Check Sheet

Company Name: City of Orlando
Permit Number: AC59-593[illegible]-59313
PSD Number:
Permit Engineer:

Cross References:
- ☐
- ☐
- ☐

Application:
- ☑ Initial Application
- ☑ Incompleteness Letters
- ☑ Responses
- ☐ Waiver of Department Action
- ☐ Department Response
- ☐ Other

Intent:
- ☑ Intent to Issue
- ☑ Notice of Intent to Issue
- ☑ Technical Evaluation
- ☑ BACT or LAER Determination
- ☒ Unsigned Permit
- ☑ Correspondence with:
  - ☐ EPA
  - ☐ Park Services
  - ☐ Other
- ☑ Proof of Publication
- ☐ Petitions - (Related to extensions, hearings, etc.)
- ☐ Waiver of Department Action
- ☐ Other

Final Determination:
- ☐ Final Determination
- ☐ Signed Permit
- ☒ BACT or LAER Determination
- ☐ Other

Post Permit Correspondence:
- ☐ Extensions/Amendments/Modifications
- ☐ Other

Revision #5

In the folder labeled as follows there are documents, listed below, which were not reproduced in this electronic file. That folder can be found in one of the file drawers labeled Supplementary Documents Drawer. Folders in that drawer are arranged alphabetically, then by permit number.

Folder Name: City of Orlando

Permit(s) Numbered:

AC	59	-	059312
AC	59	-	059313

Period during which document was received:		Detailed Description
APPLICATION 23 AUG 1982	1.	22"×34" BLUEPRINT: INSTRUMENT PIPING AND MECHANICAL FUNCTION SCHEMATIC FLOW DIAGRAM (DRAWING NUMBER: K79-0267-5, REV. F)
	2.	22"×34" BLUEPRINT: WET SCRUBBER STACK W/ LADDERS & PLATFORMS ORLANDO (DRAWING NUMBER: M-571)

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee			
To: 601		Loctn.:	
To:		Loctn.:	
To:		Loctn.:	
From:		Date:	
Reply Optional [ ]	Reply Required [ ]		Info. Only [ ]
Date Due:	Date Due:		

DER
OCT 29 1982
BAQM

TO: C.H. Fancy, BAQM

FROM: Jeanette L. Filsinger, Accountant I
Finance and Accounting

DATE: 10/29/82

SUBJECT: Refund of Fee's

Your application for refund for City of Orlando
File# AC-59-59312 (9000) AC-59-59313 (9000) is complete.

State of Florida warrant #357164 dated 10/27/82 and in the amount of $1800.00 was mailed 10/29/82 .

Refund processed on agency voucher 279 TF

Fiscal Year 82-83

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO.

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION) C. H. Fancy, DAQM 601	INITIAL	
	DATE	
2. Patty - For File	INITIAL	
	DATE	
3.	INITIAL	
	DATE	
4.	INITIAL	
	DATE	

REMARKS:

INFORMATION
- REVIEW & RETURN
- REVIEW & FILE
- INITIAL & FORWARD

DISPOSITION
- REVIEW & RESPOND
- PREPARE RESPONSE
- FOR MY SIGNATURE
- FOR YOUR SIGNATURE
- LET'S DISCUSS
- SET UP MEETING
- INVESTIGATE & REPT
- INITIAL & FORWARD
- DISTRIBUTE
- CONCURRENCE
- FOR PROCESSING
- INITIAL & RETURN

FROM: Glenda

DATE 10/29/82

PHONE

PM
10-12-82
Orlando, FL

CROSS/TESSITORE & ASSOCIATES, P.A.

1611 E. HILLCREST STREET
ORLANDO, FLORIDA 32803
305/898-6140

To file

October 12, 1982

DER
OCT 15 1982
BAQM

Mr. Ed Palagyi
FLA. DEPT. OF ENV. REG.
Twin Towers Office Bldg.
2600 Blair Stone Rd.
Tallahassee, Fla. 32301

Dear Ed:

Attached are the Hg emission calculations for the Iron Bridge Sludge Drying System. The calculations indicate that the maximum predicted Hg emissions are 7.0 lbs/yr. This is based on the conservative assumption that all solids entering the scrubber reach the atmosphere, and that the Hg concentration is 3.93 mg/Kg of dry solids.

Actually, the scrubber will reduce the Hg discharge dramatically; however at this time we have no stack test information on Hg emissions. Therefore the figure of 7.0 lbs of Hg per year is a maximum possible emission value.

If you have any additional questions, do not hesitate to call upon me.

Sincerely,

Joseph L. Tessitore

Joseph L. Tessitore, P.E.
Vice President

JLT/b
cc: Bob Smedley
Robert Haven

Enc. a/s

CALCULATION OF MAXIMUM HG EMISSIONS FROM IRON BRIDGE SLUDGE DRYER SYSTEM

(1) See attached mass flow diagram

(2) Assume all solids to scrubber (306 lbs/hr) reach the atmosphere

(3) Assume these solids possess same Hg concentration as dried pellets, 3.93 mg/Kg (dry).

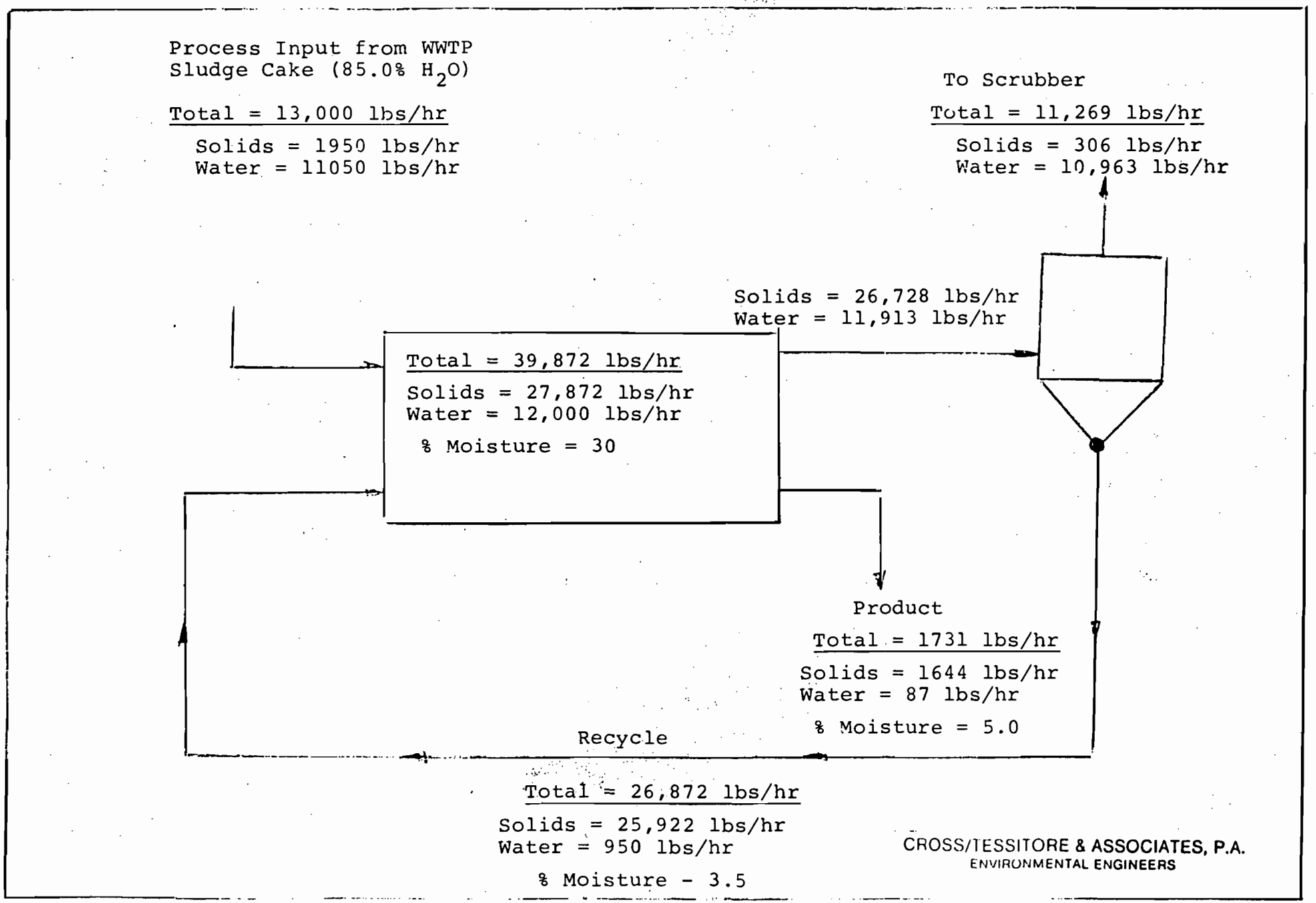
$$\text{Hg Emissions} = 3.93 \frac{\text{mg}}{\text{Kg}} \times 306 \frac{\text{lbs}}{\text{hr}} \times \frac{\text{Kg}}{1000 \text{ gm}}$$

$$\times \frac{1}{1000 \text{ mg/gm}} = 0.0012 \text{ lb/hr}$$

$$\text{Annual Emissions} = (.0012) \frac{\text{lb}}{\text{hr}} \times (16) \frac{\text{hrs}}{\text{day}} \times (7) \frac{\text{days}}{\text{wk}}$$

$$\times (52) \frac{\text{wks}}{\text{yr}} = 6.99 \text{ lbs/yr}$$

PROCESS WEIGHT DIAGRAM (DESIGN CONDITIONS)*



CROSS/TESSITORE & ASSOCIATES, P.A.
ENVIRONMENTAL ENGINEERS

CROSS/TESSITORE & ASSOCIATES, P.A.
1611 E. HILLCREST STREET
ORLANDO, FLORIDA 32803
305/898-6140

September 30, 1982

Mr. Ed Palagyi
Fla. Dept. of Env. Reg.
Twin Towers Office Bldg.
2600 Blair Stone Rd.
Tallahassee, Fla. 32301

Dear Ed:

As per our telephone conversation of 9/29, we've gone ahead at your recommendation and recalculated the Iron Bridge emissions. The emissions now indicate that we are not a major source and not subject to PSD and will not be required to complete an EPA permit or conduct a detailed air quality evaluation for the project.

As per your request, we've included a copy of the initial stack tests conducted at Iron Bridge as part of the contractor performance specifications. You will note that the tests are lower than the 7.65 lbs/hr of particulates that we've used. This is to try and be conservative as the plant was not operating at full design capacity.

As soon as we have the Mercury (Hg) results we'll forward these to you.

Thank Bill Thomas and Larry George for their cooperation on this project.

If the permit is sent back to the district for processing as a minor source, then there will be a reduction of the application fees from $1000 to $100 for each dryer system!

If you need any further information, please contact us.

Best regards.

Sincerely,

Frank L. Cross, Jr., P.E.
President

FLC/tb
Enc. a/s
cc: Bob Smedley
C. H. Fancy
Robert Haven

CROSS/TESSITORE & ASSOCIATES, P.A.
4759 S. CONWAY ROAD, UNIT D
ORLANDO, FLORIDA 32812
305/851-1484

Teresa file

April 28, 1983

DER
MAY 02 1983
BAQM

Mr. Charles Collins, P.E.
Air Section
FDER - St. Johns River District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803

Dear Mr. Collins:

This is to notify you that the stack testing at the Iron Bridge Wastewater Treatment Plant Air Pollution Control System for the two sludge drying operations (Permits No. AC 59-59312 and AC 59-59313) will take place according to the following schedule:

Date	Activity
May 23, 1983	Arrange stack sampling equipment and qualify odor panel
May 24, 1983	Stack test East Side Control System
May 25, 1983	Odor panel analysis for East Side samples
May 26, 1983	Stack test West Side Control System
May 27, 1983	Odor panel analysis for West Side samples.

Testing will be at the wastewater treatment plant, and odor analyses will be at the Quality Inn on East Colonial Drive.

The odor evaluation procedure (modeling) agreed to by FDER and all parties concerned is attached.

Sincerely,

Frank L. Cross, Jr., P.E.
President

FLC:kim
Enc.A/S
cc: Mr. Harvey Gray
Mr. Clare Fancy
Mr. Michael Hanlon

PM
4-28-83
Orlando, FL

CROSS/TESSITORE & ASSOCIATES, P.A.
4759 S. CONWAY ROAD, UNIT D
ORLANDO, FLORIDA 32812
305/851-1484

April 26, 1983

Mr. Michael J. Hanlon
Project Manager
City of Orlando
400 South Orange Avenue
Orlando, Florida 32801

Dear Mike:

A meeting was held at the FDER offices in Tallahassee on Monday, April 25, to discuss the odor proviso on the permit(s) for the air pollution control systems serving the sludge drying facilities at the Iron Bridge Wastewater Treatment Plant.

> "5. No objectionable odor shall be allowed from this facility. Test method shall be the American Society for Testing Materials Method D 1391-57 (Standard Method for Measurement of Odor in Atmospheres [(Dilution Method)]."

Attached is an attendance sheet from the meeting and a copy of a discussion sheet prepared by C/TA for the meeting.

The bottom line of the discussions was that FDER considers any odor, above the threshold odor level, as a problem at any receptor past the property line.

The remainder of the meeting centered around the ground rules on how this would be determined. The following guidelines were agreed upon:

(1) Emissions would be calculated using the ASTM 1978 Specifications, and total odor emissions (ou/sec) would be used in modeling.

(2) Models to be used are PTPLU (Point Plume) and PTMTP (Point Maximum Terrain Program).

PRELIMINARY

(3) A maximum one hour odor concentration will be used to determine compliance.

(4) Receptors for analysis will be--residences, property line, and point of maximum concentration.

(5) Terrain elevation for residence receptor(s) will be used if above normal ground levels.

The meteorologist, Tom Rogers, has agreed to assist the City (C/TA) and do the modeling. This will save us time, money, and discussions relative to the modeling procedures.

After the stack/odor tests are completed, C/TA will work with the FDER to complete the modeling for inclusion in the final test report that will be a part of the operating permit application submittal.

Sincerely,

Frank L. Cross, Jr., P.E.
President

FLC:kim
Enc.a/s

PRELIMINARY

PS Form 3811, Jan. 1979

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
- ☒ Show to whom and date delivered..... ¢
- ☐ Show to whom, date and address of delivery..... ¢
- ☐ RESTRICTED DELIVERY
  Show to whom and date delivered..... ¢
- ☐ RESTRICTED DELIVERY.
  Show to whom, date, and address of delivery.$

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:

Mr. Michael J. Hanlon
400 South Orange Ave.
Orlando, FL 32801

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	0157903	

(Always obtain signature of addressee or agent)

I have received the article described above.

SIGNATURE ☐Addressee ☐Authorized agent

4. DATE OF DELIVERY — POSTMARK

JAN 28 1983

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: — CLERK'S INITIALS

☆GPO : 1979-300-459

No. 0157903

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL

(See Reverse)

SENT TO
Michael J. Hanlon

STREET AND NO.

