

F.J. GANNON GENERATING STATION
AIR CONSTRUCTION PERMIT APPLICATION
BY-PRODUCT BENEFICIATION PROJECT

Prepared for:



TAMPA ELECTRIC
Tampa, Florida

0570040-016-Ae

Prepared by:

ECT

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BACKGROUND AND PROJECT DESCRIPTION

BACKGROUND INFORMATION

The F.J. Gannon Station (Gannon Station) is a Tampa Electric Company (TEC) owned and operated coal-fired generating facility located on Port Sutton in Tampa, Florida. Fly-ash and slag are both byproducts of the Gannon Station combustion process. The majority of byproduct generated during combustion of coal at Gannon Station is sold for re-use. There are contracts in place for the sale of the byproduct materials that meet the terms and conditions specified. However, portions of the byproducts do not meet the vendor specifications and cannot be sold under current contracts. These byproduct materials are often high in carbon content and easily beneficiated, therefore making them recyclable in terms of energy and byproduct recovery. Currently, the unmarketable byproduct materials are sent to onsite storage areas where they are allowed to dewater and then are transported off-site by tanker trucks to be disposed at a solid waste facility.

CURRENTLY PERMITTED OPERATIONS

For Units 1 through 4 Flyash Silo No. 2 with baghouse, flyash collected in the hoppers of the electrostatic precipitators (ESPs) is pneumatically conveyed to a 30-foot (ft) diameter, 45.5-ft-high silo. The flyash in the silo is gravity fed by tubing into enclosed tanker trucks for transport to an off-site consumer. In addition, flyash from Silo No. 2 may be routed to the pugmill at Gannon Station Silo No. 1 where it is *conditioned* by wetting with water and gravity fed into open bed trucks. The flyash is then transported to an off-site consumer.

For Units 5 and 6 Flyash Silo No. 1 with baghouse and pugmill, flyash collected in the hoppers of the ESPs is pneumatically conveyed to a 25-ft diameter, 50-ft-high silo. The flyash in the silo is gravity fed by chute into enclosed tanker trucks or to a pugmill where it is *conditioned* by wetting with water and gravity fed by chute into open bed trucks. In addition, flyash from Units 1 through 4 Flyash Silo No. 2 may be routed via gravity flow to the pugmill where it is *conditioned* by wetting with water and gravity fed into open bed trucks. The flyash is then transported to an off-site consumer.

PROJECT DESCRIPTION

TEC is proposing to change the mode of operation at the Gannon Station from disposing of the unmarketable byproduct materials off-site to beneficiating the flyash and slag and reintroducing them back into the system to capture its remaining fuel value. This will give the plant more operational flexibility and minimize the use of the remaining on-site storage areas, as well as off-site solid waste disposal facilities. At the same time, it will increase beneficial re-use of Gannon Station byproduct materials. The byproduct beneficiation process is a wet process and therefore will also minimize fugitive particulate matter (PM) emissions.

TEC expects to reuse a maximum amount of 36,500 tons per year (tpy) of the byproduct materials. The unmarketable conditioned flyash and slag from the silos, ash storage area, and slag bins will be transported via trucks to a miscellaneous pile at the coalfield. At the coalfield, the byproduct materials will be screened. A rubber-tired front-end loader will place the screened byproduct materials on the portable conveyor, which will then be transported to the bunkers, mixed with raw fuel, and reburned in Units 1 through 6. Spray water will be added at the screen and to the miscellaneous pile at the coalfield as needed to keep the materials wet, thus minimizing fugitive PM emissions.

When the proposed byproduct beneficiation process is in use, the plant will not use the existing closed loop flyash reinjection system. Since the proposed process will not cause any emission increase from the currently permitted operations at the Gannon Station, TEC is not requesting any revisions to current allowable emission rates for Units 1 through 6.

Additional potential fugitive PM emission points (i.e., not covered under the existing Title V permit) include:

- Unload byproduct to miscellaneous pile at the coalfield.
- Transferring of the byproduct materials from miscellaneous pile to screen.
- Screening of the byproduct materials.
- Transferring of the screened byproduct materials to portable conveyor and to "J" conveyors.

Fugitive PM and particulate matter less than or equal to 10 micrometers (PM₁₀) emissions due to additional truck traffic will be minimal since all Gannon Station roadways are paved with posted speed limits and the trucks will be hauling moist materials. Emissions from slag loading/unloading operations were considered to be negligible.

Potential fugitive PM and PM₁₀ emissions due to the proposed mode of handling of the by-product materials are projected to be approximately 23 and 11 tpy, respectively, based on U.S. Environmental Protection Agency (EPA) AP-42 algorithms. As such, the proposed process will not trigger Prevention of Significant Deterioration (PSD) review. Details of the potential fugitive PM/PM₁₀ emission estimates are provided as a supplement to this in the non-PSD construction permit application package. It should be noted that the emission factor of 110 pounds per ton (lb/ton) (AP-42, Table 11.8-2) used to calculate PM emissions due to screening is a conservative assumption, since the factor is intended not only for screening, but also for crushing and sintering operations. These operations will not take place at the Gannon Station. For operational flexibility, TEC requests any throughput restriction to be placed on the process be on an annual basis rather than a daily basis.

