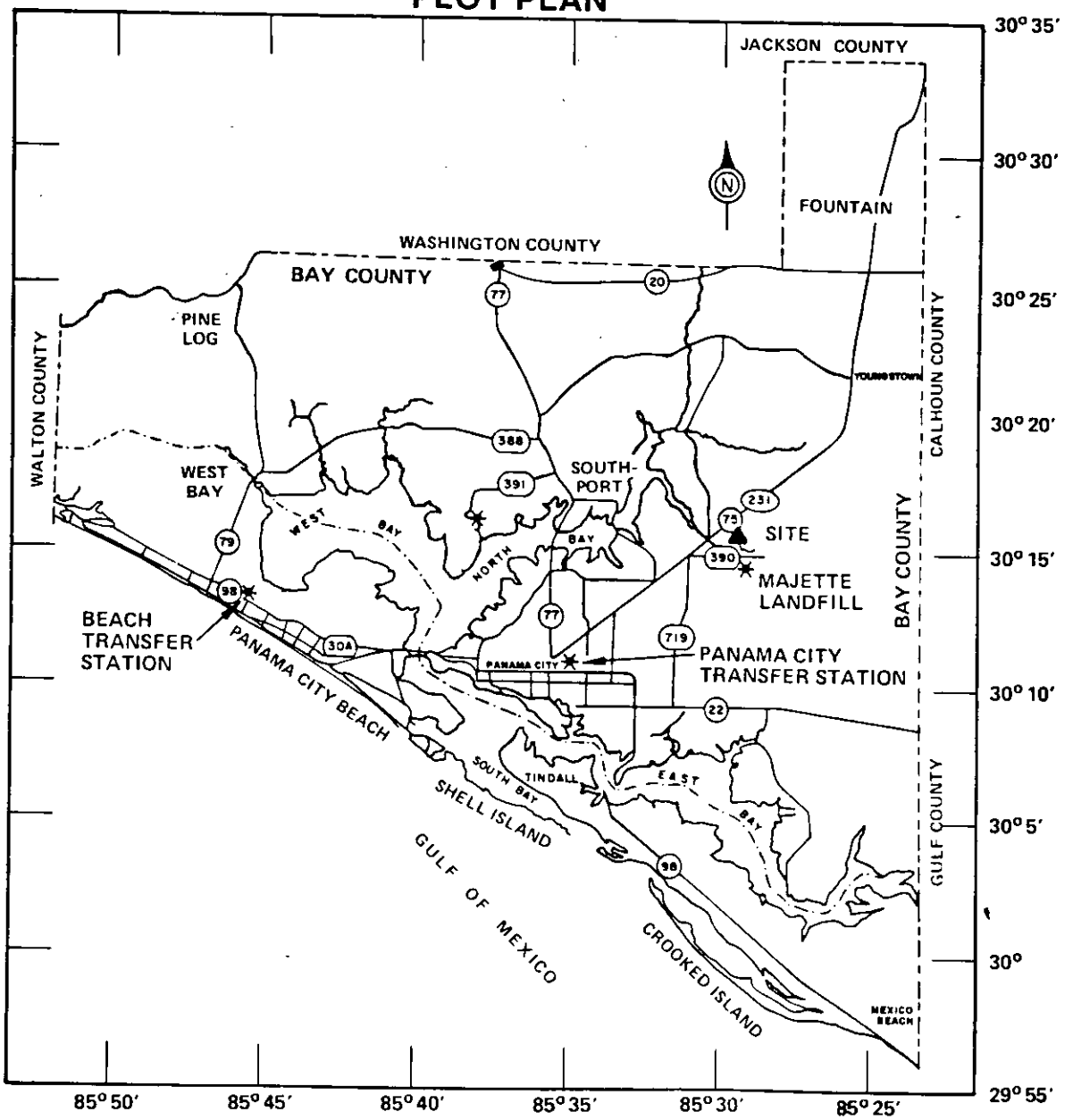
FLOW DIAGRAM



Westinghouse

Bay County Waste to Energy Project

PLOT PLAN