P.O., STATE AND ZIP CODE

POSTAGE			$
CONSULT POSTMASTER FOR FEES	CERTIFIED FEE		¢
	OPTIONAL SERVICES	SPECIAL DELIVERY	¢
		RESTRICTED DELIVERY	¢
		RETURN RECEIPT SERVICE — SHOW TO WHOM AND DATE DELIVERED	¢
		RETURN RECEIPT SERVICE — SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
		RETURN RECEIPT SERVICE — SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
		RETURN RECEIPT SERVICE — SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES			$

POSTMARK OR DATE

1/25/83

PS Form 3800, Apr. 1976

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

January 25, 1983

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Michael J. Hanlon
City of Orlando
Public Works Department
400 South Orange Avenue
Orlando, Florida 32801

Dear Mr. Hanlon:

Enclosed is a duplicate warrant for $1800 payable to the City of Orlando to replace your lost refund check. Again, we apologize for the inconvenience and delays you experienced in obtaining your refund. If we can be of further assistance, please let us know.

Sincerely,

Patty Adams

Patty Adams
Bureau of Air Quality
Management

/pa

OFFICE OF COMPTROLLER
STATE OF FLORIDA

TALLAHASSEE

32301

GERALD A. LEWIS
COMPTROLLER OF FLORIDA

1-21-83

Jeanette

RE: PAYEE City of Orlando
WT. NO. 3571164
AMOUNT 1,800.00
CODE 2-560-BH11

Dear Sir:

☒ 1. In compliance with your request, we are enclosing the following:

- ☐ Photo copy of the above captioned warrant.
- ☒ Duplicate of the above captioned warrants.
- ☐ Correction of voided warrant.
- ☐ Re-issue of a forgery.
- ☐ Re-issue of twelve month old warrant.

☐ 2. We find the above captioned warrant to be paid on _____ by bank _____. We will furnish you with photo copy as soon as warrant is available to us.

☐ 3. We find the above captioned warrant to be outstanding as of _____. Upon receipt of a properly executed affidavit to this office, a duplicate warrant will be forwarded to you for delivery to the payee.

- ☐ Please advise of action to be taken.
- ☐ We have requested the State Treasurer to stop payment on this warrant.

☐ 4. We are enclosing photo copy of the above captioned warrant showing payment stopped by the State Treasurer on _____.

Sincerely,

William J. Arnold, Supervisor
Bureau of Accounting
State Reconciliation

City of Orlando

400 S. ORANGE AVENUE
ORLANDO, FLORIDA
32801

PUBLIC WORKS
DEPARTMENT

TELEPHONE
(305) 849-2266

January 11, 1983

DER
JAN 17 1983
BAQM

Ms. Patricia G. Adams
Bureau of Air Quality Management
State of Florida
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301

Dear Ms. Adams:

Enclosed for your use are three (3) copies of the "Affidavit for Duplicate Warrant" signed and sealed as directed. I assume that you can now expedite this matter.

Please contact me if you need any further assistance.

Sincerely,

Michael J. Hanlon
Project Manager

Enclosures

cc: file

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

January 7, 1983

Mr. Michael J. Hanlon
Public Works Department
City of Orlando
400 South Orange Avenue
Orlando, Florida 32801

Dear Mr. Hanlon:

In response to your letter of January 3, 1983, a "stop payment" was placed on your original check on January 6, 1983. Before we can issue a new check, you or an authorized representative of the City of Orlando must sign and have notarized all three copies of the attached "Affidavit for Duplicate Warrant."

Please return all three copies to me (not the State Comptroller's Office) at your earliest convenience. You should receive your duplicate check two to three weeks after you return the attached forms. If you should have any further questions, please feel free to write or call me at (904)488-1344.

Sincerely,

Patricia G. Adams

Patricia G. Adams
Bureau of Air Quality
Management

Attachments

1-6-83:

Patty:
A verbal "Stop Payment" was placed on this warrant today. Please have the representative of the City of Orlando, have all three copies signed and notarized and returned to this office. I will handle it from this end, and when the re-issue is made, it will come back to me and you will be contacted so that the warrant can be mailed out by your office. If I can help in any other way, let me know.

City of Orlando

PUBLIC WORKS DEPARTMENT

400 S. ORANGE AVENUE
ORLANDO, FLORIDA
32801

TELEPHONE
(305) 849-2266

DER

JAN 06 1983

BAQM

January 3, 1983

Patty - please handle

Mr. C. H. Fancy, P.E., Deputy Chief
Bureau of Air Quality Management
State of Florida
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301

Subject: Iron Bridge Regional WPCF
Air Pollution Source/Construction Permit

Dear Mr. Fancy:

In response to your letter dated December 30, 1982 I have contacted Henderson's Furniture in Orlando. They acknowledged that their post office box number is 1418, Orlando, but that they have not received our check for $1800. Therefore, I would suggest that the check is probably lost, and that you stop payment on the original check, and issue a new one.

Please contact me if I can be of assistance.

Sincerely,

Michael J. Hanlon
Project Manager

MJH:dp

cc: file

City of Orlando

400 S. ORANGE AVENUE
ORLANDO, FLORIDA
32801

PUBLIC WORKS
DEPARTMENT

TELEPHONE
(305) 849-2266

January 5, 1983

Patty

DER
JAN 10 1983
BAQM

Mr. C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
State of Florida
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301

Subject: Iron Bridge Regional WPCF
Air Pollution Source/Construction Permit

Dear Mr. Fancy:

As requested in your letter of December 8, 1982 I am enclosing the proof of publication for the "Notice of Proposed Agency Action" for the subject project. I trust that this fulfills your requirements.

Please contact me if you need any additional information.

Sincerely,

Michael J. Hanlon
Project Manager

MJH:dp

Enclosure

cc: file

Sentinel Star Company

Published Daily
Orlando, Orange County, Florida

ADVERTISING CHARGE $22.30

State of Florida } SS.
COUNTY OF ORANGE

Before the undersigned authority personally appeared Betty M. Kinney, who on oath says that she is the Legal Advertising Representative of the Sentinel Star, a Daily newspaper published at Orlando, in Orange County, Florida; that the attached copy of advertisement, being a Notice of Proposed Agency Action in the matter of Construction - sludge drying facility in the _____ Court, was published in said newspaper in the issues of December 19, 1982

Affiant further says that the said Sentinel Star is a newspaper published at Orlando, in said Orange County, Florida, and that the said newspaper has heretofore been continuously published in said Orange County, Florida, each Week Day and has been entered as second-class mail matter at the post office in Orlando, in said Orange County, Florida for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he/she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Betty M. Kinney

Sworn to and subscribed before me this 20th day of December A.D., 1982

Virginia M. Hollingsworth
Notary Public

Notary Public, State of Florida at Large
My Commission Expires July 13, 1985
Bonded by American Fire & Casualty Co.

FORM NO. AD-262

NOTICE OF PROPOSED AGENCY ACTION The Department of Environmental Regulation gives notice of its intent to issue a permit to the City of Orlando for the construction of a sludge drying facility located in the city of Oviedo, Seminole County, Florida. A determination of Best Available Control Technology (BACT) was not required. A person who is substantially affected by the Department's proposed permitting decision may request a hearing in accordance with Section 120.57, Florida Statutes, and Chapters 17-1 and 28-5, Florida Administrative Code. The request for *hearing must be filed (received) in* the Office of General Counsel of the Department at 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32301, within fourteen (14) days of publication of this notice. Failure to file a request for hearing within this time period shall constitute a waiver of any right such person may have to request a hearing under Section 120.57, Florida Statutes. The Application, technical evaluation, and departmental intent are available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at the following locations: DER, Bureau of Air Quality Mgmt., 2600 Blair Stone Road, Tallahassee, Florida 32301. DER St. Johns River District, 3319 Maguire Blvd., Suite 232, Orlando, Florida 32803. Comments on this action shall be submitted in writing to Bill Thomas of the Tallahassee office within thirty (30) days of this notice.
LS-262(10) Dec.19,1982

Proposed 12-20-82
mfield
to Pub Works 1-3-83

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

December 30, 1982

Mr. Michael J. Hanlon
City of Orlando
Public Works Department
400 South Orange Avenue
Orlando, Florida 32801

Dear Mr. Hanlon:

The Bureau of Air Quality Management received your letter dated December 17, 1982, in response to the Preliminary Determination for the Iron Bridge Sludge Recovery Facility. Your comments concerning the Specific Conditions of the draft permit will be addressed in the Final Determination.

You are correct is assuming that you are due a refund of $1800 for overpayment of the processing fee. A check for that amount was mailed on October 29, 1982; however, it was mailed to Post Office Box 1418 in Orlando, instead of P. O. Box 1418 in Oviedo. The State Comptroller's office has informed us that as of December 13, 1982, the check had not been presented for payment. In this situation, two options are available.

1. You may contact the boxholder in Orlando to determine if the check was delivered there. Post Office records in Orlando show Hendrickson's Furniture as the boxholder.

2. At your request, we can stop payment on the check and issue a duplicate warrant. This process will take 3 to 4 weeks, and if you should receive the original warrant during that time, it would not be valid.

We apologize for the delay and any inconvenience caused by this error and will do all we can to help you in obtaining your refund. Please contact us as soon as possible if you are unable to locate your check, or if you wish us to stop payment and issue a duplicate warrant.

Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/pa

City of Orlando

400 S. ORANGE AVENUE
ORLANDO, FLORIDA
32801

PUBLIC WORKS
DEPARTMENT

TELEPHONE
(305) 849-2266

December 17, 1982

DER
DEC 23 1982
BAQM

Mr. C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
State of Florida
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301

Subject: Iron Bridge Regional WPCF
Air Pollution Source/Construction Permit

Dear Mr. Fancy:

I have reviewed the proposed permit for the Iron Bridge Sludge Recovery Facility, recently transmitted to the City by your office, and have several comments as follows:

1) Specific Condition 4 references a performance test schedule in the General Conditions. However, the General Conditions are not specific in this regard. Please indicate the required performance test schedule.

2) Specific Condition 5 specifies "no objectionable odors". Please indicate the required test procedure for determining objectionable odors.

3) Specific Condition 8 requires the submission of an application for an operating permit 90 days prior to the expiration date of February 28, 1983. Thus, the application must be submitted by November 30, 1982. This would be difficult since we did not receive the proposed construction permit until December 13, 1982. We suggest that the expiration date be revised to a date 120 days after the formal issuance of the construction permit.

4) Specific Condition 9 requires the submission of periodic test reports, however, no schedule for submission of the reports is specified. Please indicate the required submission schedule.

In accordance with your letter dated December 8, 1982 we have placed the "Notice of Proposed Agency Action" in the Orlando Sentinel, and will provide you with a proof of publication.

Your department has determined that the Iron Bridge Facility is a "minor source". However, the application was submitted on the basis of a "major source" with an application fee of $1,000.00 per stack. We believe that a refund in the amount of $1,800.00 is due the City. Please advise in this matter.

Upon issuance of the formal construction permit we will proceed with the preparation and submission of the operating permit application. Please contact me if you have any questions.

Sincerely,

Michael J. Hanlon
Project Manager

MJH:dp

cc: Robert C. Haven
Howard W. Jewett
D. R. Smedley
file

PS Form 3811, Jan. 1979

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
XK Show to whom and date delivered..... ¢
☐ Show to whom, date and address of delivery... ¢
☐ RESTRICTED DELIVERY
Show to whom and date delivered..... ¢
☐ RESTRICTED DELIVERY.
Show to whom, date, and address of delivery.$

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
Mr. Robert C. Haven
Post Office Box 1418
Oviedo, FL 32765

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	0157890	

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐Addressee ☐Authorized agent

Linda Lackey

4. DATE OF DELIVERY: 12-10-82
POSTMARK: DEC 10 1982

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE:
CLERK'S INITIALS

☆GPO : 1979-300-459

No. 0157890

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

SENT TO: Robert C. Haven
STREET AND NO.: P. O. Box 1418
P.O., STATE AND ZIP CODE: Oviedo, FL 32765

POSTAGE		$
CONSULT POSTMASTER FOR FEES — OPTIONAL SERVICES	CERTIFIED FEE	¢
	SPECIAL DELIVERY	¢
	RESTRICTED DELIVERY	¢
	RETURN RECEIPT SERVICE — SHOW TO WHOM AND DATE DELIVERED	¢
	RETURN RECEIPT SERVICE — SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
	RETURN RECEIPT SERVICE — SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
	RETURN RECEIPT SERVICE — SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES		$

POSTMARK OR DATE

12-8-82

PS Form 3800, Apr. 1976

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

December 8, 1982

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Robert C. Haven
Director of Public Works
City of Orlando
Post Office Box 1418
Oviedo, Florida 32765

Dear Mr. Haven:

Attached is one copy of the application, Technical Evaluation and Preliminary Determination, and proposed permits for a sludge drying facility located in the City of Oveido, Seminole County, Florida.

Purusant to Section 403.815, Florida Statutes, and Florida Administrative Code Rule 17-1.62, you are required to publish (at your own expense) the attached notice. This notice should be published, one time only, in the legal ad section of the Orlando Sentinel as soon as possible and no later than December 28, 1982. The department, in accordance with Rule 17-1.62, is required to have proof that notice was given. Therefore, please have the newspaper prepare an affidavit of publication to submit to the department.

Please submit, in writing, any comments which you wish to have considered concerning the department's proposed action to Bill Thomas of the Bureau of Air Quality Management.

Sincerely,

Laurence A. George

for C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/pa

cc: Frank L. Cross, Jr., P.E., Cross/Tessitore & Associates, P.A.
Charles Collins, DER St. Johns River District

Technical Evaluation

and

Preliminary Determination

CITY OF ORLANDO

Sludge Drying Facility

Seminole County, Florida

Permit Numbers: AC 59-59312

AC 59-59313

Florida Department of Environmental Regulation

Bureau of Air Quality Management

Central Air Permitting

November 19, 1982

TABLE OF CONTENTS

NOTICE OF PROPOSED AGENCY ACTION

The Department of Environmental Regulation gives notice of its intent to issue a permit to the City of Orlando for the construction of a sludge drying facility located in the city of Oviedo, Seminole County, Florida. A determination of Best Available Control Technology (BACT) was not required.

A person who is substantially affected by the Department's proposed permitting decision may request a hearing in accordance with Section 120.57, Florida Statutes, and Chapters 17-1 and 28-5, Florida Administrative Code. The request for hearing must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32301, within fourteen (14) days of publication of this notice. Failure to file a request for hearing within this time period shall constitute a waiver of any right such person may have to request a hearing under Section 120.57, Florida Statutes.

The application, technical evaluation, and departmental intent are available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at the following locations:

DER, Bureau of Air Quality Mgmt.
2600 Blair Stone Road
Tallahassee, Florida 32301

DER St. Johns River District
3319 Maguire Blvd.
Suite 232
Orlando, Florida 32803

Comments on this action shall be submitted in writing to Bill Thomas of the Tallahassee office within thirty (30) days of this notice.

RULES OF THE ADMINISTRATIVE COMMISSION
MODEL RULES OF PROCEDURE
CHAPTER 28-5
DECISIONS DETERMINING SUBSTANTIAL INTERESTS

28-5.15 Requests for Formal and Informal Proceedings

(1) Requests for proceedings shall be made by petition to the agency involved. Each petition shall be printed typewritten or otherwise duplicated in legible form on white paper of standard legal size. Unless printed, the impression shall be on one side of the paper only and lines shall be double spaced and indented.