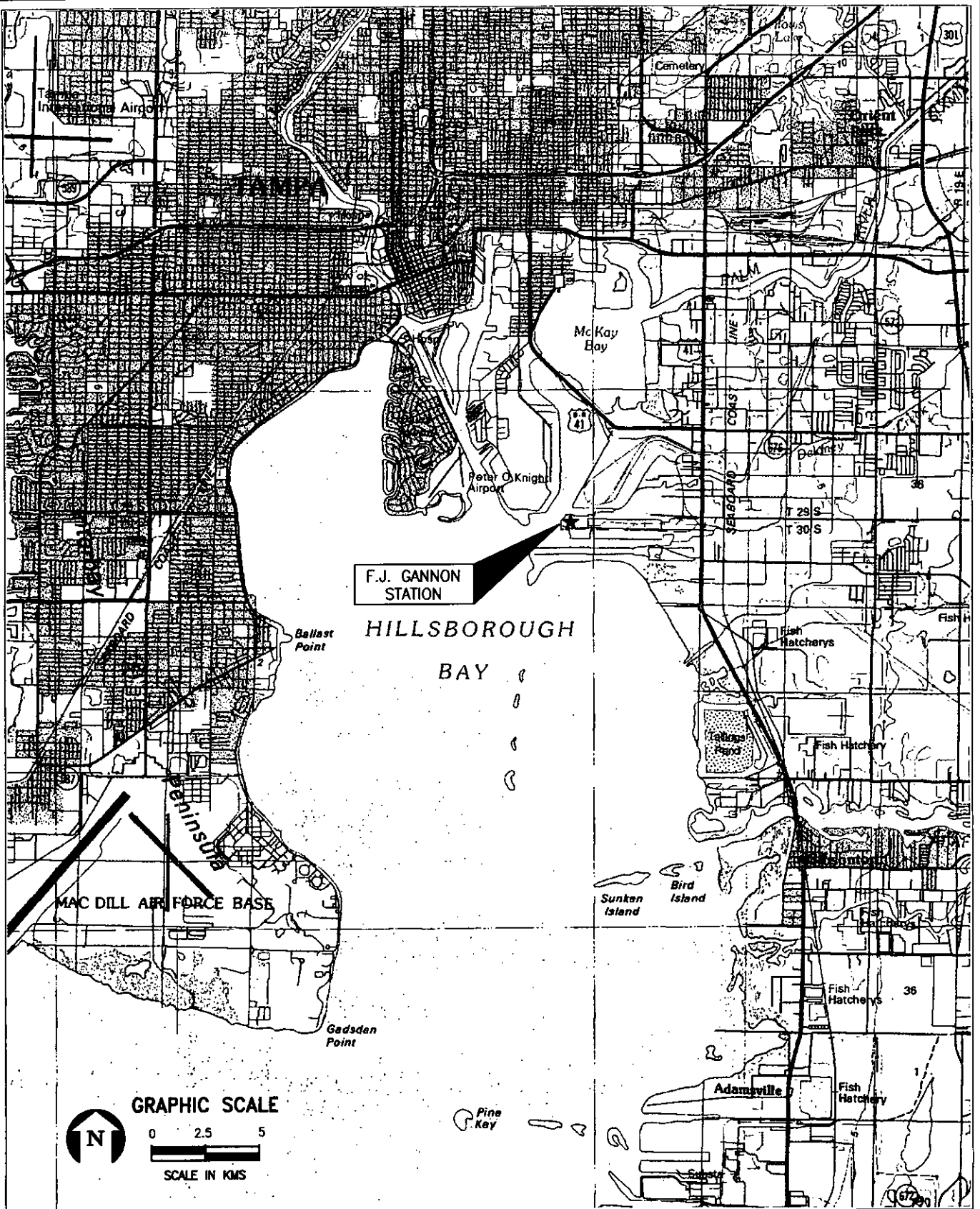


FIGURE 1.
 F.J. GANNON STATION AREA MAP

Source: USGS 30x60 Quad: St. Petersburg, FL, 1981.



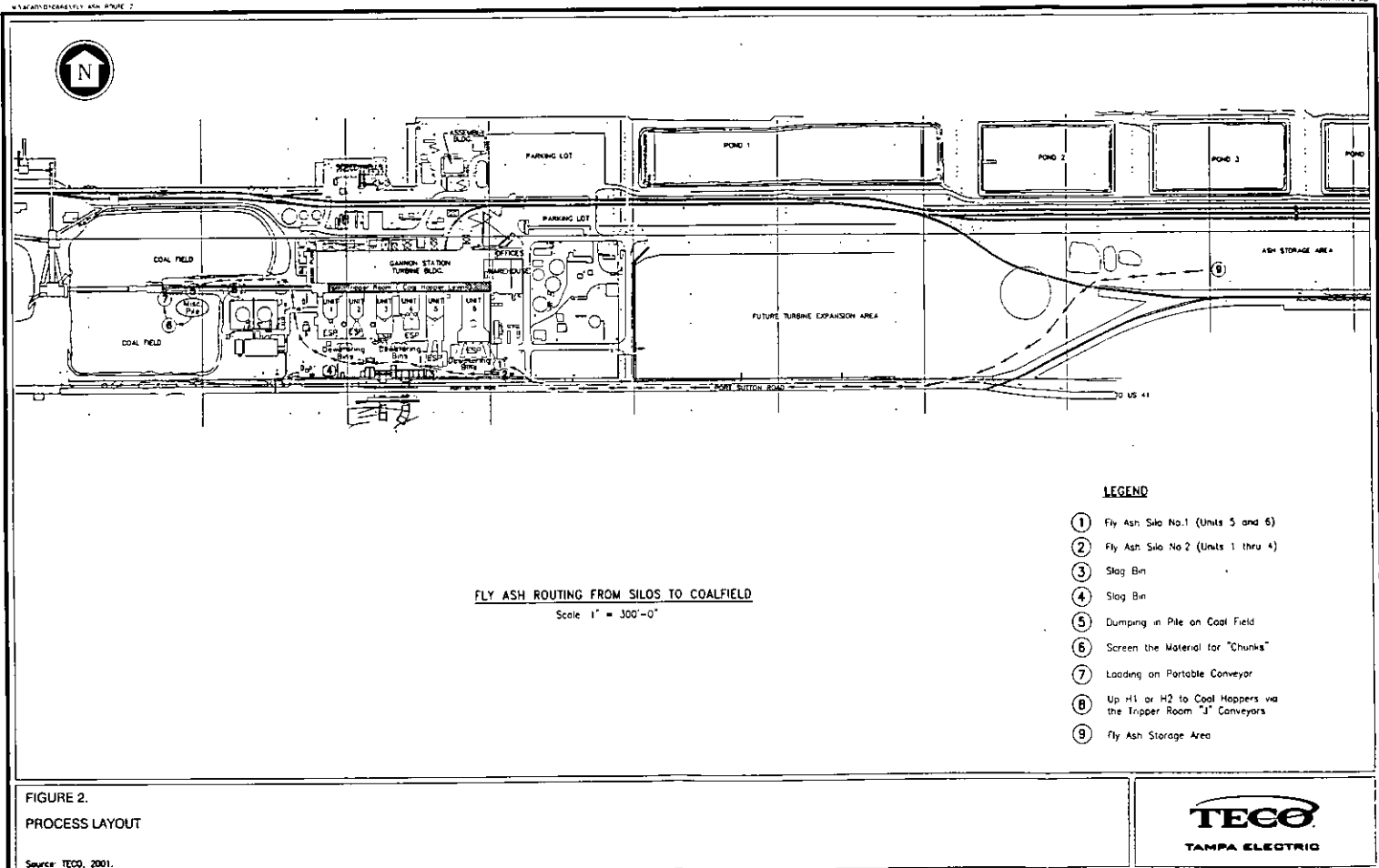
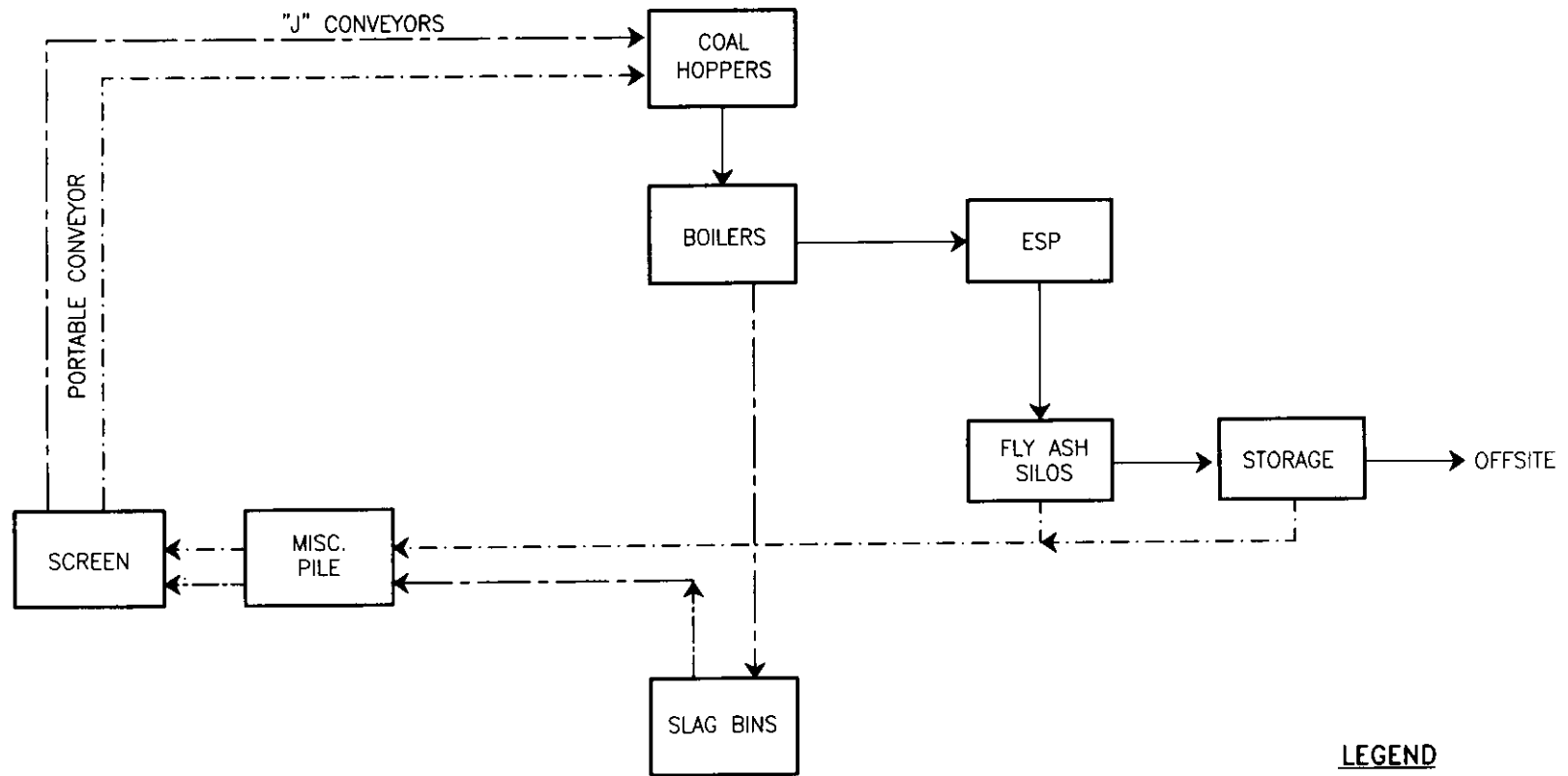