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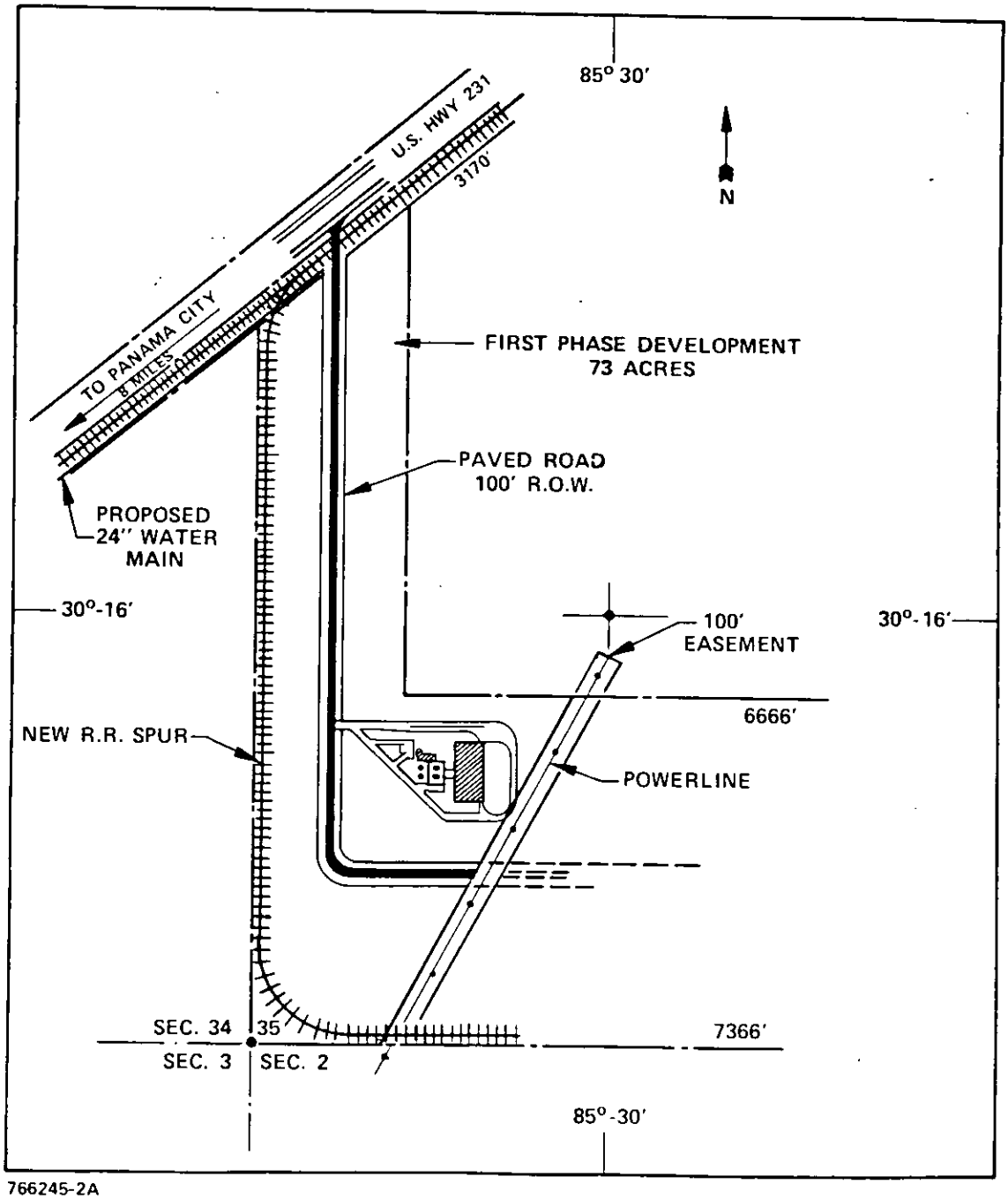
Bay County Waste to Energy Project