(2) All petitions filed under these rules should contain:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name and address of the petitioner or petitioners;

(c) All disputed issues of material fact. If there are none, the petition must so indicate;

(d) A concise statement of the ultimate facts alleged, and the rules, regulations and constitutional provisions which entitle the petitioner to relief;

(e) A statement summarizing any informal action taken to resolve the issues, and the results of that action;

(f) A demand for the relief to which the petitioner deems himself entitled; and

(g) Such other information which the petitioner contends is material.

I. SYNOPSIS OF APPLICATION

A. Name and Address of Applicant

City of Orlando
P. O. Box 1418
Oviedo, Florida 32765

B. Source Location

The proposed source, Iron Bridge Regional Water Pollution Control Plant, is located at the city of Oviedo, in Seminole County, Florida. The UTM coordinates are 478.25 km East and 3,166.500 km North.

C. Project Description

The applicant proposes to install and operate a sludge recovery system, this includes furnishing and installing all material, equipment, labor and services necessary to provide a complete sludge drying process capable of producing a pasteurized, pelletized dry soil conditioner from the waste sludge produced by the wastewater treatment plant.

II. RULE APPLICABILITY

A. State Regulations

The proposed project is subject to preconstruction review under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2 Florida Administrative Code. Specifically, City of Orlando's sludge drying facility is a minor emitting facility as defined in Chapter 17-2, FAC.

The proposed source location, Seminole County, is in an area currently designated as attainment in accordance with section 17-2.420, FAC for SO_2, NO_x, VOC, CO, and unclassifiable for PM in accordance with section 17-2.430, FAC.

The proposed project shall be permitted under section 17-2.520, FAC, Sources Not Subject to Prevention of Significant Deterioration or Nonattainment Requirements.

The proposed source shall comply with provisions of sections 17-2.610, FAC, General Particulate Emission Limiting Standards, 17-2.620., FAC, General Pollutant Emissions Limiting Standard and 17-2.700., FAC, Stationary Point Source Emissions Test Procedures.

The proposed source is also subject to the provisions of the federal National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR 61, Subpart E, National Emission Standard for Mercury. This NESHAP has been adopted by reference in Section 17-2.670, FAC.

III. SOURCE IMPACT ANALYSIS

A. Emissions Limitations

The operation of the proposed sludge drying facility will produce emissions of particulate matter (PM), sulfur dioxide (SO_2), nitrogen dioxide (NO_x), carbon monoxide (CO), mercury (Hg), and volatile organic compounds (VOC).

Table 1 summarizes potential to emit all pollutant regulated under the Act which are affected by the proposed source. As the table shows, the proposed source is a minor emitting facility for all pollutants.

The emission limits selected as permitted emissions, which were made a condition of the permit, are listed in Table 2. The permitted emissions are in compliance with the department's applicable rules and regulations.

B. Air Quality Analysis

No ambient monitoring or modeling is required to provide reasonable assurance that ambient air standards will not be violated.

Table 1

Iron Bridge Sludge Drying Facility

Summary of Emissions

(tons per year)[1]

Pollutant	Uncontrolled	Controlled[2]
PM	891.1	22.3
SO_2	13.8	13.8
NO_x	5.9	5.9
HC	0.3	0.3
Hg	0.0035	0.0035

(1) Emission calculations based on 5824 hours per year. Fuel oil consumption is based on 92 gal/hr. These emission limits are from each source (East and West Lines).

(2) Controlled emissions based on 97.5% control efficiency.

Table II

Iron Bridge Sludge Drying Facility

Allowable Emissions(1)

SOURCE	POLLUTANT					
	Opacity	PM lb/hr	SO_2 lb/hr	NO_x lb/hr	HC lb/hr	Hg(2)
East Line	10%	7.7	4.7	2.0	0.1	3200 gr per 24-hour period
West Line	10%	7.7	4.7	2.0	0.1	3200 gr per 24-hour period

(1) Emissions as calculated by the applicant based on fuel oil consumption of 92 gal/hr, fuel analysis (0.36% S), AP-42 Emission Factors and stack test results.

(2) National Emission Standard for Hazardous Air Pollutants, 40 CFR 61, Subpart E.

IV. CONCLUSION

Based on review of the data submitted by the City of Orlando for the operation of a sludge drying facility at the Iron Bridge Regional Water Pollution Control Plant, the FDER concludes that compliance with all applicable state air quality regulations will be achieved provided certain specific conditions are met.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

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

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

APPLICANT:

City of Orlando
P. O. Box 1418
Oviedo, Florida 32765

PERMIT/CERTIFICATION NO. AC 59-59312

COUNTY: Seminole

PROJECT: Sludge Drying Facility. East Line

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2 and 17-4, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto and made a part hereof and specifically described as follows:

For the installation of a cyclone followed by a Venturi scrubber and a packed column using $KMnO_4$ for odor removal to be located at the Iron Bridge Regional Water Pollution Control Plant, in Seminole County, Florida. The UTM coordinates are 478.85 East and 3,166.50 North.

The construction shall be in accordance with the attached permit application, plans and documents except as otherwise noted on pages 1 through 4, Specific Conditions.

Attachments:

1. Application to Construct Air Pollution Sources, DER Form 17-1.122(16) received on August 23, 1982.

2. City of Orlando's letters of September 23, 1982, September 30, 1982, and October 12, 1982 (Responses to technical discrepancies).

PERMIT NO.: AC 59-59312
APPLICANT: City of Orlando

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions:, and as such are binding upon the permittee and enforceable pursuant to the authority of Section 403.161(1), Florida Statutes. Permittee is hereby placed on notice that the department will review this permit periodically and may initiate court action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations indicated in the attached drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit shall constitute grounds for revocation and enforcement action by the department.

3. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information: (a) a description of and cause of non-compliance; and (b) the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

4. As provided in subsection 403.087(6), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

5. This permit is required to be posted in a conspicuous location at the work site or source during the entire period of construction or operation.

6. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Section 403.111, F.S.

7. In the case of an operation permit, permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

8. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant, or aquatic life or property and penalities therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, except where specifically authorized by an order from the department granting a variance or exception from department rules or state statutes.

9. This permit is not transferable. Upon sale or legal transfer of the property or facility covered by this permit, the permittee shall notify the department within thirty (30) days. The new owner must apply for a permit transfer within thirty (30) days. The permittee shall be liable for any non-compliance of the permitted source until the transferee applies for and receives a transfer of permit.

10. The permittee, by acceptance of this permit, specifically agrees to allow access to permitted source at reasonable times by department personnel presenting credentials for the purposes of inspection and testing to determine compliance with this permit and department rules.

11. This permit does not indicate a waiver of or approval of any other department permit that may be required for other aspects of the total project.

12. This permit conveys no title to land or water, nor constitutes state recognition or acknowledgement of title, and does not constitute authority for the reclamation of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

13. This permit also constitutes:

[ ] Determination of Best Available Control Technology (BACT)
[ ] Determination of Prevention of Significant Deterioration (PSD)
[ ] Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

PERMIT NO.: AC 59-59312
APPLICANT: City of Orlando

SPECIFIC CONDITIONS:

1. Emissions from this source shall not exceed the following allowable emissions.

Opacity	PM lb/hr	SO_2 lb/hr	NO_x lb/hr	HC lb/hr	Hg
10%	7.7	4.7	2.0	0.1	3200 gr per 24-hour period

2. This source shall be allowed to operate 5824 hours per year.

3. The fuel used to fire the dryer is No. 2 fuel oil with a 0.36 percent sulfur content. Maximum heat input shall be 18.72 MMBTU/hr.

4. Compliance with all allowable emission limits shall be determined by performance tests scheduled in accordance with the attached General Conditions. Except as provided under 40 CFR 60.8(b), the performance tests shall be in accordance with the provisions of the following reference methods in Appendix A of 40 CFR or other State approved methods.

   a. Method 1. Sample and Velocity Traverses
   b. Method 2. Volumetric Flow Rate
   c. Method 3. Gas Analysis
   d. Method 5. Determination of Particulate Emissions for Stationary Sources
   g. Method 9. Determination of the Opacity of Emissions from Stationary Sources

   A compliance test shall consist of the average of three consecutive runs. The test will be conducted at 90 to 100 percent maximum capacity while burning No. 2 fuel oil. The Department shall be notified 30 days in advance of the compliance test.

5. No objectionable odor shall be allowed from this facility.

6. Compliance with the SO_2 emission limit will be based upon the sulfur content of the fuel fired. Applicable test methods by the American Society for Testing Material (A.S.T.M.) will be used.

7. Compliance with the mercury emission shall be determined as specified in the 40 CFR 61, Subpart E, National Emission Standard for Mercury.

8. The applicant will demonstrate compliance with the conditions of the construction permit, and submit a complete application for an operating permit to the Department's St. Johns River District office prior to 90 days of the expiration date of the construction permit. The applicant may continue to operate in compliance with all terms of the construction permit until its expiration date or issuance of an operating permit.

9. Upon obtaining an operating permit, the applicant will be required to submit periodic test reports on the actual operation and emissions of the facility. Reports will give emission test data, emission test results, hours of operation, fuel oil usage, average and maximum percent sulfur in oil, pressure drop across the scrubber, pressure on scrubber header, and flow of water through scrubber.

10. Stack sampling facilities will include the eyebolt and angle described in Chapter 17-2.700, FAC.

11. The source shall comply with the provisions and requirements of the attached general conditions.

Expiration Date: February 28, 1983

_____ Pages Attached.

Issued this _____ day of _____, 19____.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

_____
Signature

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

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

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

APPLICANT:

City of Orlando
P. O. Box 1418
Oviedo, Florida 32765

PERMIT/CERTIFICATION
NO. AC 59-59313

COUNTY: Seminole

PROJECT: Sludge Drying Facility.
West Line

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2 and 17-4, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto and made a part hereof and specifically described as follows:

For the installation of a cyclone followed by a Venturi scrubber and a packed column using $KMnO_4$ for odor removal to be located at the Iron Bridge Regional Water Pollution Control Plant, in Seminole County, Florida. The UTM coordinates are 478.250 East and 3,166.50 North.

The construction shall be in accordance with the attached permit application, plans and documents except as otherwise noted on pages 1 through 4, Specific Conditions.

Attachments:

1. Application to Construct Air Pollution Sources, DER Form 17-1.122(16) received on August 23, 1982.

2. City of Orlando's letters of September 23, 1982, September 30, 1982, and October 12, 1982 (Responses to technical discrepancies).

PERMIT NO.: AC 59-59313
APPLICANT: City of Orlando

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions:, and as such are binding upon the permittee and enforceable pursuant to the authority of Section 403.161(1), Florida Statutes. Permittee is hereby placed on notice that the department will review this permit periodically and may initiate court action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations indicated in the attached drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit shall constitute grounds for revocation and enforcement action by the department.

3. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information: (a) a description of and cause of non-compliance; and (b) the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

4. As provided in subsection 403.087(6), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

5. This permit is required to be posted in a conspicuous location at the work site or source during the entire period of construction or operation.

6. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Section 403.111, F.S.

7. In the case of an operation permit, permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

8. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant, or aquatic life or property and penalities therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, except where specifically authorized by an order from the department granting a variance or exception from department rules or state statutes.

9. This permit is not transferable. Upon sale or legal transfer of the property or facility covered by this permit, the permittee shall notify the department within thirty (30) days. The new owner must apply for a permit transfer within thirty (30) days. The permittee shall be liable for any non-compliance of the permitted source until the transferee applies for and receives a transfer of permit.

10. The permittee, by acceptance of this permit, specifically agrees to allow access to permitted source at reasonable times by department personnel presenting credentials for the purposes of inspection and testing to determine compliance with this permit and department rules.

11. This permit does not indicate a waiver of or approval of any other department permit that may be required for other aspects of the total project.

12. This permit conveys no title to land or water, nor constitutes state recognition or acknowledgement of title, and does not constitute authority for the reclamation of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

13. This permit also constitutes:

[ ] Determination of Best Available Control Technology (BACT)
[ ] Determination of Prevention of Significant Deterioration (PSD)
[ ] Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

PERMIT NO.: AC 59-59313
APPLICANT: City of Orlando

SPECIFIC CONDITIONS:

1. Emissions from this source shall not exceed the following allowable emissions.

Opacity	PM lb/hr	SO_2 lb/hr	NO_x lb/hr	HC lb/hr	Hg
10%	7.7	4.7	2.0	0.1	3200 gr per 24-hour period

2. This source shall be allowed to operate 5824 hours per year.

3. The fuel used to fire the dryer is No. 2 fuel oil with a 0.36 percent sulfur content. Maximum heat input shall be 18.72 MMBTU/hr.

4. Compliance with all allowable emission limits shall be determined by performance tests scheduled in accordance with the attached General Conditions. Except as provided under 40 CFR 60.8(b), the performance tests shall be in accordance with the provisions of the following reference methods in Appendix A of 40 CFR or other State approved methods.

   a. Method 1. Sample and Velocity Traverses
   b. Method 2. Volumetric Flow Rate
   c. Method 3. Gas Analysis
   d. Method 5. Determination of Particulate Emissions for Stationary Sources
   g. Method 9. Determination of the Opacity of Emissions from Stationary Sources

   A compliance test shall consist of the average of three consecutive runs. The test will be conducted at 90 to 100 percent maximum capacity while burning No. 2 fuel oil. The Department shall be notified 30 days in advance of the compliance test.

5. No objectionable odor shall be allowed from this facility.

6. Compliance with the SO_2 emission limit will be based upon the sulfur content of the fuel fired. Applicable test methods by the American Society for Testing Material (A.S.T.M.) will be used.

PERMIT NO.: AC 59-59313
APPLICANT: City of Orlando

7. Compliance with the mercury emission shall be determined as specified in the 40 CFR 61, Subpart E, National Emission Standard for Mercury.

8. The applicant will demonstrate compliance with the conditions of the construction permit, and submit a complete application for an operating permit to the Department's St. Johns River District office prior to 90 days of the expiration date of the construction permit. The applicant may continue to operate in compliance with all terms of the construction permit until its expiration date or issuance of an operating permit.

9. Upon obtaining an operating permit, the applicant will be required to submit periodic test reports on the actual operation and emissions of the facility. Reports will give emission test data, emission test results, hours of operation, fuel oil usage, average and maximum percent sulfur in oil, pressure drop across the scrubber, pressure on scrubber header, and flow of water through scrubber.

10. Stack sampling facilities will include the eyebolt and angle described in Chapter 17-2.700, FAC.

11. The source shall comply with the provisions and requirements of the attached general conditions.

Expiration Date: February 28, 1983

_____ Pages Attached.

Issued this _____ day of _____, 19____.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

_____
Signature

CROSS/TESSITORE & ASSOCIATES, P.A.
1611 E. HILLCREST STREET
ORLANDO, FLORIDA 32803
305/898-6140

To file

October 12, 1982

Mr. Ed Palagyi
FLA. DEPT. OF ENV. REG.
Twin Towers Office Bldg.
2600 Blair Stone Rd.
Tallahassee, Fla. 32301

Dear Ed:

Attached are the Hg emission calculations for the Iron Bridge Sludge Drying System. The calculations indicate that the maximum predicted Hg emissions are 7.0 lbs/yr. This is based on the conservative assumption that all solids entering the scrubber reach the atmosphere, and that the Hg concentration is 3.93 mg/Kg of dry solids.