FIGURE 2.
PROCESS LAYOUT

Source: TECO, 2001.





1-6

LEGEND

- - - - - "CONDITIONED" FLY ASH
- - - - - SLAG

FIGURE 3.
SIMPLIFIED PROCESS FLOW DIAGRAM

Source: TECO, 2001; ECT, 2001.



Table 1. Estimated PM₁₀ Emissions (Proposed New Sources)

EU ID	Process Description	Reference to Flow Diag.	Emission Factors		Emission Factor Source	Operating Parameters				Potential PM ₁₀ Emissions	
			Factor	Units		tpy	max. tph	max. hr/yr	VMT/yr	(tpy)	(lb/hr)
019-1	Truck Traffic on Paved Roads	Arrows	0.4136	lb/VMT	AP-42 13.2.1 (10/97)	n/a	n/a	n/a	691	0.1072	0.0766
019-2	Unloading Byproducts to Misc. Pile	5	0.0006	lb/ton	AP-42, 13.2.4 (1/95)	36500	50	2912	n/a	0.0115	0.0314
019-3	Working with Misc. Pile	5	6.0762	lb/VMT	AP-42, 13.2.2 (9/98)	36500	50	2912	183	0.5545	0.3808
019-4	Wind Erosion from Misc. Pile	5	n/a	n/a	AP-42, 13.2.5 (1/95)	n/a	n/a	n/a	n/a	0.0002	0.0001
019-5	Transfer from Misc. Pile to Screen	5 to 6	0.0006	lb/ton	AP-42, 13.2.4 (1/95)	36500	50	2912	n/a	0.0001	0.0003
019-6	Screening	6	55.0	lb/ton	AP-42, 11.8 (1/95)	36500	50	2912	n/a	10.04	27.50
019-7	Transfer from Screen to Portable Conveyor	6 to 7	0.0006	lb/ton	AP-42, 13.2.4 (1/95)	36500	50	2912	n/a	0.0001	0.0003
019-8	Transfer from Portable Conveyor to "J" Conveyors	7 to 8	0.0006	lb/ton	AP-42, 13.2.4 (1/95)	36500	50	2912	n/a	0.0001	0.0003
TOTALS										10.71	27.99

Note: n/a = not applicable

Assumed PM₁₀/PM = 0.5 for the screening emission factor

Applied a control efficiency of 99% for keeping the materials sufficiently wet (EPRI, 1984)

Applied a control efficiency of 25% to the uncontrolled truck traffic emissions for using precautions such as speed limits (AP-40)

tpy = tons per year, tph = tons per hour, lb = pounds, yr = year

hr = hours, VMT = vehicle miles traveled

PM = Particulate Matter, PM₁₀ = Particulate Matter Less than 10 micron in aerodynamic diameter

Sources: TECO, 2001; U.S. EPA, 1995-1998; ECT, 2001.

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Table 2. Estimated PM Emissions (Proposed New Sources)

EU ID	Process Description	Reference to Flow Diag.	Emission Factors		Emission Factor Source	Operating Parameters				Potential PM Emissions	
			Factor	Units		tpy	max. tph	max. hr/yr	VMT/yr	(tpy)	(lb/hr)
019-1	Truck Traffic on Paved Roads	Arrows	2.1195	lb/VMT	AP-42 13.2.1 (10/97)	n/a	n/a	n/a	691	0.5494	0.3925
019-2	Unloading Byproducts to Misc. Pile	5	0.0013	lb/ton	AP-42, 13.2.4 (1/95)	36500	50	2912	n/a	0.0243	0.0664
019-3	Working with Misc. Pile	5	23.37	lb/VMT	AP-42, 13.2.2 (9/98)	36500	50	2912	183	2.1325	1.4646
019-4	Wind Erosion from Misc. Pile	5	n/a	n/a	AP-42, 13.2.5 (1/95)	n/a	n/a	n/a	n/a	0.0004	0.0001
019-5	Transfer from Misc. Pile to Screen	5 to 6	0.0013	lb/ton	AP-42, 13.2.4 (1/95)	36500	50	2912	n/a	0.0002	0.0007
019-6	Screening	6	110.0	lb/ton	AP-42, 11.8 (1/95)	36500	50	2912	n/a	20.0750	55.00
019-7	Transfer from Screen to Portable Conveyor	6 to 7	0.0013	lb/ton	AP-42, 13.2.4 (1/95)	36500	50	2912	n/a	0.0002	0.0007
019-8	Transfer from Portable Conveyor to "J" Conveyors	7 to 8	0.0013	lb/ton	AP-42, 13.2.4 (1/95)	36500	50	2912	n/a	0.0002	0.0007
TOTALS										22.78	56.93

Note: n/a = not applicable

Applied a control efficiency of 99% for keeping the materials sufficiently wet (EPRI, 1984)

Applied a control efficiency of 25% to the uncontrolled truck traffic emissions for using precautions such as speed limits (AP-40)

tpy = tons per year, tph = tons per hour, lb = pounds, yr = year

hr = hours, VMT = vehicle miles traveled

PM = Particulate Matter, PM10 = Particulate Matter Less than 10 micron in aerodynamic diameter

Sources: TECO, 2001; U.S. EPA, 1995-1998; ECT, 2001.