SITE PLAN



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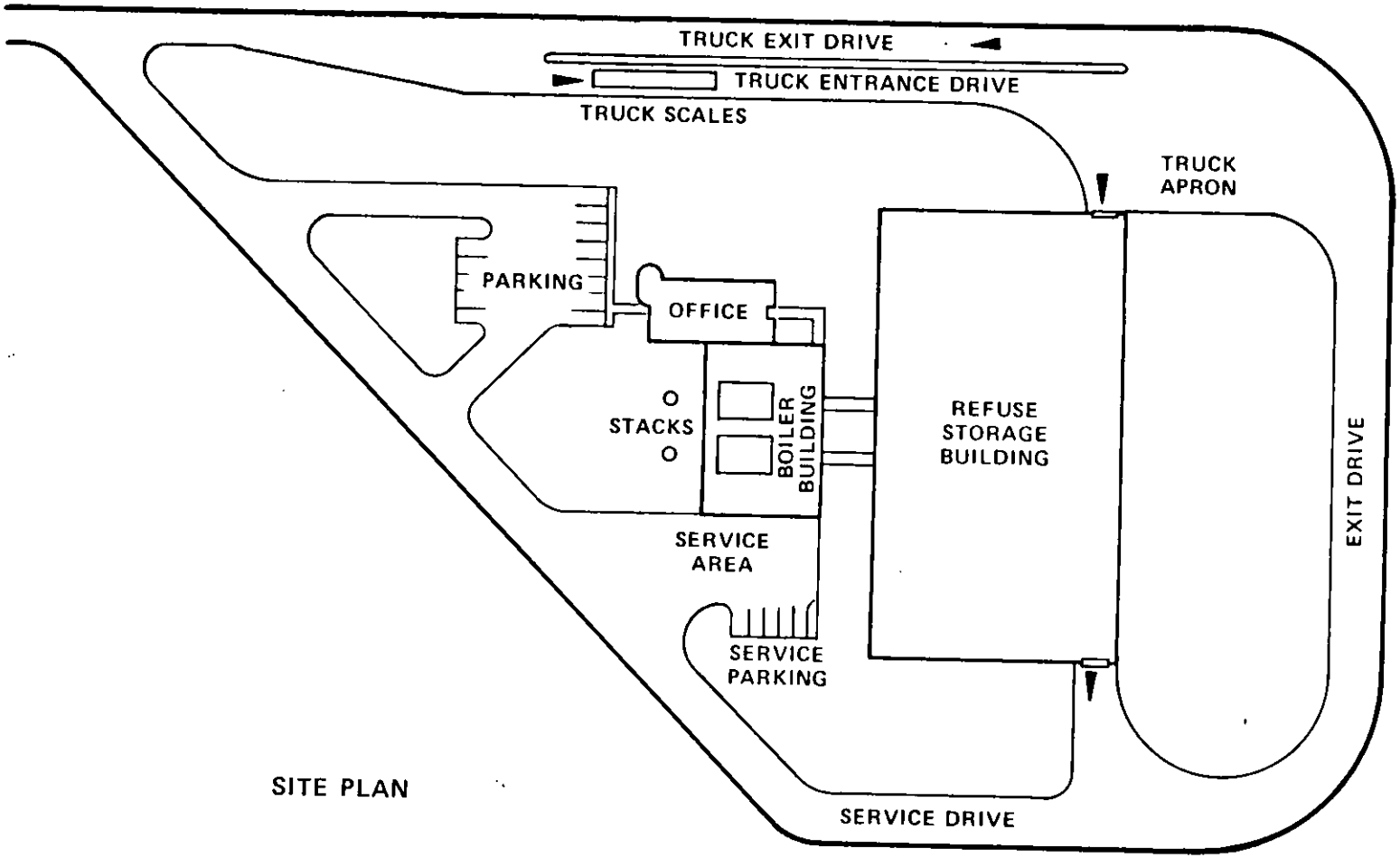
MUNICIPAL SOLID WASTE FACILITIES



SITE PLAN

766245-3A