Actually, the scrubber will reduce the Hg discharge dramatically; however at this time we have no stack test information on Hg emissions. Therefore the figure of 7.0 lbs of Hg per year is a maximum possible emission value.

If you have any additional questions, do not hesitate to call upon me.

Sincerely,

Joseph L. Tessitore

Joseph L. Tessitore, P.E.
Vice President

JLT/b
cc: Bob Smedley
Robert Haven

Enc. a/s

CALCULATION OF MAXIMUM HG EMISSIONS FROM IRON BRIDGE SLUDGE DRYER SYSTEM

(1) See attached mass flow diagram

(2) Assume all solids to scrubber (306 lbs/hr) reach the atmosphere

(3) Assume these solids possess same Hg concentration as dried pellets, 3.93 mg/Kg (dry).

$$\text{Hg Emissions} = 3.93 \frac{\text{mg}}{\text{Kg}} \times 306 \frac{\text{lbs}}{\text{hr}} \times \frac{\text{Kg}}{1000 \text{ gm}}$$

$$\times \frac{1}{1000 \text{ mg/gm}} = 0.0012 \text{ lb/hr}$$

$$\text{Annual Emissions} = (.0012) \frac{\text{lb}}{\text{hr}} \times (16) \frac{\text{hrs}}{\text{day}} \times (7) \frac{\text{days}}{\text{wk}}$$

$$\times (52) \frac{\text{wks}}{\text{yr}} = 6.99 \text{ lbs/yr}$$

CROSS/TESSITORE & ASSOCIATES, P.A.
1611 E. HILLCREST STREET
ORLANDO, FLORIDA 32803
305/898-6140

September 30, 1982

DER
OCT 08 1982
BAQM

Mr. Ed Palagyi
Fla. Dept. of Env. Reg.
Twin Towers Office Bldg.
2600 Blair Stone Rd.
Tallahassee, Fla. 32301

Dear Ed:

As per our telephone conversation of 9/29, we've gone ahead at your recommendation and recalculated the Iron Bridge emissions. The emissions now indicate that we are not a major source and not subject to PSD and will not be required to complete an EPA permit or conduct a detailed air quality evaluation for the project.

As per your request, we've included a copy of the initial stack tests conducted at Iron Bridge as part of the contractor performance specifications. You will note that the tests are lower than the 7.65 lbs/hr of particulates that we've used. This is to try and be conservative as the plant was not operating at full design capacity.

As soon as we have the Mercury (Hg) results we'll forward these to you.

Thank Bill Thomas and Larry George for their cooperation on this project.

If the permit is sent back to the district for processing as a minor source, then there will be a reduction of the application fees from $1000 to $100 for each dryer system!

If you need any further information, please contact us.

Best regards.

Sincerely,

Frank L. Cross, Jr., P.E.
President

FLC/tb
Enc. a/s
cc: Bob Smedley
C. H. Fancy
Robert Haven

CROSS/TESSITORE & ASSOCIATES, P.A.
1611 E. HILLCREST STREET
ORLANDO, FLORIDA 32803
305/898-6140

October 6, 1982

ENCLOSURES AND INSTRUCTIONS FOR UPDATING
AIR CONSTRUCTION PERMIT APPLICATION FOR
IRON BRIDGE SLUDGE DRYER

Title Page
Replace with enclosed

Application
pp. 1&2, 2a, 3&4, 5&6 - Replace with enclosed

Calculations
Replace Items 1 thru 5 with enclosed

Air Quality
Delete Entire Section

Process Weight
Replace diagram with 2 diagrams enclosed

AIR CONSTRUCTION PERMIT

APPLICATION FOR

IRON BRIDGE SLUDGE DRYER, EAST

Revised

October 1982

Cross/Tessitore & Associates, P.A.
1611 East Hillcrest Street
Orlando, Florida 32806

(305) 898-6140

BEST AVAILABLE COPY

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Sludge Drying Facility [x] New[1] [ ] Existing[1]

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

COMPANY NAME: City of Orlando COUNTY: Seminole

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired). East Line with cyclone + Venturi scrubber + odor contactor

SOURCE LOCATION: Street Iron Bridge City Oviedo

UTM: East 478250 North 3166500

Latitude 28 ° 37 ' 20 "N Longitude 81 ° 13 ' 10 "W

APPLICANT NAME AND TITLE: City of Orlando

APPLICANT ADDRESS: P. O. Box 1418, Oviedo, Florida 32765

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of The City of Orlando (Florida)

I certify that the statements made in this application for a construction 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: [signature]

Robert C. Haven, Director of Public Works
Name and Title (Please Type)

Date: 8/17/82 Telephone No. (305) 849-2266

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 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.

(Affix Seal)

FRANK L. CROSS CERTIFICATE No. 7916 STATE OF FLORIDA REGISTERED ENGINEER

Signed: [signature]

Frank L. Cross, Jr., P.E.
Name (Please Type)

Cross/Tessitore & Associates, P.A.
Company Name (Please Type)

1611 E. Hillcrest St., Orlando FL 32803
Mailing Address (Please Type)

Florida Registration No. 7916 Date: _____ Telephone No. (305) 898-6140

[1] See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

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.

This is an air pollution control system to clean the air from a sewage sludge dryer at the Iron Bridge Wastewater Treatment Plant. The system consists of cyclone(s) followed by a Venturi scrubber for particulate removal and a packed column using $KMnO_4$ for odor removal. This project will result in full compliance with the FDER air pollution control regulations.

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

Start of Construction July 1980 Completion of Construction March 1982

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.)

Ducts	$ 25,000.00	
Fan	50,000.00	
Scrubber	250,000.00	Total $350,000.00
Stack	25,000.00	

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

N/A

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? ____ Yes __x__ No

F. Normal equipment operating time: hrs/day 16 ; days/wk 7 ; wks/yr 52 ; if power plant, hrs/yr N/A ; if seasonal, describe: N/A

G. 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? N/A
   b. If yes, has "Lowest Achievable Emission Rate" been applied? N/A
   c. If yes, list non-attainment pollutants. N/A
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII. Yes
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

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

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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.

This is an air pollution control system to clean the air from a sewage sludge dryer at the Iron Bridge Wastewater Treatment Plant. The system consists of cyclone(s) followed by a Venturi scrubber for particulate removal and a packed column using $KMnO_4$ for odor removal. This project will result in full compliance with the FDER air pollution control regulations.

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Fan	50,000.00	
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if seasonal, describe: N/A

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

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      N/A
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes
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Page 2a

Additional Information

Section II:G.

2. No

3. No

4. No, because this type of source is not on the list of NSPS industries.

5. No--from lead analysis of performance test filter the lead emission values are under NESHAPS, 1200 lbs/yr.

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

A. Raw Materials and Chemicals Used in your Process, if applicable: (Note: this page revised 10/1/82)

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Conditioned Sewage Sludge	particu-lates	15 solids	1950	input to dryer
Recycle	particu-lates	3.5 solids	25,922	input to dryer

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

1. Total Process Input Rate (lbs/hr): 27,872 (solids)

2. Product Weight (lbs/hr): 1731 (see process weight diagram)

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1]		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Vis. Emiss.	--	--	NA	NA	--	--	
Particulates	7.7	22.3	process weight	18.4	306	891.1	Stack
CO	Neg	Neg	NA	NA	Neg	Neg	Emission
Sulfur Diox.	4.7	13.8	NA	NA	4.7	13.8	Sketch
NO_x	2.0	5.9	NA	NA	2.0	5.9	
HC	0.1	0.3	NA	NA	0.1	0.3	

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5])
Cyclone & Scrubber	Particulate	97.5%	3%<3u(into scrubber)	
System	SO_2	0	86%>10u(from dryer)	EPA AP-42

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 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)

[5]If Applicable

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
No. 2 oil	(105 gal/ton)	136.5 gal/hr	18.72
	92 gal/hr		

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: 0.36 Percent Ash: 0.01

Density: 7.162 lbs/gal Typical Percent Nitrogen: 0.012

Heat Capacity: 19,400 BTU/lb 137,158 BTU/gal

Other Fuel Contaminants (which may cause air pollution): N/A

F. If applicable, indicate the percent of fuel used for space heating. Annual Average N/A Maximum

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

Solid waste and liquid wastes go back into the wastewater treatment plant.

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

Stack Height: 54'2" ft. Stack Diameter: 4'3" ft.

Gas Flow Rate: 33,700 ACFM Gas Exit Temperature: 119 °F.

Water Vapor Content: 13.4 % Velocity: 25 FPS

stack test

SECTION IV: INCINERATOR INFORMATION

N/A

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.)
Lbs/hr Incinerated							

Description of Waste

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

Approximate Number of Hours of Operation per day days/week

Manufacturer

Date Constructed Model No.

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
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stack test

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Lbs/hr Incinerated							

Description of Waste

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

Approximate Number of Hours of Operation per day days/week

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 Diameter _____ 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.):

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight – show derivation.
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, 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 8½" 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 8½" 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 8½" 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. An application fee of $20, unless exempted by Section 17-4.05(3), F.A.C. 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

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
[ ] Yes [X] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) [X] Yes [ ] No

Contaminant	Rate or Concentration

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

Contaminant	Rate or Concentration
Particulates	7.7 lbs/hr
SO_x	4.7
NO_x	2.0
CO	Neg
HC	0.1

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

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:
5. Useful Life:
6. Operating Costs:
7. Energy:
8. Maintenance Cost:
9. Emissions:

Contaminant	Rate or Concentration

*Explain method of determining D 3 above. *Fee of $1,000.00 enclosed based on potential emissions of 1994 lbs/hr

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2. Operating Principles:
3. Efficiency:*
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*Explain method of determining D 3 above. *Fee of $1,000.00 enclosed based on potential emissions of 1994 lbs/hr

CROSS/TESSITORE AND ASSOCIATES
Enviromental and Energy Engineers
1611 Hillcrest Street
Orlando, Florida 32803
(305) 857-0926

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Item 1) - Total Process Input Rate and Product Weight*

Sludge Cake from WWTP = 13,000 lbs/hr

Solids = 1950 lbs/hr

H_2O = 11,050 lbs/hr

Recycle = 26,872 lbs/hr

Solids = 25,972 lbs/hr

H_2O = 950 lbs/hr

Total Solids Input to Sludge Dryer = 27,872 lbs/hr

= 13.95 T/hr

(See Process Weigh Diagram, Design Conditions)

Allowable Particulate Emissions

$$= 3.59\ (13.94)^{0.62} = 18.38 \text{ lbs/hr}$$

*Revised 10/1/82

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Item 2) Controlled Emission Estimate*

Pollutant	Uncontrolled Emissions (T/yr)	Control Efficiency	Controlled Emissions (T/yr)
Particulate	891.1	0.975	22.3 **
SO_2	13.8	0	13.8
NO_X	5.9	0	5.9
HC	0.3	0	0.3

** Test data shows scrubber control efficiency of 98.2%; however, solids input to the scrubber may vary, based on sludge feed. To allow for input uncertainty, design emissions will be based on 97.5% control efficiency.

$E = 306\ (1 - 0.975) = 7.65$ lbs/hr

Annual Design Emissions = 22.3 T/yr

* Revised 10/1/82

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Orlando, Florida 32803
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Item 3) Potential Emissions*

a) Particulate

From mass flow balance on Process Weight Diagram (Design Contitions)

Uncontrolled Solids = 306 lbs/hr

$$\text{Annual Emissions} = (306)\ \frac{\text{lbs}}{\text{hr}} \times (16)\ \frac{\text{hrs}}{\text{day}} \times (7)\ \frac{\text{days}}{\text{wk}}$$

$$\times (52)\ \frac{\text{wks}}{\text{yr}} \times \left(\frac{1}{2000}\right)\ \frac{\text{T}}{\text{lbs}} = \frac{891.1}{}\ \text{T/yr}$$

b) Sulfur Dioxide

From fuel analysis, %S = 0.36

Fuel consumption = 92 gal/hr

$$\text{Annual Emissions} = (92)\ \frac{\text{gal}}{\text{hr}} \times (7.162)\ \text{lbs/hr}$$

$$\times (2) \times (0.0036) \times (16)\ \text{hrs/day}$$

$$\times (7)\ \text{days/wk} \times (52)\ \frac{\text{wks}}{\text{yr}} \times \left(\frac{1}{2000}\right)\ \text{T/lbs} = 13.8\ \text{T/yr}$$

c) Nitrogen Oxides

From AP-Y2, Table 1.3-1, Distillate Oil (Industrial/Commercial)

$$NO_2 = 22\ \text{lbs}/10^3\ \text{gal}$$

$$\text{Annual Emission} = (92)\ \text{gal/hr} \times (16)\ \text{hrs/day}$$

$$\times (7)\ \frac{\text{days}}{\text{wk}} \times (52)\ \frac{\text{wks}}{\text{yr}} \times \left(\frac{22}{1000}\right)\ \text{lbs/gal}$$

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Item 3) c) Continued

$$\times \left(\frac{1}{2000}\right) \frac{T}{lbs} = 5.89 \text{ T/yr}$$

d) HC

From AP-42, Table 1.3-1, Distillate Oil (Industrial/Commercial)

$$HC = 1 \text{ lbs}/10^3 \text{ gal}$$

Annual Emission = (92) gal/hr x (16) hrs/day

$$\times (7) \frac{\text{days}}{\text{wk}} \times (52) \frac{\text{wks}}{\text{yr}} \times \left(\frac{1}{1000}\right) \text{lbs/gal}$$

$$\times \left(\frac{1}{2000}\right) \frac{T}{lbs} = 0.27 \text{ T/yr}$$

*Revised 10/1/82

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SCALE _____

Item 4) Design Details of Air Pollution Control System

See Section "Air Pollution Control System Description"

Item 5) Derivation of Control System Efficiency *

From attached test report (July 21, 1982) measured emissions were:

	Production Rate lbs/hr	Emissions lbs/hr
East Dryer	30,000	4.49
West Dryer	34,105	4.18