**Department of
Environmental Protection**

**DIVISION OF AIR RESOURCES MANAGEMENT
APPLICATION FOR AIR PERMIT - LONG FORM**

I. APPLICATION INFORMATION

Identification of Facility Addressed in This Application

1. Facility Owner/Company Name : TAMPA ELECTRIC COMPANY	
2. Site Name : F.J. GANNON STATION	
3. Facility Identification Number : 0570040	<input type="checkbox"/> Unknown
4. Facility Location : PORT SUTTON ROAD	
Street Address or Other Locator : City : TAMPA	P.O. BOX 111 County : HILLSBOROUGH Zip Code : 33601-0111
5. Relocatable Facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6. Existing Permitted Facility? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

I. Part 1 - 1

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official :

Name : KAREN A. SHEFFIELD
Title : GENERAL MANAGER, FJ GANNON STATION

2. Owner or Authorized Representative or Responsible Official Mailing Address :

Organization/Firm : TAMPA ELECTRIC COMPANY
Street Address : P.O. BOX 111
City : TAMPA
State : FL Zip Code : 33601-0111

3. Owner/Authorized Representative or Responsible Official Telephone Numbers :

Telephone : (813)641-5261 Fax : (813)641-5081

4. Owner/Authorized Representative or Responsible Official Statement :

I, the undersigned, am the owner or authorized representative of the non-Title V source addressed in this Application for Air Permit or the responsible official, as defined in Rule 62-210.200, F.A.C., of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions units.*

Karen Sheffield
Signature

9/26/01
Date

* Attach letter of authorization if not currently on file.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type
019	ALTERNATIVE METHOD OF HANDLING CONDITIONED FLYASH AND SLAG	AC1E

Purpose of Application and Category

Category I : All Air Operation Permit Applications Subject to Processing Under Chapter 62-213, F.A.C.

This Application for Air Permit is submitted to obtain :

- Initial air operation permit under Chapter 62-213, F.A.C., for an existing facility which is classified as a Title V source.

- Initial air operation permit under Chapter 62-213, F.A.C., for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number :

- Air operation permit renewal under Chapter 62-213, F.A.C., for a Title V source.

Operation permit to be renewed :

- Air operation permit revision for a Title V source to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number :

Operation permit to be revised :

- Air operation permit revision or administrative correction for a Title V source to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application.

Operation permit to be revised/corrected :

- Air operation permit revision for a Title V source for reasons other than construction or modification of an emissions unit.

Operation permit to be revised :

Reason for revision :

Category II : All Air Operation Permit Applications Subject to Processing Under Rule 62-210.300(2)(b), F.A.C.

This Application for Air Permit is submitted to obtain :

- Initial air operation permit under Rule 62-210.300(2)(b), F.A.C., for an existing facility seeking classification as a synthetic non-Title V source.

Current operation/construction permit number(s) :

- Renewal air operation permit under Rule 62-210.300(2)(b), F.A.C., for a synthetic non-Title V source.

Operation permit to be renewed :

- Air operation permit revision for a synthetic non-Title V source.

Operation permit to be revised :

Reason for revision :

Category III : All Air Construction Permit Applications for All Facilities and Emissions Units

This Application for Air Permit is submitted to obtain :

I. Part 4 - 2

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- Air construction permit to construct or modify one or more emissions units within a facility (including any facility classified as a Title V source).

Current operation permit number(s), if any :
0570040-002-AV

- Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.

Current operation permit number(s) :

- Air construction permit for one or more existing, but unpermitted, emissions units.

Application Processing Fee

Check one :

Attached - Amount : \$0.00

Not Applicable.

Construction/Modification Information

1. Description of Proposed Project or Alterations :	
THE PROJECT ENTAILS THE TRANSFER OF CONDITIONED FLYASH AND SLAG, FROM THE SILOS, ASH STORAGE AREAS AND SLAG BINS, VIA TRUCKS TO A TEMPORARY STORAGE PILE (MISC. PILE) IN THE COAL FIELD. THE BYPRODUCT MATERIALS WILL THEN BE SCREENED AND TRANSPORTED TO CONVEYORS TO BE REBURNED IN UNITS 1 THROUGH THIS BENEFICIATING PROCESS WILL GIVE THE PLANT MORE OPERATIONAL FLEXIBILT AND MINIMIZE THE USE OF THE REMAINING ASH STORAGE AREAS, AS WELL AS OFF-SIT SOLID WASTE DISPOSAL FACILITIES.	
2. Projected or Actual Date of Commencement of Construction :	01-Dec-2001
3. Projected Date of Completion of Construction :	04-Dec-2001

Professional Engineer Certification

1. Professional Engineer Name : DANIEL N. HLAING Registration Number : 00045058	
2. Professional Engineer Mailing Address :	
Organization/Firm : ECT, INC. Street Address : 3701 NW 98th STREET City : GAINESVILLE State : FL Zip Code : 32606	
3. Professional Engineer Telephone Numbers :	
Telephone : (352)332-0444	Fax : (352)332-6722

4. Professional Engineer Statement :

I, the undersigned, hereby certify, except as particularly noted herein, that :*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollutant control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

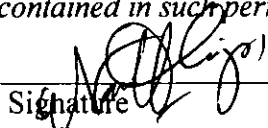
(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [] if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [] if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [] if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature
(seal)



Date

9/21/01

* Attach any exception to certification statement.

I. Part 6 - 2

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Application Contact

1. Name and Title of Application Contact : Name : RAIZA CALDERON Title : ASSOCIATE ENGINEER, ENV. AFFAIRS
2. Application Contact Mailing Address : Organization/Firm : TAMPA ELECTRIC COMPANY Street Address : P.O. BOX 111 City : TAMPA State : FL Zip Code : 33601-0111
3. Application Contact Telephone Numbers : Telephone : (813)641-5036 Fax : (813)641-5081

Application Comment

THE PROJECTED START AND COMPLETION DATES FOR CONSTRUCTION ARE ESTIMATES ONLY. CONSTRUCTION WILL COMMENCE IMMEDIATELY UPON RECEIPT OF THE PERMIT. IT TAKES LESS THAN ONE WEEK TO SET UP THE SCREEN.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility, Location, and Type

1. Facility UTM Coordinates : Zone : 17 East (km) : 360.00 North (km) : 3087.50			
2. Facility Latitude/Longitude : Latitude (DD/MM/SS) : Longitude (DD/MM/SS) :			
3. Governmental Facility Code : 0	4. Facility Status Code : A	5. Facility Major Group SIC Code : 49	6. Facility SIC(s) : 4911
7. Facility Comment :			

Facility Contact

1. Name and Title of Facility Contact : RAIZA CALDERON ASSOCIATE ENGINEER, ENV. AFFAIRS	
2. Facility Contact Mailing Address : Organization/Firm : TAMPA ELECTRIC COMPANY Street Address : P.O. BOX 111 City : TAMPA State : FL Zip Code : 33601-0111	
3. Facility Contact Telephone Numbers : Telephone : (813)641-5036 Fax : (813)641-5081	

Facility Regulatory Classifications

1. Small Business Stationary Source?	N
2. Title V Source?	Y
3. Synthetic Non-Title V Source?	N
4. Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?	Y
5. Synthetic Minor Source of Pollutants Other than HAPs?	N
6. Major Source of Hazardous Air Pollutants (HAPs)?	Y
7. Synthetic Minor Source of HAPs?	N
8. One or More Emissions Units Subject to NSPS?	Y
9. One or More Emission Units Subject to NESHAP?	N
10. Title V Source by EPA Designation?	N
11. Facility Regulatory Classifications Comment :	

B. FACILITY REGULATIONS

Rule Applicability Analysis

SEE PREVIOUSLY SUBMITTED TITLE V PERMIT APPLICATION.

B. FACILITY REGULATIONS

List of Applicable Regulations

APPENDIX A OF TITLE V PERMIT APPLICATION

II. Part 3b - 1

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C. FACILITY POLLUTANTS

Facility Pollutant Information

1. Pollutant Emitted	2. Pollutant Classification
PM10	B
PM	B

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Information

Pollutant 1

- | | | |
|-----------------------------------|------------|---------------------|
| 1. Pollutant Emitted : | PM10 | |
| 2. Requested Emissions Cap : | (lbs/hour) | 15.0000 (tons/year) |
| 3. Basis for Emissions Cap Code : | ESCPSD | |
| 4. Facility Pollutant Comment : | | |

II. Part 4b - 1

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Information

Pollutant 2

1. Pollutant Emitted :	PM
2. Requested Emissions Cap :	(lbs/hour) 25.0000 (tons/year)
3. Basis for Emissions Cap Code :	ESCPSD
4. Facility Pollutant Comment :	

II. Part 4b - 2

D. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements for All Applications

1. Area Map Showing Facility Location :	FIGURE 1
2. Facility Plot Plan :	FIGURE 2
3. Process Flow Diagram(s) :	FIGURE 3
4. Precautions to Prevent Emissions of Unconfined Particulate Matter :	SUPPLEMENT 1
5. Fugitive Emissions Identification :	TABLES 1&2
6. Supplemental Information for Construction Permit Applica	SUPPLEMENT 2

Additional Supplemental Requirements for Category I Applications Only

7. List of Proposed Exempt
8. List of Equipment/Activities Regulated under
9. Alternative Methods of Operation :
10. Alternative Modes of Operation (Emissions
11. Identification of Additional Applicable
12. Compliance Assurance Monitoring
13. Risk Management Plan Verification :
14. Compliance Report and Plan :
15. Compliance Certification (Hard-copy Requir

III. EMISSIONS UNIT INFORMATION

A. TYPE OF EMISSIONS UNIT (Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 1

ALTERNATIVE METHOD OF HANDLING CONDITIONED FLYASH AND SLAG

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

- The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.
- The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

2. Single Process, Group of Processes, or Fugitive Only? Check one :

- This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).
- This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.
- This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

III. Part 1 - 1

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B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section : ALTERNATIVE METHOD OF HANDLING CONDITIONED FLYASH AND SLAG		
2. Emissions Unit Identification Number : 019 [] No Corresponding ID [] Unknown		
3. Emissions Unit Status Code : C	4. Acid Rain Unit? [] Yes [X] No	5. Emissions Unit Major Group SIC Code : 49
6. Emissions Unit Comment :		

Emissions Unit Information Section 1

ALTERNATIVE METHOD OF HANDLING CONDITIONED FLYASH AND SLAG

Emissions Unit Control Equipment 1

1. Description : WATER SPRAYS, REASONABLE PRECAUTIONS
--

2. Control Device or Method Code : 61
--

III. Part 3 - 1

**C. EMISSIONS UNIT DETAIL INFORMATION
(Regulated Emissions Units Only)**

Emissions Unit Information Section 1
ALTERNATIVE METHOD OF HANDLING CONDITIONED FLYASH AND SLAG

Emissions Unit Details

1. Initial Startup Date :		
2. Long-term Reserve Shutdown Date :		
3. Package Unit :		
Manufacturer :	Model Number :	
4. Generator Nameplate Rating : MW		
5. Incinerator Information :		
Dwell Temperature :	Degrees Fahrenheit	
Dwell Time :	Seconds	
Incinerator Afterburner Temperature :	Degrees Fahrenheit	

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate :	mmBtu/hr	
2. Maximum Incinerator Rate :	lb/hr	tons/day
3. Maximum Process or Throughput Rate :	36500	TPY
4. Maximum Production Rate :		
5. Operating Capacity Comment :		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule :		
8 hours/day	7 days/week	
52 weeks/year	2,912 hours/year	

**D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)**

Emissions Unit Information Section 1
ALTERNATIVE METHOD OF HANDLING CONDITIONED FLYASH AND SLAG

Rule Applicability Analysis

THE FACILITY IS LOCATED IN AN AIR QUALITY MAINTENANCE AREA FOR PM, AND IS SUBJECT TO RULE 62-296.711, F.A.C. (PM-RACT). IT IS ALSO SUBJECT TO THE GENERAL PROVISIONS TO CONTROL UNCONFINED PM, PER RULE 62-296.320(1)(c), F.A.C.

III. Part 6a - 1

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Emissions Unit Information Section 1
ALTERNATIVE METHOD OF HANDLING CONDITIONED FLYASH AND SLAG

List of Applicable Regulations

FDEP 62-296.320, F.A.C.,
FDEP 62-296.711, F.A.C.,
HILLSBOROUGH COUNTY 1-3.61

III. Part 6b - 1

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E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 1

ALTERNATIVE METHOD OF HANDLING CONDITIONED FLYASH AND SLAG

Emission Point Description and Type :

1. Identification of Point on Plot Plan or Flow Diagram :	SEE FIGURE 2	
2. Emission Point Type Code :	4	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking : (limit to 100 characters per point)		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common :	N/A	
5. Discharge Type Code :		
6. Stack Height :	0 feet	
7. Exit Diameter :	0.0 feet	
8. Exit Temperature :	0 °F	
9. Actual Volumetric Flow Rate :	0 acfm	
10. Percent Water Vapor :	0.00 %	
11. Maximum Dry Standard Flow Rate :	0 dscfm	
12. Nonstack Emission Point Height :	0 feet	
13. Emission Point UTM Coordinates :		
Zone : 0	East (km) : 0.000	North (km) : 0.000
14. Emission Point Comment :	TRUCK LOADING POINTS ARE ~6-8 FT., STORAGE PILE IS AT GROUND LEVEL, SCREEN IS AT ~7 FT, AND PORTABLE CONVEYOR IS AT ~4 FT.	