Average Emissions = 4.34 lbs/hr

Average Production Rate = 32,053 lbs/hr

From Process Weight Diagram (Test Conditions) Solids to Scrubber = 246 lbs/hr

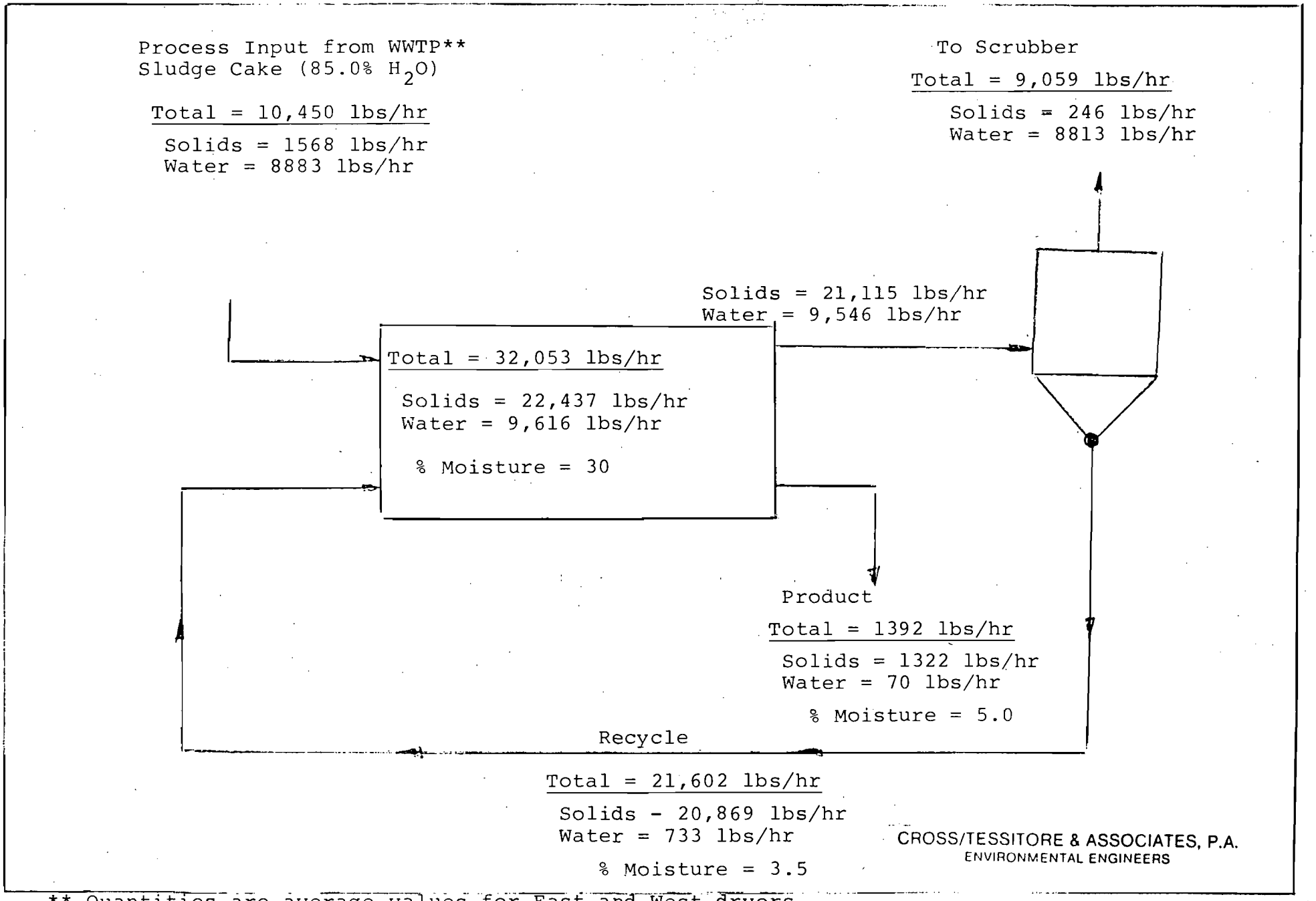
Therefore, Average Scrubber Efficiency (N_c) can be found.

$$N_c = 1 - \frac{(E2)}{(E1)} = 1 - \frac{(4.34)}{(246)} = .982$$

Scrubber Efficiency = 98.2%

*Revised 10/1/82

PROCESS WEIGHT DIAGRAM (TEST CONDITIONS)*



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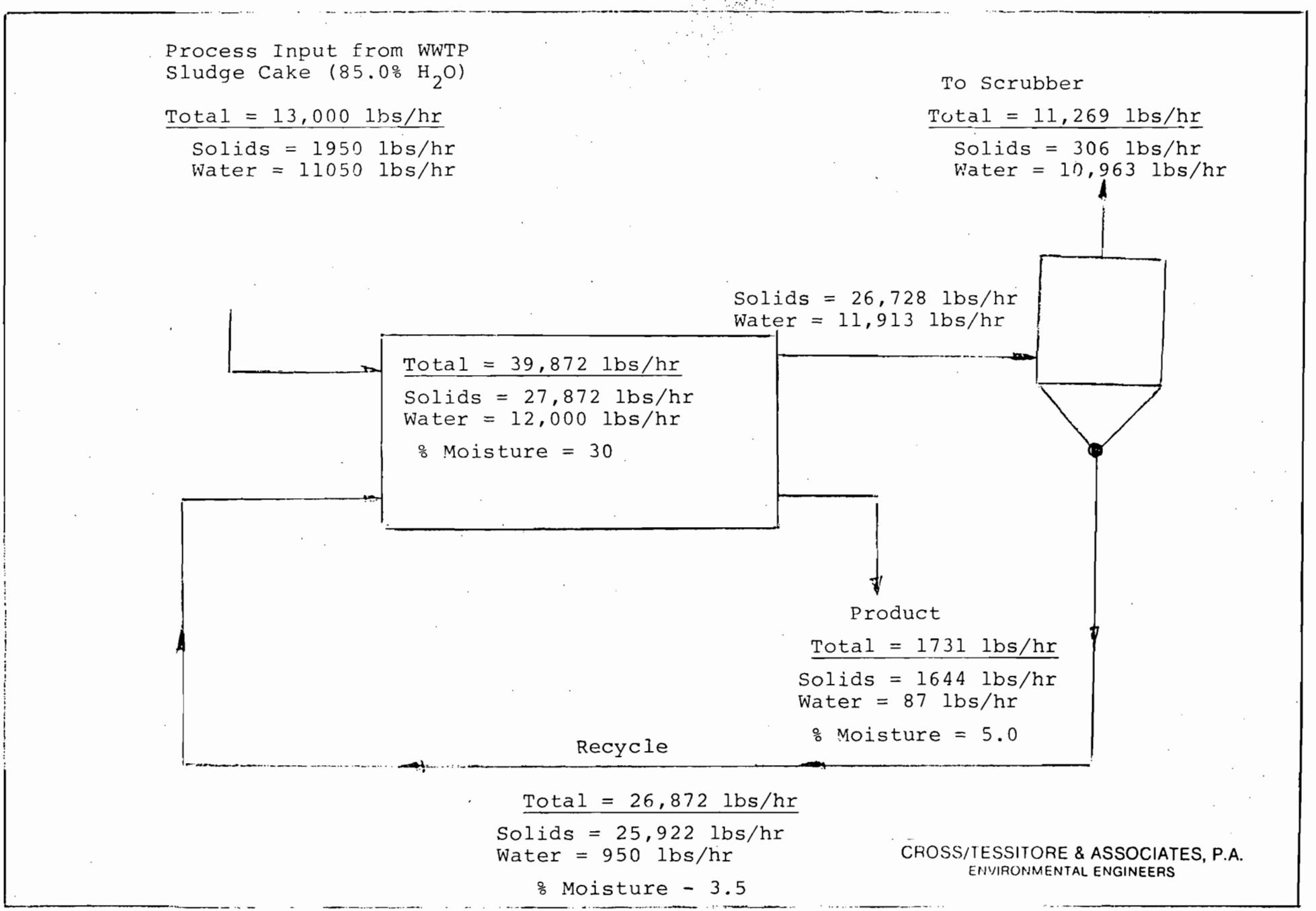
ENVIRONMENTAL ENGINEERS

** Quantities are average values for East and West dryers

*Test Data June 30, 1982

Jul[redacted] 1, 1[redacted]982

PROCESS WEIGHT DIAGRAM (DESIGN CONDITIONS)*



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*Revised 10/1/82

CROSS/TESSITORE & ASSOCIATES, P.A.
1611 E. HILLCREST STREET
ORLANDO, FLORIDA 32803
305/898-6140

October 6, 1982

ENCLOSURES AND INSTRUCTIONS FOR UPDATING
AIR CONSTRUCTION PERMIT APPLICATION FOR
IRON BRIDGE SLUDGE DRYER

Title Page
Replace with enclosed

Application
pp. 1&2, 2a, 3&4, 5&6 - Replace with enclosed

Calculations
Replace Items 1 thru 5 with enclosed

Air Quality
Delete Entire Section

Process Weight
Replace diagram with 2 diagrams enclosed

AIR CONSTRUCTION PERMIT

APPLICATION FOR

IRON BRIDGE SLUDGE DRYER, WEST

Revised

October 1982

Cross/Tessitore & Associates, P.A.
1611 East Hillcrest Street
Orlando, Florida 32806

(305) 898-6140

BEST AVAILABLE COPY

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Sludge Drying Facility [X] New[1] [ ] Existing[1]

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

COMPANY NAME: City of Orlando COUNTY: Seminole

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired). West Line with cyclone + Venturi scrubber + odor contactor

SOURCE LOCATION: Street Iron Bridge City Oviedo

UTM: East 478250 North 3166500

Latitude 28 ° 37 ' 20 "N Longitude 81 ° 13 ' 10 "W

APPLICANT NAME AND TITLE: City of Orlando

APPLICANT ADDRESS: P. O. Box 1418, Oviedo, Florida 32765

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of The City of Orlando (Florida)

I certify that the statements made in this application for a construction 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: [signature]

Robert C. Haven, Director of Public Works
Name and Title (Please Type)

Date: 8/17/82 Telephone No. (305) 849-2266

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 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.

(Affix Seal)

FRANK L. CROSS JR. CERTIFICATE NO. 7916 STATE OF FLORIDA REGISTERED ENGINEER

Signed: [signature]

Frank L. Cross, Jr., P.E.
Name (Please Type)

Cross/Tessitore & Associates, P.A.
Company Name (Please Type)

1611 E. Hillcrest St., Orlando FL 32803
Mailing Address (Please Type)

Florida Registration No. 7916 Date: _____ Telephone No. (305) 898-6140

[1] See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

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

Start of Construction July 1980 Completion of Construction March 1982

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N/A

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F. Normal equipment operating time: hrs/day 16 ; days/wk 7 ; wks/yr 52 ; if power plant, hrs/yr N/A ; if seasonal, describe: N/A

G. 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? N/A
   b. If yes, has "Lowest Achievable Emission Rate" been applied? N/A
   c. If yes, list non-attainment pollutants. N/A
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII. Yes
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

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

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.

This is an air pollution control system to clean the air from a sewage sludge dryer at the Iron Bridge Wastewater Treatment Plant. The system consists of cyclone(s) followed by a Venturi scrubber for particulate removal and a packed column using $KMnO_4$ for odor removal. This project will result in full compliance with the FDER air pollution control regulations.

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

Start of Construction July 1980 Completion of Construction March 1982

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.)

Ducts	$ 25,000.00	
Fan	50,000.00	
Scrubber	250,000.00	Total $350,000.00
Stack	25,000.00	

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

N/A

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? ____ Yes __x__ No

F. Normal equipment operating time: hrs/day 16 ; days/wk 7 ; wks/yr 52 ; if power plant, hrs/yr N/A ;

if seasonal, describe: N/A

G. 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? N/A
   b. If yes, has "Lowest Achievable Emission Rate" been applied? N/A
   c. If yes, list non-attainment pollutants.
      N/A
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII. Yes
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

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

Page 2a

Additional Information

Section II:G.

2. No

3. No

4. No, because this type of source is not on the list of NSPS industries.

5. No--from lead analysis of performance test filter the lead emission values are under NESHAPS, 1200 lbs/yr.

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

A. Raw Materials and Chemicals Used in your Process, if applicable: (Note: this page revised 10/1/82)

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Conditioned Sewage Sludge	particu-lates	15 solids	1950	input to dryer
Recycle	particu-lates	3.5 solids	25,922	input to dryer

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

1. Total Process Input Rate (lbs/hr): 27,872 (solids)

2. Product Weight (lbs/hr): 1731 (see process weight diagram)

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1]		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Vis. Emiss.	--	--	NA	NA	--	--	
Particulates	7.7	22.3	process weight	18.4	306	891.1	Stack
CO	Neg	Neg	NA	NA	Neg	Neg	Emission
Sulfur Diox.	4.7	13.8	NA	NA	4.7	13.8	Sketch
NO_x	2.0	5.9	NA	NA	2.0	5.9	
HC	0.1	0.3	NA	NA	0.1	0.3	

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5]
Cyclone & Scrubber	Particulate	97.5%	3%<3u(into scrubber)	
System	SO_2	0	86%>10u(from dryer)	EPA AP-42

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 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)

[5] If Applicable

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
No. 2 oil	(105 gal/ton)	136.5 gal/hr	18.72
	92 gal/hr		

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: 0.36 Percent Ash: 0.01

Density: 7.162 lbs/gal Typical Percent Nitrogen: 0.012

Heat Capacity: 19,400 BTU/lb 137,158 BTU/gal

Other Fuel Contaminants (which may cause air pollution): N/A

F. If applicable, indicate the percent of fuel used for space heating. Annual Average N/A Maximum

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

Solid waste and liquid wastes go back into the wastewater treatment plant.

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

Stack Height: 54'2" ft. Stack Diameter: 4'3" ft.

Gas Flow Rate: 33,700 ACFM Gas Exit Temperature: 119 °F.

Water Vapor Content: 13.4 % Velocity: 25 FPS

stack test

SECTION IV: INCINERATOR INFORMATION

N/A

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr. Incinerated							

Description of Waste

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

Approximate Number of Hours of Operation per day days/week

Manufacturer

Date Constructed Model No.

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
No. 2 oil	(105 gal/ton)	136.5 gal/hr	18.72
	92 gal/hr		

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

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Heat Capacity: 19,400 BTU/lb 137,158 BTU/gal

Other Fuel Contaminants (which may cause air pollution): N/A

F. If applicable, indicate the percent of fuel used for space heating. Annual Average N/A Maximum

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Water Vapor Content: 13.4 % Velocity: 25 FPS

stack test

SECTION IV: INCINERATOR INFORMATION

N/A

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr Incinerated							

Description of Waste

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

Approximate Number of Hours of Operation per day days/week

Manufacturer

Date Constructed Model No.

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

Stack Height: _____ ft. Stack Diameter _____ 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.):

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight – show derivation.
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, 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 8½" 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 8½" 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 8½" 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. An application fee of $20, unless exempted by Section 17-4.05(3), F.A.C. 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

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
[ ] Yes [X] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) [X] Yes [ ] No

Contaminant	Rate or Concentration

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

Contaminant	Rate or Concentration
Particulates	7.7 lbs/hr
SO_x	4.7
NO_x	2.0
CO	Neg
HC	0.1

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

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:
5. Useful Life:
6. Operating Costs:
7. Energy:
8. Maintenance Cost:
9. Emissions:

Contaminant	Rate or Concentration

*Explain method of determining D 3 above. *Fee of $1,000.00 enclosed based on potential emissions of 1994 lbs/hr

9. An application fee of $20, unless exempted by Section 17-4.05(3), F.A.C. The check should be made payable to the Department of Environmental Regulation.