III. Part 7a - 1

F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 1

ALTERNATIVE METHOD OF HANDLING CONDITIONED FLYASH AND SLAG

Segment Description and Rate : Segment 1

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) : FLY ASH AND SLAG TRANSFER AND HANDLING (WET PROCESS)	
2. Source Classification Code (SCC) : 30500712	
3. SCC Units : Tons Transferred Or Handled	
4. Maximum Hourly Rate : 0.00	5. Maximum Annual Rate : 36,500.00
6. Estimated Annual Activity Factor :	
7. Maximum Percent Sulfur :	8. Maximum Percent Ash :
9. Million Btu per SCC Unit :	
10. Segment Comment : MAXIMUM HOURLY RATE VARIES FROM DIFFERENT EQUIPMENT. SEE TABLES 1 AND 2.	

III. Part 8 - 1

G. EMISSIONS UNIT POLLUTANTS
(Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 1

ALTERNATIVE METHOD OF HANDLING CONDITIONED FLYASH AND SLAG

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
1 - PM10	061		WP
2 - PM	061		WP

III. Part 9a - 1

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 1
ALTERNATIVE METHOD OF HANDLING CONDITIONED FLYASH AND SLAG

Pollutant Potential/Estimated Emissions : Pollutant 1

1. Pollutant Emitted : PM10			
2. Total Percent Efficiency of Control :		%	
3. Potential Emissions :			
	28.0000000 lb/hour		10.7000000 tons/year
4. Synthetically Limited? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
5. Range of Estimated Fugitive/Other Emissions:		2	
		5.00	to 25.00 tons/year
6. Emissions Factor Reference :		Units	
7. Emissions Method Code : 3			
8. Calculations of Emissions : SEE TABLE 1 AND SUPPLEMENT 2			
9. Pollutant Potential/Estimated Emissions Comment :			

III. Part 9b - 1

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 1
ALTERNATIVE METHOD OF HANDLING CONDITIONED FLYASH AND SLAG

Pollutant Potential/Estimated Emissions : Pollutant 2

1. Pollutant Emitted : PM			
2. Total Percent Efficiency of Control :		%	
3. Potential Emissions :			
	57.0000000 lb/hour		22.8000000 tons/year
4. Synthetically Limited? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
5. Range of Estimated Fugitive/Other Emissions:		2	
		5.00	to 25.00 tons/year
6. Emissions Factor Reference :		Units	
7. Emissions Method Code : 3			
8. Calculations of Emissions : SEE TABLE 2 AND SUPPLEMENT 2			
9. Pollutant Potential/Estimated Emissions Comment :			

III. Part 9b - 2

Emissions Unit Information Section _____

Pollutant Information Section _____

Allowable Emissions _____

1. Basis for Allowable Emissions Code :	
2. Future Effective Date of Allowable Emissions :	
3. Requested Allowable Emissions and Units :	
4. Equivalent Allowable Emissions :	
lb/hour	tons/year
5. Method of Compliance :	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) :	

III. Part 9c - 1

1. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 1

ALTERNATIVE METHOD OF HANDLING CONDITIONED FLYASH AND SLAG

Visible Emissions Limitation : Visible Emissions Limitation 1

1. Visible Emissions Subtype : 05
2. Basis for Allowable Opacity : RULE
3. Requested Allowable Opacity : Normal Conditions : 5 % Exceptional Conditions : 10 % Maximum Period of Excess Opacity Allowed : min/hour
4. Method of Compliance : METHOD 9/22
5. Visible Emissions Comment :

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 1
ALTERNATIVE METHOD OF HANDLING CONDITIONED
FLYASH AND SLAG

Continuous Monitoring System Continuous Monitor 1

1. Parameter Code :	2. Pollutant(s):
3. CMS Requirement	
4. Monitor Information Manufacturer : Model Number : Serial Number :	
5. Installation Date :	
6. Performance Specification Test Date :	
7. Continuous Monitor Comment : N/A	

III. Part 11 - 1

**K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT
TRACKING INFORMATION**

Emissions Unit Information Section 1

ALTERNATIVE METHOD OF HANDLING CONDITIONED FLYASH AND SLAG

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

-] The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.

-] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.

-] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

-] For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

-] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

2. Increment Consuming for Nitrogen Dioxide?

- The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.
- The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

3. Increment Consuming/Expanding Code :		
PM :	SO2 :	NO2 :
4. Baseline Emissions :		
PM :	lb/hour	tons/year
SO2 :	lb/hour	tons/year
NO2 :		tons/year
5. PSD Comment :		

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Emissions Unit Information Section 1

ALTERNATIVE METHOD OF HANDLING CONDITIONED FLYASH AND SLAG

Supplemental Requirements for All Applications

1. Process Flow Diagram :	FIGURE 3
2. Fuel Analysis or Specification :	
3. Detailed Description of Control Equipment :	
4. Description of Stack Sampling Facilities :	
5. Compliance Test Report :	
6. Procedures for Startup and Shutdown :	
7. Operation and Maintenance Plan :	SUPPLEMENT 1
8. Supplemental Information for Construction Permit Application :	
9. Other Information Required by Rule or Statue :	

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operations :
11. Alternative Modes of Operation (Emissions Trading) :

III. Part 13 - 1

12. Identification of Additional Applicable Requirements :

13. Compliance Assurance Monitoring
Plan :

14. Acid Rain Application (Hard-copy Required) :

Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))

Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)

New Unit Exemption (Form No. 62-210.900(1)(a)2.)

Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

III. Part 13 - 2

**OPERATION AND MAINTENANCE PLAN
FOR FUGITIVE DUST CONTROL
TAMPA ELECTRIC COMPANY
F.J. GANNON STATION
BY-PRODUCT BENEFICIATION PROJECT**

Trucks will be covered, as needed, during transport of conditioned fly ash and slag to the miscellaneous storage pile. Most of the truck traffic will be on paved roads. The speed limit signs are posted through the plant.

At the miscellaneous storage pile, additional watering may be conducted as necessary. Reasonable precautions will be taken (e.g., avoiding material transfer during windy periods). Watering of plant grounds (e.g., unpaved roads) will also be performed as necessary. Screening will not be conducted unless the material is sufficiently wet to minimize fugitive dust emissions. The conveyors and transfer points will be visually inspected daily.

Records of inspections and maintenance will be retained for a minimum of 2 years and will be made available to the regulatory authority upon request. Should corrective actions are necessary, such requests will be immediately initiated. These records will also be maintained for a minimum of 2 years.