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SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
[ ] Yes [X] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) [X] Yes [ ] No

Contaminant	Rate or Concentration

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

Contaminant	Rate or Concentration
Particulates	7.7 lbs/hr
SO_x	4.7
NO_x	2.0
CO	Neg
HC	0.1

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

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:
5. Useful Life:
6. Operating Costs:
7. Energy:
8. Maintenance Cost:
9. Emissions:

Contaminant	Rate or Concentration

*Explain method of determining D 3 above. *Fee of $1,000.00 enclosed based on potential emissions of 1994 lbs/hr

CROSS/TESSITORE AND ASSOCIATES
Enviromental and Energy Engineers
1611 Hillcrest Street
Orlando, Florida 32803
(305) 857-0926

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Item 1) - Total Process Input Rate and Product Weight*

Sludge Cake from WWTP = 13,000 lbs/hr

Solids = 1950 lbs/hr

H_2O = 11,050 lbs/hr

Recycle = 26,872 lbs/hr

Solids = 25,972 lbs/hr

H_2O = 950 lbs/hr

Total Solids Input to Sludge Dryer = 27,872 lbs/hr

= 13.95 T/hr

(See Process Weigh Diagram, Design Conditions)

Allowable Particulate Emissions

$$= 3.59\ (13.94)^{0.62} = 18.38 \text{ lbs/hr}$$

*Revised 10/1/82

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Orlando, Florida 32803
(305) 857-0926

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Item 2) Controlled Emission Estimate*

Pollutant	Uncontrolled Emissions (T/yr)	Control Efficiency	Controlled Emissions (T/yr)
Particulate	891.1	0.975	22.3 **
SO_2	13.8	0	13.8
NO_X	5.9	0	5.9
HC	0.3	0	0.3

** Test data shows scrubber control efficiency of 98.2%; however, solids input to the scrubber may vary, based on sludge feed. To allow for input uncertainty, design emissions will be based on 97.5% control efficiency.

$E = 306 (1 - 0.975) = 7.65$ lbs/hr

Annual Design Emissions = 22.3 T/yr

* Revised 10/1/82

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1611 Hillcrest Street
Orlando, Florida 32803
(305) 857-0926

JOB _____

SHEET NO. _____ OF _____

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SCALE _____

Item 3) Potential Emissions*

a) Particulate

From mass flow balance on Process Weight Diagram (Design Contitions)

Uncontrolled Solids = 306 lbs/hr

$$\text{Annual Emissions} = (306)\ \frac{\text{lbs}}{\text{hr}} \times (16)\ \frac{\text{hrs}}{\text{day}} \times (7)\ \frac{\text{days}}{\text{wk}}$$

$$\times (52)\ \frac{\text{wks}}{\text{yr}} \times \left(\frac{1}{2000}\right)\ \frac{\text{T}}{\text{lbs}} = \frac{891.1}{}\ \text{T/yr}$$

b) Sulfur Dioxide

From fuel analysis, %S = 0.36

Fuel consumption = 92 gal/hr

$$\text{Annual Emissions} = (92)\ \frac{\text{gal}}{\text{hr}} \times (7.162)\ \text{lbs/hr}$$

$$\times (2) \times (0.0036) \times (16)\ \text{hrs/day}$$

$$\times (7)\ \text{days/wk} \times (52)\ \frac{\text{wks}}{\text{yr}} \times \left(\frac{1}{2000}\right)\ \text{T/lbs} = 13.8\ \text{T/yr}$$

c) Nitrogen Oxides

From AP-Y2, Table 1.3-1, Distillate Oil (Industrial/Commercial)

$$NO_2 = 22\ \text{lbs}/10^3\ \text{gal}$$

$$\text{Annual Emission} = (92)\ \text{gal/hr} \times (16)\ \text{hrs/day}$$

$$\times (7)\ \frac{\text{days}}{\text{wk}} \times (52)\ \frac{\text{wks}}{\text{yr}} \times \left(\frac{22}{1000}\right)\ \text{lbs/gal}$$

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SCALE _____

Item 3) c) Continued

$$x \left(\frac{1}{2000}\right) \frac{T}{lbs} = 5.89 \text{ T/yr}$$

d) HC

From AP-42, Table 1.3-1, Distillate Oil (Industrial/Commercial)

$$HC = 1 \text{ lbs}/10^3 \text{ gal}$$

Annual Emission = (92) gal/hr x (16) hrs/day

$$x\ (7)\ \frac{\text{days}}{\text{wk}} \times (52)\ \frac{\text{wks}}{\text{yr}} \times \left(\frac{1}{1000}\right) \text{lbs/gal}$$

$$x \left(\frac{1}{2000}\right) \frac{T}{lbs} = 0.27 \text{ T/yr}$$

*Revised 10/1/82

CROSS/TESSITORE AND ASSOCIATES
Enviromental and Energy Engineers
1611 Hillcrest Street
Orlando, Florida 32803
(305) 857-0926

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Item 4) Design Details of Air Pollution Control System

See Section "Air Pollution Control System Description"

Item 5) Derivation of Control System Efficiency *

From attached test report (July 21, 1982) measured emissions were:

	Production Rate lbs/hr	Emissions lbs/hr
East Dryer	30,000	4.49
West Dryer	34,105	4.18

Average Emissions = 4.34 lbs/hr

Average Production Rate = 32,053 lbs/hr

From Process Weight Diagram (Test Conditions) Solids to Scrubber = 246 lbs/hr

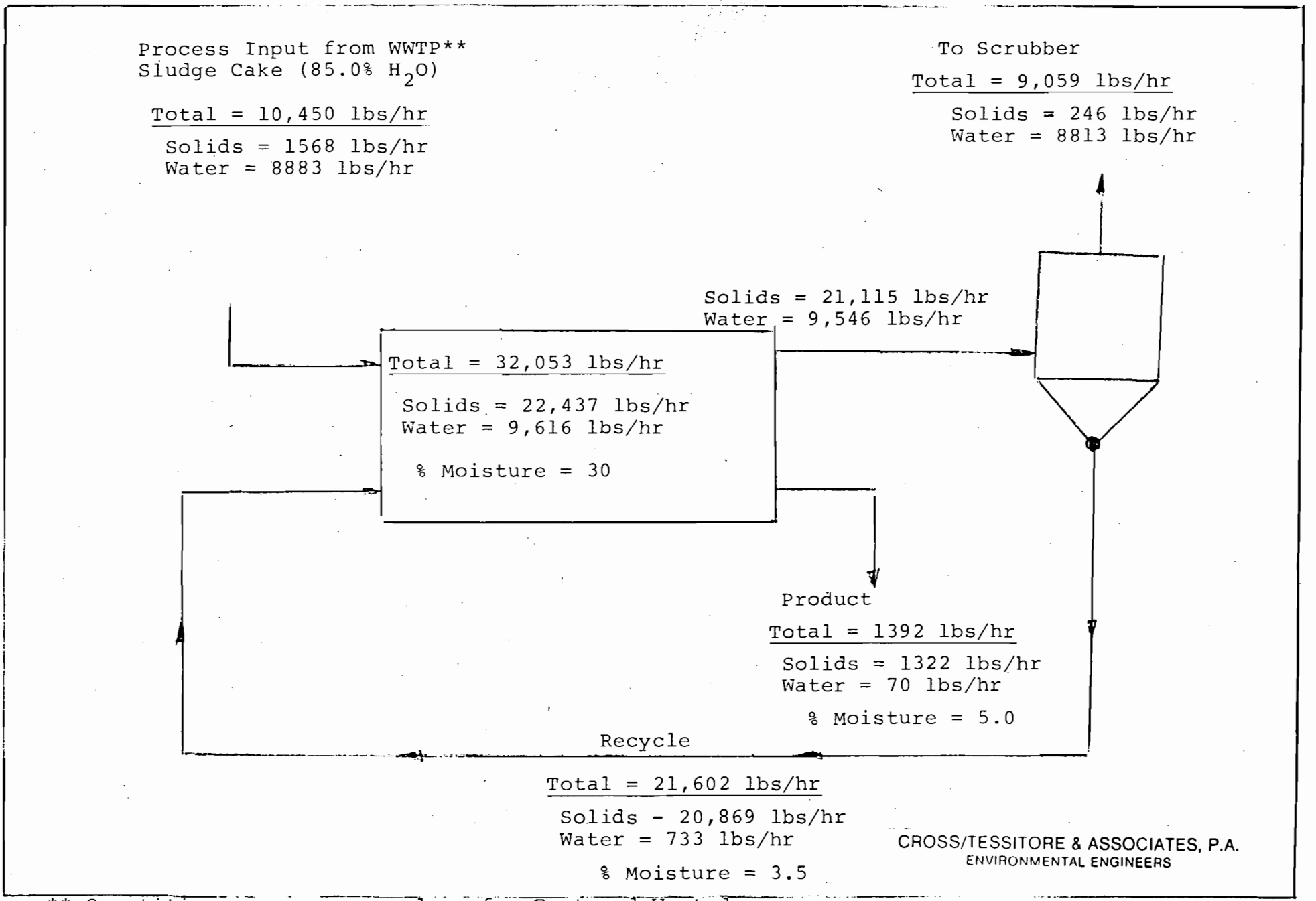
Therefore, Average Scrubber Efficiency (N_c) can be found.

$$N_c = 1 - \frac{(E2)}{(E1)} = 1 - \frac{(4.34)}{(246)} = .982$$

Scrubber Efficiency = 98.2%

*Revised 10/1/82

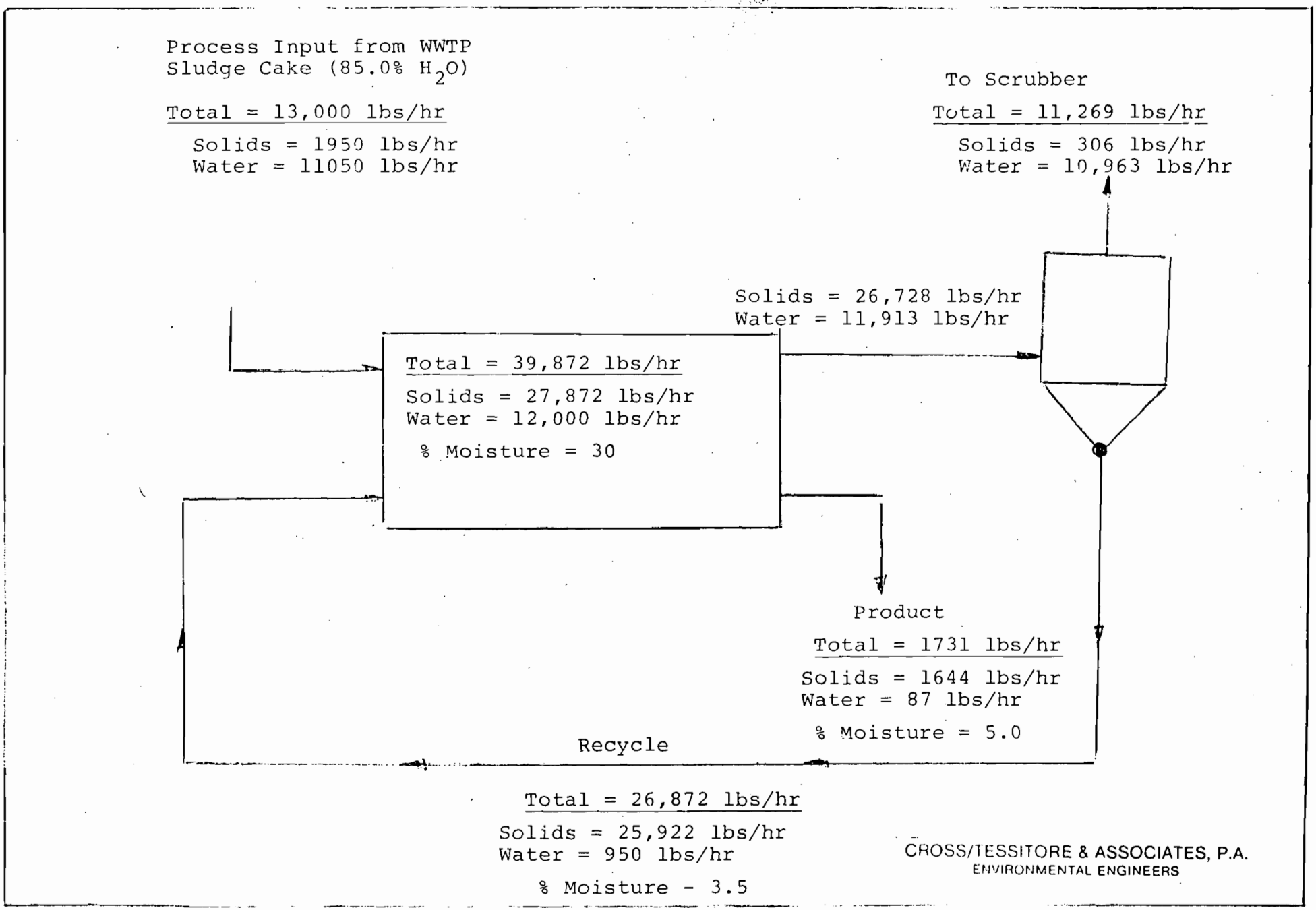
PROCESS WEIGHT DIAGRAM (TEST CONDITIONS)*



** Quantities are average values for East and West dryers

*Test Data June 30, 1982
July [illegible], 1982

PROCESS WEIGHT DIAGRAM (DESIGN CONDITIONS)*



CROSS/TESSITORE & ASSOCIATES, P.A.
ENVIRONMENTAL ENGINEERS

*Revised 10/1/82

PM
9-24-82
Orlando, FL

CROSS/TESSITORE & ASSOCIATES, P.A.
1611 E. HILLCREST STREET
ORLANDO, FLORIDA 32803
305/898-6140

September 23, 1982

DER
SEP 27 1982
BAQM

Mr. C. H. Fancy, P.E.
Deputy Bureau Chief
Bureau of Air Quality Mgmt.
FL Dept. of Env. Reg.
Twin Towers Office Bldg.
2600 Blair Stone Rd.
Tallahssee, FL 32301

Ref: Iron Bridge WWTP Applications AC5959312 and 3

Dear Mr. Fancy:

Reference is made to your letter of 9/17/82 concerning the two air permit applications submitted by the City of Orlando.

In response to your letter, we are providing some additional information and comments.

Application

Section II. G Page 2a

As per information received, your facility is a major facility (250 TPY NO_x emission). Because of this, your facility is subject to preconstruction review under state and federal Prevention of Significant Deterioration (PSD) regulations. Therefore, an application for a federal permit should be submitted to this office. Please refer to Chapter 17-2.500, F.A.C. and 40 CFR 52.21.

Response:

CTA is discussing the preparation of a federal PSD application with our client - Dawkins and Associates and the City of Orlando - at the present time, and will respond to you in this regard in the near future. It was our understanding in talking to Mr. Collins and Mr. Thomas that FDER was taking over the EPA PSD permitting and that a separate application would not be required.

Section III.C.

What is your estimate of mercury emissions (grams Hg per 24-hr. period) from each sludge dryer? Please refer to National Emission Standard for Hazardous Air Pollutants (NESHAPS) 40 cfr 61.50.

Response:

No mercury (Hg) samples have been collected at the plant. The city is now running Hg analysis on samples from the system and we hope to be able to make a material balance to estimate the stack emissions. We will forward this information as it becomes available.

Calculations

Item 2

There is a discrepancy in the particulate matter emission data Item 2. Controlled Emissions Table (58.1 Tons/year) and Section III. C. (174 Tons/year). which emission rate are you proposing as the actual emission?

Response:

The number of 174 TPY is an error on our part in Section III.C., and should have been 25.04 tpy.

Item 3

It appears that AP-42 emission factors, Table 2.5.1, were not used in terms of dry sludge feed. Since the major source category is determined by the amount of emissions, new material balance calculations should be done either using an appropriate emission factor for a dryer, or justifying the applicability of the incinerator emissions factor as used in the original calculations.

Response:

The emission factor should be 0.6 lbs/ton (dry basis) based upon recent preliminary performance tests on the system. (See process sheet for test day and derivation of emission factor).

Air Quality

The air quality analysis is inadequate. If, after recalculations of emissions, your facility still remains a major facility for any pollutant, an air quality analysis consistent with the requirements of Chapter 17-2.500(5), F.A.C., should be performed for each pollutant emitted in a significant amount. Any air quality modeling should be performed in accordance with Chapter 17-2.260, F.A.C.

We also want to point out that total emissions from the facility will be the sum of the emissions from each source (East and West Lines).

Response:

We were under the impression the limited analysis that we submitted would be sufficient. Before proceeding with the analysis requested, we are suggesting a meeting with FDER to clarify exactly what will be required, so that we can advise our client more fully with what will be required.

We will certainly consider the total emissions from the facility (sum of the two sources) in any future air quality analysis.

Please let us know how you would like to proceed with the air quality analysis discussions.

Sincerely,

Frank L. Cross, Jr., P.E.
President

FLC/kad

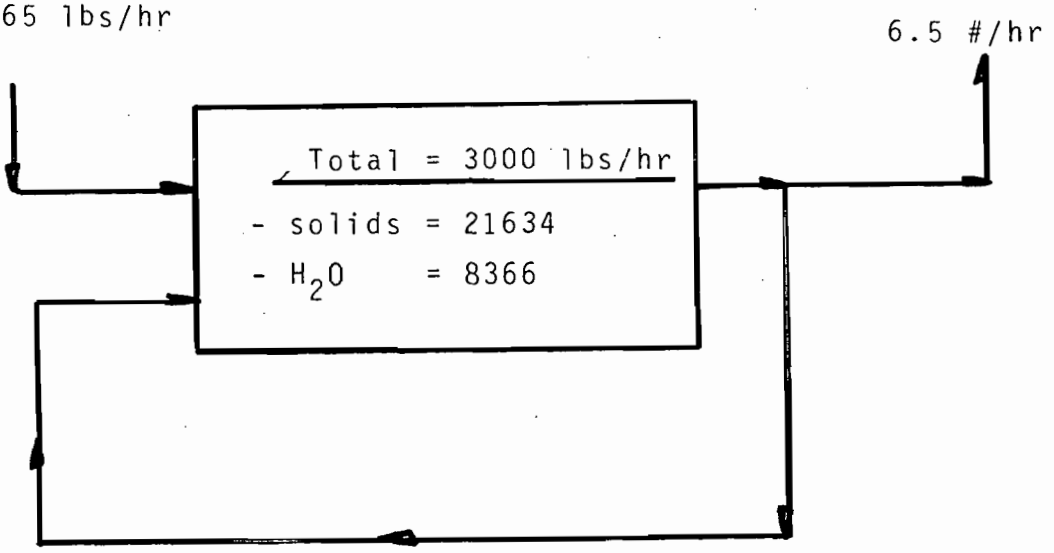
cc: Robert Haven
City of Orlando

Bob Smedley
Dawkins & Associates

Data from Prelinimary Stack Tests for Equipment Evaluation (7/82)

Total = 8312 lbs/hr
- solids = 1247 lbs/hr
- H_2O = 7065 lbs/hr

(15%)



Total = 21,688 lbs/hr
- solids = 20,387 lbs/hr
- H_2O = 1,301 lbs/hr

Process Operating Conditions During Test

$$\therefore \text{emission factor} = \frac{6.5 \text{ \#/hr emission}}{21{,}634 \text{ \#/hr dry/solids}}$$

$$EF = \frac{6.5 \times 2000}{21{,}634} = 0.6 \text{ lbs/ton (dry basis)}$$

Revised Calculation and Data Sheets

Note:
Results are representative of both
East and West stacks

Revised Calculations 9/21/82

Cross/Tessitore & Associates

ITEM 1 Total Process Input Rate and Product Weight

Sludge cake = 11,048 lb/hr @ 14.88% dry solids

Recycle = 28,824 lb/hr @ 93.99% dry solids

Sludge Dryer Feed = 28,751 lb/hr = 14.37 T/hr on dry basis

(See Process Weight Flow Diagram)

ITEM 3 Potential Emissions (uncontrolled)

AP-42 Table 2.5-1 "Emission Factors for Sewage Sludge Incinerators"

Pollutant	Uncontrolled Emissions Factor (lb/ton)
Particulate	100
CO	Negligible
NO_x	6
HC	1.5

Potential Emission Calculations

Sludge Feed Rate = 19.94 T/hr

Particulate Emissions = $(100) \times (19.94) \times (1b) \frac{hrs}{day} \times (7) \frac{days}{wk} \times (52) \frac{wks}{yr} \times (\frac{1}{2000}) \frac{T}{lbs}$

= 5806.5 T/yr

SO_2 From fuel analysis %S = 0.36%

Emissions = $(92) \frac{gal}{hr} \times (7.16) \frac{lb}{gal} \times (0.0036) \times 2 \times (16) \frac{hrs}{day} \times (7) \frac{days}{wk} \times (52) \frac{wks}{yr} \times (\frac{1}{2000}) \frac{T}{lbs}$ = 13.8 T/yr

$\underline{NO_x}$ Emissions = (6) $\frac{lbs}{T}$ x (19.94) $\frac{T}{hr}$ x (16) $\frac{hrs}{day}$

x (7) $\frac{days}{week}$ x (52) $\frac{weeks}{yr}$ x $(\frac{1}{2000})$ $\frac{T}{lbs}$

= 348.4 T/yr

$\underline{HC}$ Emissions = (1.5) $\frac{lbs}{T}$ x (19.94) $\frac{T}{hr}$ x (16) $\frac{hrs}{day}$

x (7) $\frac{days}{wk}$ x (52) $\frac{wks}{yr}$ x $(\frac{1}{2000})$ $\frac{T}{lbs}$

= 87.1 T/yr

ITEM 2 Controlled Emissions

Control System = Cyclone and Venturi Scrubber

Based on data from preliminary stack test (see attached data), a particulate emission factor of 0.6 lbs per ton of dry feed was used.

Therefore:

Particulate Emissions = (0.6) $\frac{lbs}{ton}$ x (14.37) $\frac{T}{hr}$ = 8.6 $\frac{lbs}{hr}$

Annual Emissions = (8.6) $\frac{lbs}{hr}$ x (16) $\frac{hrs}{day}$ x (7) $\frac{days}{wk}$

x (52) $\frac{wks}{yr}$ $(\frac{1}{2000})$ $\frac{tons}{lbs}$ = 25.04 $\frac{T}{yr}$

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

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

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Conditioned Sewage Sludge	particulates	14% solids	39,872 (28,571) Dry basis	input to dryer

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

1. Total Process Input Rate (lbs/hr): 39,872 (28,571 Dry Basis)

2. Product Weight (lbs/hr): 1,731 (see process weight diagram)

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1]		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Visible Emissions	--	--	N/A	N/A	--	--	
Particulates	20	25	process weight	18.2	1994	5806	Stack
CO	Neg	Neg	N/A	N/A	Neg	Neg	Emission
Sulfur Dioxide	3	14	N/A	N/A	3	14	Sketch
NO_x	120	348	N/A	N/A	120	348	
HC	30	87	N/A	N/A	30	87	

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5])
Cyclone & Scrubber System	Particulate	> 99%	3%<3μ (into scrubber)	*
	SO_2	zero	86%>10μ (from dryer)	EPA AP-42

*Assumes 99% from air pollution control system manufacturer.

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 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)

[5] If Applicable

PS Form 3811, Jan. 1979

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

SENDER: Complete items 1, 2, and 3. Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
   - XX ☐ Show to whom and date delivered..... ¢
   - ☐ Show to whom, date and address of delivery.... ¢
   - ☐ RESTRICTED DELIVERY
     Show to whom and date delivered..... ¢
   - ☐ RESTRICTED DELIVERY.
     Show to whom, date, and address of delivery.$

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:

Mr. Robert C. Haven
P. O. Box 1418
Oviedo, FL 32765

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	7682421	

(Always obtain signature of addressee or agent)

I have received the article described above.

SIGNATURE ☐Addressee ☐Authorized agent

Linda Lackey

4. DATE OF DELIVERY — POSTMARK: OVIEDO, FL SEP 21 1982

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: — CLERK'S INITIALS

☆GPO : 1979-300-459

P16 7682421

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
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SENT TO
Robert C. Haven
STREET AND NO.
P. O. Box 1418
P.O., STATE AND ZIP CODE
Oviedo, FL 32765

POSTAGE		$
CERTIFIED FEE		¢
SPECIAL DELIVERY		¢
RESTRICTED DELIVERY		¢
OPTIONAL SERVICES — RETURN RECEIPT SERVICE — SHOW TO WHOM AND DATE DELIVERED		¢
SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY		¢
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TOTAL POSTAGE AND FEES		$

CONSULT POSTMASTER FOR FEES

POSTMARK OR DATE

9/17/82

PS Form 3800, Apr. 1976

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

September 17, 1982

Mr. Robert C. Haven, Director of Public Works
City of Orlando
P. O. Box 1418
Oviedo, Florida 32765

Dear Mr. Haven:

Re: Air Construction Permit Applications AC 59-59312 and AC 59-59313

The Department has received your applications for permits (2) to construct two sludge dryers, each with a cyclone followed by a Venturi scrubber for particulate removal and a packed column using $KMnO_4$ for odor removal, at the Iron Bridge Wastewater Treatment Plant in Seminole County, Florida. Based on our initial review of your proposal, it has been determined that additional information is needed before we can process the application. The information required to complete the application is listed below:

Application

Section II. G. Page 2a

As per information received, your facility is a major facility (250 TPY NO_x emission). Because of this, your facility is subject to preconstruction review under state and federal Prevention of Significant Deterioration (PSD) regulations. Therefore, an application for a federal permit should be submitted to this office. Please refer to Chapter 17-2.500, F.A.C. and 40 CFR 52.21.

Section III. C.

What is your estimate of mercury emissions (grams Hg per 24-hr. period) from each sludge dryer? Please refer to National Emission Standard for Hazardous Air Pollutants (NESHAPS) 40 CFR 61.50.

Calculations

Item 2

There is a discrepancy in the particulate matter emission data Item 2. Controlled Emissions Table (58.1 Tons/year) and Section III. C. (174 Tons/year). Which emission rate are you proposing as the actual emission?

Item 3

It appears that AP-42 emission factors, Table 2.5.1., were not used in terms of dry sludge feed. Since the major source category is determined by the amount of emissions, new material balance calculations should be done either using an appropriate emission factor for a dryer, or justifying the applicability of the incinerator emissions factor as used in the original calculations.

Air Quality

The air quality analysis is inadequate. If, after recalculations of emissions, your facility still remains a major facility for any pollutant, an air quality analysis consistent with the requirements of Chapter 17-2.500(5), F.A.C., should be performed for each pollutant emitted in a significant amount. Any air quality modeling should be performed in accordance with Chapter 17-2.260, F.A.C.

We also want to point out that total emissions from the facility will be the sum of the emissions from each source (East and West Lines).

As soon as the requested information is received, we will begin processing your applications. If you have any questions on the data requested, please contact this office, (904)488-1344. Cleve Holladay should be contacted on any questions related to modeling and Teresa Heron on the other data requested.

Sincerely,

C. H. Fancy, P.E.
Deputy Bureau Chief
Bureau of Air Quality
Management

CHF/TH/bjm

City of Orlando
Iron Bridge WWTP

4/25 meeting

Frank Cross	(CTA) City of Orlando
Nancy Gray	CTA (CTS) City of Orlando
John Geordano	Ecological Services Products Inc.
Richard Kruse	Ann Arbor Science (ESP)
Heron Terrell	DER/BAQM
Bill Thomas	DER/BAQM
[signature]	" "
Ed Palagyi	" "
Tom Rogers	" "

CROSS/TESSITORE & ASSOCIATES, P.A.
1611 E. HILLCREST STREET
ORLANDO, FLORIDA 32803
305/898-6140

August 20, 1982

Mr. Charles Collins, P.E.
Air & Solid Waste
FDER - St. Johns River District
3319 Maguire Blvd., Suite 232
Orlando, FL 32803

Dear Mr. Collins:

Enclosed are two sets of air pollution control construction permit applications (3 copies per set), plus two, one thousand dollar checks.

These applications are for the air pollution control systems serving the East and West lines for the Iron Bridge Wastewater Treatment sludge drying systems.

These systems are already in operation, as we discussed, and our intent is to get the construction and the operating permits processed as quickly as possible.

Please address any questions or requests for additional information to either my or Mr. Tessitore's attention.

Thank you for your cooperation in this matter.

Sincerely,

Frank L. Cross, Jr., P.E.
President

FLC/kad
Enc.a/s

cc: Bob Smedley

AIR CONSTRUCTION PERMIT APPLICATION FOR IRON BRIDGE SLUDGE DRYER, EAST

July 26, 1982

CROSS/TESSITORE & ASSOCIATES, P.A.

REGISTERED PROFESSIONAL ENGINEERS

ENVIRONMENTAL ENGINEERS

1611 E. HILLCREST STREET
ORLANDO, FLORIDA 32803
305/898-6140

PERMIT APPLICATION

PAID 1000. AUG 20 1982 DER

SAINT JOHNS RIVER DISTRICT

AUG 25 1982

BAQM

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

RECEIVED AUG 20 1982 SAINT JOHNS RIVER DISTRICT

SOURCE TYPE: Sludge Drying Facility [X] New[1] [ ] Existing[1]

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

COMPANY NAME: City of Orlando COUNTY: Seminole

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) East Line with cyclone + Venturi scrubber + odor contactor

SOURCE LOCATION: Street Iron Bridge City Oviedo

UTM: East 478250 North 3166500

Latitude 28 ° 37 ' 20 "N Longitude 81 ° 13 ' 10 "W

APPLICANT NAME AND TITLE: City of Orlando

APPLICANT ADDRESS: P. O. Box 1418, Oviedo, Florida 32765

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of ~~The City of Orlando (Florida)~~

I certify that the statements made in this application for a construction 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: [signature]

Robert C. Haven, Director of Public Works
Name and Title (Please Type)

Date: 8/17/82 Telephone No. (305) 849-2266

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 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.

(Affix Seal)

FRANK L. CROSS, JR. CERTIFICATE No. 7916 STATE OF FLORIDA REGISTERED PROFESSIONAL ENGINEER

Signed: [signature]

Frank L. Cross, Jr., P.E.
Name (Please Type)

Cross/Tessitore & Associates, P.A.
Company Name (Please Type)

1611 E. Hillcrest St., Orlando FL 32803
Mailing Address (Please Type)

Florida Registration No. 7916 Date: _____ Telephone No. (305) 898-6140

[1]See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

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.

This is an air pollution control system to clean the air from a sewage sludge dryer at the Iron Bridge Wastewater Treatment Plant. The system consists of cyclone(s) followed by a Venturi scrubber for particulate removal and a packed column using $KMnO_4$ for odor removal. This project will result in full compliance with the FDER air pollution control regulations.

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

Start of Construction July 1980 Completion of Construction March 1982

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.)