Supporting Details for PM Emission Calculations TEC-Gannon, Byproduct Beneficiation Process

Drop Operations:

$$EF (PM) = k * 0.0032 * \frac{(U/5)^{1.3}}{(M/2)^{1.4}} \text{ lb/ton}$$

Source:
AP-42 13.2.4-3 (1/95), Drop Operations

where k (adjustment for particle size) = 0.74 for PM₁₀ (0.35 for PM-10, 0.74 for PM)
 U (mean windspeed) = 8.6 mph (E), Gale, 3rd Ed., Tampa Airport, 1951-1980
 M (material moisture content) = 5 %

$$EF (PM_{10}) = 0.00132878 \text{ lb/ton}$$

Misc. Pile Operations:

$$EF (PM) = (365-p)/365 * k * (s/12)^{0.8} * \frac{(W/3)^{0.4}}{(M/0.2)^{0.3}} \text{ lb/VMT}$$

Source:
AP-42 13.2.2 (9/98), Unpaved Roads

where k (adjustment for particle size) = 10 for PM₁₀ (2.6 for PM-10, 10 for PM)
 s (silt content) = 80 % (typical)
 M (moisture content) = 5 %
 W (mean vehicle weight) = 15 ton
 p (# non-dry days) = 107 days (Gale, 3rd Ed., Tampa, Precip >= 0.01")

$$EF (PM_{10}) = 23.3701 \text{ lb/VMT} \quad \begin{array}{l} \text{VMT/yr} = 183 \text{ miles (based on } 0.5 \text{ VMT/hr)} \\ \text{\# of front-end loaders} = 1 \end{array}$$

Truck Traffic on Paved Roads:

Source:
AP-42 13.2.1 (10/97) Paved Roads
AP-40, 2nd Ed.

$E \text{ (PM)} = k * (sL/2)^{0.65} * (W/3)^{1.5} \text{ lb/VMT}$

where k (adjustment for particle size) = 0.082 (0.016 for PM-10, 0.082 for PM-30)
sL (silt loading) = 3 g/m2 (Default based on AP-40, 2nd Edition, Chapter 4)
W (avg. weight of vehicles) = 22 ton (average of loaded and unloaded trucks)

$E \text{ (PM-10)} = 2.1195 \text{ lb/VMT}$

$VMT \text{ (vehicle miles travelled)} = D * T * 2 / 5280$ Throughput = 100 tpd

where D (one way distance) = 1000 ft 20 ton (material only) /truck load
T (# of truck loads) = 1095 per year 5.0 per day

$VMT \text{ / year} = 415 \text{ mi.}$ $VMT/hr = 0.24 \text{ mi.}$

Screening:

$EF \text{ (lb/ton)} = 110 \text{ (PM-Uncontrolled)}$

Source:
AP-42 11.18 (1/95) Fly Ash Sintering

Wind Erosion:

Source:
AP-42 13.2.5 (1/95), Wind Erosion

1951-80 Gale Climate Data, Tampa International Airport

Wind Erosion from Storage Piles

ThrFricVel: 1.12 m/s CE 0 %
Pile L (m): 15 Pile W (m): 10 Pile Ht (m): 3 S.Area(m2) 150

Month	Friction Velocity (m/s)	Emission Potential (g/m2)	Aff Area (%)	Affected Area (m2)	(lb/hr)	PM Emission Rates (ton)
1	1.81	44.55	4	6.0	0.001	0.0003
1	1.48	16.52	14	21.0	0.001	0.0004
2	2.58	160.13	4	6.0	0.003	0.0011
2	2.11	81.60	14	21.0	0.005	0.0019
2	1.41	12.13	54	81.0	0.003	0.0011
3	2.22	97.68	4	6.0	0.002	0.0006
3	1.82	45.92	14	21.0	0.003	0.0011
3	1.21	2.72	54	81.0	0.001	0.0002
4	1.91	55.95	4	6.0	0.001	0.0004
4	1.56	22.23	14	21.0	0.001	0.0005
5	2.38	123.58	4	6.0	0.002	0.0008
5	1.94	59.50	14	21.0	0.004	0.0014
5	1.30	6.38	54	81.0	0.002	0.0006
6	3.46	376.08	4	6.0	0.007	0.0025
6	2.83	212.35	14	21.0	0.014	0.0049
6	1.89	53.64	54	81.0	0.013	0.0048
7	3.00	252.00	4	6.0	0.005	0.0017
7	2.45	135.85	14	21.0	0.009	0.0031
7	1.63	27.84	54	81.0	0.007	0.0025
8	1.96	61.92	4	6.0	0.001	0.0004
8	1.61	26.18	14	21.0	0.002	0.0006
9	2.89	225.96	4	6.0	0.004	0.0015
9	2.37	121.88	14	21.0	0.008	0.0028
9	1.58	23.77	54	81.0	0.006	0.0021
10	1.96	61.92	4	6.0	0.001	0.0004
10	1.61	26.18	14	21.0	0.002	0.0006
11	2.07	76.10	4	6.0	0.001	0.0005
11	1.69	33.09	14	21.0	0.002	0.0008
11	1.13	0.26	54	81.0	0.000	0.0000
12	2.32	113.52	4	6.0	0.002	0.0008
12	1.90	54.79	14	21.0	0.004	0.0013
12	1.27	5.06	54	81.0	0.001	0.0005
Maximum					0.01	N/A
Total					N/A	0.0420

Month	Fastest mph	Friction Velocity (m/s)			
		28% 0.2	54% 0.6	14% 0.9	4% 1.1
1	35	0.3285	0.9856	1.4785	1.8070
2	50	0.4694	1.4081	2.1121	2.5814
3	43	0.4036	1.2109	1.8164	2.2200
4	37	0.3473	1.0420	1.5629	1.9103
5	46	0.4318	1.2954	1.9431	2.3749
6	67	0.6289	1.8868	2.8302	3.4591
7	58	0.5444	1.6333	2.4500	2.9945
8	38	0.3567	1.0701	1.6052	1.9619
9	56	0.5257	1.5770	2.3655	2.8912
10	38	0.3567	1.0701	1.6052	1.9619
11	40	0.3755	1.1264	1.6897	2.0651
12	45	0.4224	1.2672	1.9009	2.3233

Supporting Details for PM-10 Emission Calculations
TEC-Gannon, Byproduct Beneficiation Process

Drop Operations:

$$EF (PM) = k * 0.0032 * \frac{(U/5)^{1.3}}{(M/2)^{1.4}} \text{ lb/ton}$$

Source:
 AP-42 13.2.4-3 (1/95), Drop Operations

where k (adjustment for particle size) = 0.35 for PM₁₀ (0.35 for PM-10, 0.74 for PM)
 U (mean windspeed) = 8.6 mph (E), Gale, 3rd Ed., Tampa Airport, 1951-1980
 M (material moisture content) = 5 %

$$EF (PM_{10}) = 0.00062848 \text{ lb/ton}$$

Misc. Pile Operations:

$$EF (PM) = (365-p)/365 * k * (s/12)^{0.8} * \frac{(W/3)^{0.4}}{(M/0.2)^{0.3}} \text{ lb/VMT}$$

Source:
 AP-42 13.2.2 (9/98), Unpaved Roads

where k (adjustment for particle size) = 2.6 for PM₁₀ (2.6 for PM-10, 10 for PM)
 s (silt content) = 80 % (typical)
 M (moisture content) = 5 %
 W (mean vehicle weight) = 15 ton (bulldozer or front-end loader)
 p (# non-dry days) = 107 days (Gale, 3rd Ed., Tampa, Precip >= 0.01")

$$EF (PM_{10}) = 6.0762 \text{ lb/VMT} \quad \begin{array}{l} \text{VMT/yr} = 183 \text{ miles (based on } 0.5 \text{ VMT/hr)} \\ \text{\# of front-end loaders} = 1 \end{array}$$

Truck Traffic on Paved Roads:

Source:
 AP-42 13.2.1 (10/97) Paved Roads
 AP-40, 2nd Ed.

$$E (PM) = k * (sL/2)^{0.65} * (W/3)^{1.5} \text{ lb/VMT}$$

where k (adjustment for particle size) = 0.016 (0.016 for PM-10, 0.082 for PM-30)
 sL (silt loading) = 3 g/m2 (Default based on AP-40, 2nd Edition, Chapter 4)
 W (avg. weight of vehicles) = 22 ton (average of loaded and unloaded trucks)

$$E (PM-10) = 0.4136 \text{ lb/VMT}$$

$$VMT (\text{vehicle miles travelled}) = D * T * 2 / 5280 \qquad \text{Throughput} = 100 \text{ tpd}$$

where D (one way distance) = 1000 ft 20 ton (material only) /truck load
 T (# of truck loads) = 1825 per year 5.0 per day

$$VMT / \text{year} = 691 \text{ mi.}$$

Screening:

$$EF (\text{lb/ton}) = 110 (\text{PM-Uncontrolled})$$

Source:
 AP-42 11.18 (1/95) Fly Ash Sintering

Wind Erosion:

Source:
AP-42 13.2.5 (1/95), Wind Erosion

Wind Erosion from Storage Piles

1951-80 Gale Climate Data, Tampa International Airport

ThrFricVel: 1.12 m/s CE 0 %
Pile L (m): 15 Pile W (m): 10 Pile Ht (m): 3 S.Area(m2) 150

Month	Friction Velocity (m/s)	Emission Potential (g/m2)	Aff Area (%)	Affected Area (m2)	(lb/hr)	PM-10 Emission Rates (ton)
1	1.81	22.27	4	6.0	0.000	0.0001
1	1.48	8.26	14	21.0	0.001	0.0002
2	2.58	80.07	4	6.0	0.001	0.0005
2	2.11	40.80	14	21.0	0.003	0.0009
2	1.41	6.06	54	81.0	0.002	0.0005
3	2.22	48.84	4	6.0	0.001	0.0003
3	1.82	22.96	14	21.0	0.001	0.0005
3	1.21	1.36	54	81.0	0.000	0.0001
4	1.91	27.97	4	6.0	0.001	0.0002
4	1.56	11.11	14	21.0	0.001	0.0003
5	2.38	61.79	4	6.0	0.001	0.0004
5	1.94	29.75	14	21.0	0.002	0.0007
5	1.30	3.19	54	81.0	0.001	0.0003
6	3.46	188.04	4	6.0	0.003	0.0012
6	2.83	106.17	14	21.0	0.007	0.0025
6	1.89	26.82	54	81.0	0.007	0.0024
7	3.00	126.00	4	6.0	0.002	0.0008
7	2.45	67.92	14	21.0	0.004	0.0016
7	1.63	13.92	54	81.0	0.003	0.0012
8	1.96	30.96	4	6.0	0.001	0.0002
8	1.61	13.09	14	21.0	0.001	0.0003
9	2.89	112.98	4	6.0	0.002	0.0007
9	2.37	60.94	14	21.0	0.004	0.0014
9	1.58	11.89	54	81.0	0.003	0.0011
10	1.96	30.96	4	6.0	0.001	0.0002
10	1.61	13.09	14	21.0	0.001	0.0003
11	2.07	38.05	4	6.0	0.001	0.0003
11	1.69	16.55	14	21.0	0.001	0.0004
11	1.13	0.13	54	81.0	0.000	0.0000
12	2.32	56.76	4	6.0	0.001	0.0004
12	1.90	27.39	14	21.0	0.002	0.0006
12	1.27	2.53	54	81.0	0.001	0.0002

Maximum 0.01 N/A
Total N/A 0.0210

Month	Fastest mph	Friction Velocity (m/s)			
		28% 0.2	54% 0.6	14% 0.9	4% 1.1
1	35	0.3285	0.9856	1.4785	1.8070
2	50	0.4694	1.4081	2.1121	2.5814
3	43	0.4036	1.2109	1.8164	2.2200
4	37	0.3473	1.0420	1.5629	1.9103
5	46	0.4318	1.2954	1.9431	2.3749
6	67	0.6289	1.8868	2.8302	3.4591
7	58	0.5444	1.6333	2.4500	2.9945
8	38	0.3567	1.0701	1.6052	1.9619
9	56	0.5257	1.5770	2.3655	2.8912
10	38	0.3567	1.0701	1.6052	1.9619
11	40	0.3755	1.1264	1.6897	2.0651
12	45	0.4224	1.2672	1.9009	2.3233

WORKBOOK ON ESTIMATION OF EMISSIONS AND DISPERSION
MODELING FOR FUGITIVE PARTICULATE SOURCES

Document P-A857

September 1981

Prepared for
UTILITY AIR REGULATORY GROUP
1919 Pennsylvania Avenue N.W.
Washington, D.C. 20036

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TABLE 3.2.28-1
 FLY ASH HANDLING: EFFICIENCIES OF CONTROL
 TECHNIQUES AND METHODS

<u>Technique</u>	<u>Control Efficiency</u>	<u>Comments</u>	<u>Reference</u>
Enclosed conveying system to silo and fabric filter on silo	99(+)%	CER should be calculated using method described in Appendix A.	EPA 1977a
Wetting and minimizing free fall	up to 100%		EPA 1977a
Cover truck with tarpaulin, etc.	up to 100%	Depends on the type of covering and care taken.	EPA 1977a
Spray bar at dump area	50%		

Topics:
Particulates
Coal handling
Waste disposal
Air pollution control
Water pollution control

EPRI CS-3455
Project 1402-19
Final Report
June 1984

Fugitive Emissions From Coal-Fired Power Plants

Prepared by
Bechtel Group, Inc.
San Francisco, California

Table 3-23

FLY ASH HANDLING

Ref. No.	Uncontrolled Fugitive Emissions			Control	
	Emission Factor (kg/t)	Particle Size (microns)	Validity	Method	Efficiency (%)
14	10-50	100	E	Keep wet	100
				Cover haul trucks	-
				Use enclosed trucks	-
				Minimize free fall	-
				Spray bar at dump area	-
36	0.1-50	-	E	Use dust collectors on vents	-
				Use dustless unloader and closed truck	-
				Wet ash at silo discharge	-

The available control methods include wetting, spraying, covering, enclosure with collection, and use of dustless unloaders and closed trucks. If the ash can be kept sufficiently wet, up to 100 percent control may be achieved for most handling operations.

ASH DISPOSAL

Fugitive dust emissions can occur at disposal ponds where ash is pumped and allowed to dry and at landfills where ash is dumped and left exposed. Airborne fugitive emissions from dry ash ponds are mainly due to wind erosion. Fugitive emissions at landfill disposal sites may be caused by wind erosion as well as by truck traffic, truck dumping, and excavation activities. The amount of uncontrolled fugitive emission depends to a large degree on the local rainfall and mean wind speed.

Very little data appear in the literature pertaining to fugitive emissions from ash disposal sites. Data that were available are shown in Table 3-24. PEDCO (4) gives an emission rate of 1.8 kg/hr. This was derived from data obtained at a fly ash dump located at a western coal mine; however, it was not related to the size of the disposal site and, therefore, is of limited use elsewhere. It was given a D validity rating.