Ducts	$ 25,000.00	
Fan	50,000.00	
Scrubber	250,000.00	Total $350,000.00
Stack	25,000.00	

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

N/A

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? ____ Yes __x__ No

F. Normal equipment operating time: hrs/day 16 ; days/wk 7 ; wks/yr 52 ; if power plant, hrs/yr N/A ;

if seasonal, describe: N/A

G. 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? N/A
   b. If yes, has "Lowest Achievable Emission Rate" been applied? N/A
   c. If yes, list non-attainment pollutants.
      N/A
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII. Yes
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

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

Additional Information

Section II:G.

2. Yes, because it is a new major source in an attainment area.

3. Yes, because it is a new source with the potential for emitting over 250 TPY of pollutants (NO_x).

4. No, because this type of source is not on the list of NSPS industries.

5. No--from lead analysis of performance test filter the lead emission values are under NESHAPS, 1200 lbs/yr.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

Nº 65127

RECEIPT FOR APPLICATION FEES AND MISCELLANEOUS REVENUE

Received from City Of Orlando Date Aug 20, 1982

Address PO Box 1418, Orlando 32765 Dollars $ 1,000.00

Applicant Name & Address Same

Source of Revenue E. line w/cyclone & scrubber

Revenue Code 0101 Ck# 102370 Application Number AC59-59313

By Judy Cerelin

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

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

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Conditioned Sewage Sludge	particulates	14% solids	39,872	input to dryer

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

1. Total Process Input Rate (lbs/hr): 39,872

2. Product Weight (lbs/hr): 1,731 (see process weight diagram)

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1]		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Visible Emissions	--	--	N/A	N/A	--	--	
Particulates	20	174	process weight	22.95	1994	5806	Stack
CO	Neg	Neg	N/A	N/A	Neg	Neg	Emission
Sulfur Dioxide	3	14	N/A	N/A	3	14	Sketch
NO_x	120	348	N/A	N/A	120	348	
HC	30	87	N/A	N/A	30	87	

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5])
Cyclone & Scrubber	Particulate	99%	3%<3μ (into scrubber)	*
System	SO_2	zero	86%>10μ(from dryer)	EPA AP-42

*Assumes 99% from air pollution control system manufacturer.

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 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)

[5] If Applicable

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
No. 2 oil	(105 gal/ton)	136.5 gal/hr	18.72
	92 gal/hr		

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: 0.36 Percent Ash: 0.01

Density: 7.162 lbs/gal Typical Percent Nitrogen: 0.012

Heat Capacity: 19,400 BTU/lb 137,158 BTU/gal

Other Fuel Contaminants (which may cause air pollution): N/A

F. If applicable, indicate the percent of fuel used for space heating. Annual Average N/A Maximum

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

Solid waste and liquid wastes go back into the wastewater treatment plant.

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

Stack Height: 54'2" ft. Stack Diameter: 4'3" ft.

Gas Flow Rate: 33,700 ACFM Gas Exit Temperature: 119 °F.

Water Vapor Content: 13.4 % Velocity: 25 FPS

stack test

SECTION IV: INCINERATOR INFORMATION

N/A

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.)
Lbs/hr Incinerated							

Description of Waste

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

Approximate Number of Hours of Operation per day days/week

Manufacturer

Date Constructed Model No.

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

Stack Height: _____ ft. Stack Diameter _____ 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.):

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight – show derivation.
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, 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 8½" 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 8½" 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 8½" 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. An application fee of $20, unless exempted by Section 17-4.05(3), F.A.C. 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

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
[ ] Yes [X] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) [ ] Yes [X] No

Contaminant	Rate or Concentration

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

Contaminant	Rate or Concentration
Particulates	20 lbs/hr
SO_x	3
NO_x	120
CO	Neg
HC	30

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

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:
5. Useful Life:
6. Operating Costs:
7. Energy:
8. Maintenance Cost:
9. Emissions:

Contaminant	Rate or Concentration

*Explain method of determining D 3 above.

*Fee of $1,000.00 enclosed based on potential emissions of 1994 lbs/hr

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: Venturi scrubber followed by contact chamber

b. Operating Principles: Impaction in Venturi for particulates followed by chemical absorption in contact chamber for odors.

c. Efficiency*: 99% d. Capital Cost: $350,000.00

e. Useful Life: 10 years f. Operating Cost: $20,000.00/yr

g. Energy*: 40 KWH h. Maintenance Cost: $1,500.00/yr

i. Availability of construction materials and process chemicals:
Readily available.

j. Applicability to manufacturing processes: Compatible with sludge drying and wwtp practices.

k. Ability to construct with control device, install in available space, and operate within proposed levels:
No problems anticipated.

2.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy**: h. Maintenance Costs:

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:

*Explain method of determining efficiency.

**Energy to be reported in units of electrical power – KWH design rate.

3.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Life: f. Operating Cost:

g. Energy: h. Maintenance Cost:

*Explain method of determining efficiency above.

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*:

d. Capital Cost:

e. Life:

f. Operating Cost:

g. Energy:

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: Venturi scrubber with contact chamber
2. Efficiency*: 99%
3. Capital Cost: $350,000.00
4. Life: 10 years
5. Operating Cost: $20,000.00
6. Energy: 40 KWH
7. Maintenance Cost: $1,500.00
8. Manufacturer: Ducon
9. Other locations where employed on similar processes:

a.

(1) Company: City of Largo, Florida - WWTP

(2) Mailing Address: City Hall

(3) City: Largo (4) State: Florida

(5) Environmental Manager: Larry Bragg

(6) Telephone No.: 813/584-8671 Ext. 207

*Explain method of determining efficiency above.

(7) Emissions*:

Contaminant	Rate or Concentration
Particulates	efficiency 99%

(8) Process Rate*: 23084 lbs/hr

b.

(1) Company: ESP (Contractor)(Polycon scrubber)

(2) Mailing Address: P.O. Drawer 1137

(3) City: Dunedin (4) State: Florida 33528

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

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

10. Reason for selection and description of systems:

The system is designed to control particulates and odors. The Venturi scrubber could be replaced with a baghouse or electrostatic precipitator for particulate removal efficiency but neither unit is compatible with the dryer because of problems with resistivity moisture and temperature. Also, the odor control system (contact chamber) could be substituted with an incinerator, but it is too energy intensive.

*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

A. Company Monitored Data

1. FDER no sites 1 TSP 1 ( ) SO^{2*} 1 Wind spd/dir

Period of monitoring ___/___/___ to ___/___/___
month day year month day year

Other data recorded N/A

Attach all data or statistical summaries to this application.

2. Instrumentation, Field and Laboratory

a) Was instrumentation EPA referenced or its equivalent? X 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 ___/___/___ Default conditions
month day year month day year

2. Surface data obtained from (location) N/A

3. Upper air (mixing height) data obtained from (location) N/A

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

C. Computer Models Used

1. PTMTP 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.
Copy of computer run attached.

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 on point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time. Only one source.

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

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

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.

This system is to recover and sell a waste product (sewage sludge).
The potential air pollution impact on the community is odor and this is being controlled by a chemical contact chamber.

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.

CALCULATIONS

ITEM 1 Total Process Input Rate and Product Weight

Sludge cake = 11,048 lb/hr @ 14.88% dry solids

Recycle = 28,824 lb/hr

Sludge Dryer Feed = 39,874 lb/hr = 19.94 T/hr

(See Process Weight Flow Diagram)

ITEM 3 Potential Emissions (uncontrolled)

AP-42 Table 2.5-1 "Emission Factors for Sewage Sludge Incinerators"

Pollutant	Uncontrolled Emissions Factor (lb/ton)
Particulate	100
CO	Negligible
NO_x	6
HC	1.5

Potential Emission Calculations

Sludge Feed Rate = 19.94 T/hr

Particulate Emissions = $(100) \times (19.94) \times (1b) \frac{hrs}{day} \times (7) \frac{days}{wk} \times (52) \frac{wks}{yr} \times (\frac{1}{2000}) \frac{T}{lbs}$

= 5806.5 T/yr

SO_2 From fuel analysis %S = 0.36%

Emissions = $(92) \frac{gal}{hr} \times (7.16) \frac{lb}{gal} \times (0.0036) \times 2 \times (16) \frac{hrs}{day} \times (7) \frac{days}{wk} \times (52) \frac{wks}{yr} \times (\frac{1}{2000}) \frac{T}{lbs}$ = 13.8 T/yr

$\underline{NO_x}$ Emissions = (6) $\frac{lbs}{T}$ x (19.94) $\frac{T}{hr}$ x (16) $\frac{hrs}{day}$

x (7) $\frac{days}{week}$ x (52) $\frac{weeks}{yr}$ x $(\frac{1}{2000})$ $\frac{T}{lbs}$

= 348.4 T/yr

$\underline{HC}$ Emissions = (1.5) $\frac{lbs}{T}$ x (19.94) $\frac{T}{hr}$ x (16) $\frac{hrs}{day}$

x (7) $\frac{days}{wk}$ x (52) $\frac{wks}{yr}$ x $(\frac{1}{2000})$ $\frac{T}{lbs}$

= 87.1 T/yr

ITEM 2 Controlled Emissions

Control System = Cyclone and Venturri Scrubber

Particulate Control Efficiency is estimated at approximately 99%

Pollutant	Uncontrolled Emissions (t/yr)	Control Efficiency (%)	Controlled Emission (t/yr)
Particulate	5806.5	0.99	58.1
SO_2	13.8	0.00	13.8
NO_x	348.4	0.00	348.4
CO	Negligible	0.00	Negligible
HC	87.1	0.00	87.1

ITEM 4 See attached Air Pollution Control System Design Data

ITEM 5 Control Efficiency Derivation

Based on manufacturers data, a particulate control efficiency of 99% was assumed.

AIR QUALITY ANALYSIS

Iron Bridge Sludge Dryer Air Quality Impact

Maximum Particulate Emissions = 20 lbs/hr

Maximum NO_x Emissions = 120 lbs/hr

Maximum Ground Level Impact*

Pollutant	Max GLC (3 min)	Max GLC (24 hr)
TSP	38 ($\mu g/m^3$)	13.7 ($\mu g/m^3$)
NO_x	227 ($\mu g/m^3$)	82 ($\mu g/m^3$)

Existing Ground Level Background**

	24 hr	Annual
TSP	128.6 (maximum)	42.2 ($\mu g/m^3$)
NO_x	NA	49 ($\mu g/m^3$)

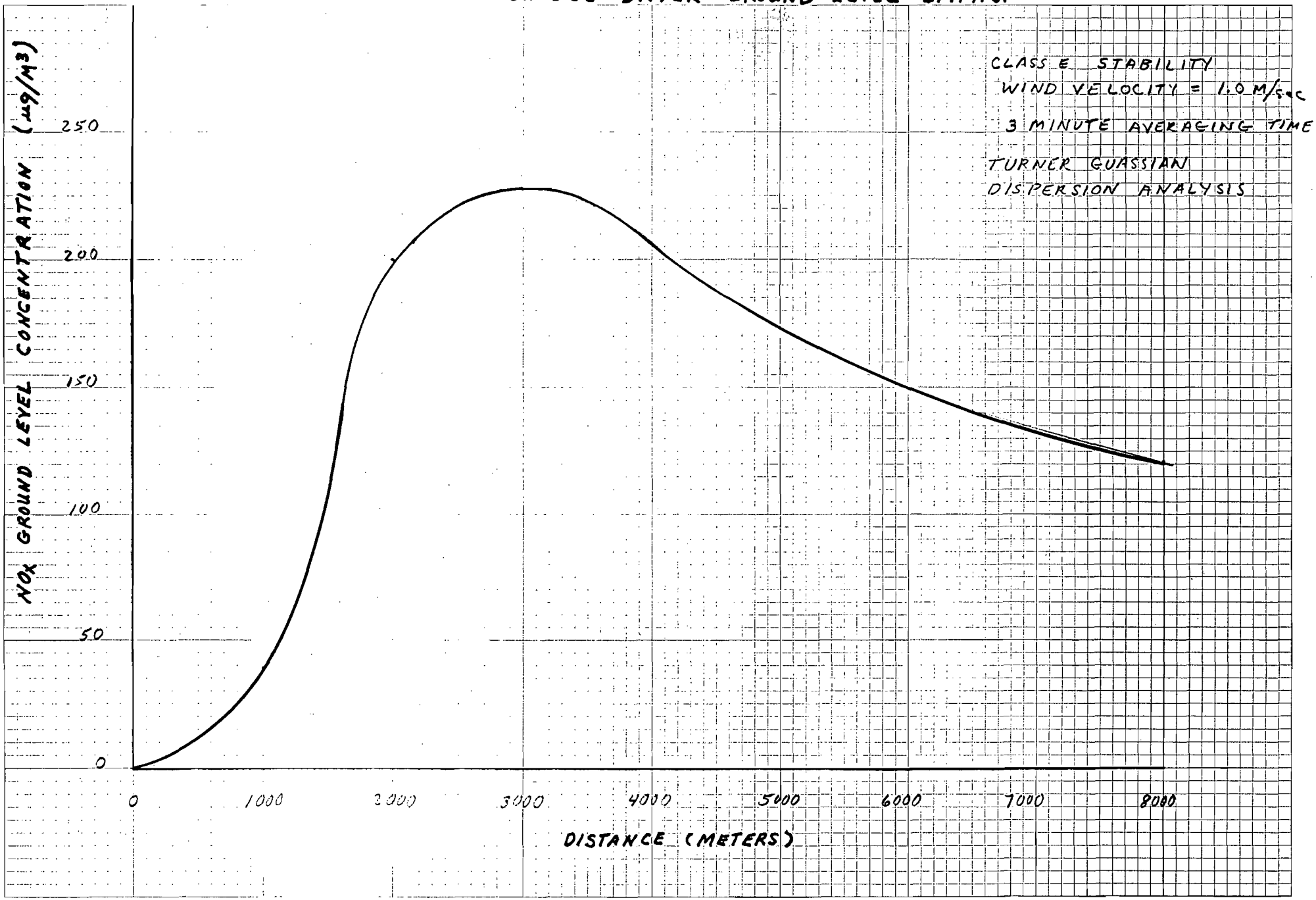
Expected Maximum Ground Level Concentration

	24 hr	Annual
TSP	142.3 ($\mu g/m^3$)	60 $\mu g/m^3$
NO_x	NA	100 $\mu g/m^3$

* See attached computer run and plot

**See attached DER data

SLUDGE DRYER GROUND LEVEL IMPACT



```
                                                          103.22
SIG Y (METERS) =                                          728.92
PLUME RISE (METERS) =                                     171
BRIGGS FORMULA USED
-----------------------------------------------------------------

CONCENTRATION (MICROGRAMS/CUBIC METER) =                  11.63

-----------------------------------------------------------------


DO YOU DESIRE TO MAKE FURTHER CALCULATIONS WITH GIVEN
ATMOSPHERIC CONDITIONS? (1=YES,2=NO) ?2

STOP  @   2190
RUN
```



```
**************************************************************

AIR IS DESIGNED TO UTILIZE GAUSSIAN DISPERSION CONCEPTS
DEVELOPED BY TURNER TO PREDICT DOWNWIND-CROSSWIND-GROUNDLEVEL
POLLUTANT CONCENTRATIONS FROM POINT AND LINE SOURCES.

TURNER, D.B., 'WORKBOOK OF ATMOSPHERIC DISPERSION',
   U.S. PUBLIC HEALTH SERVICE PUBLICAION, 999-AP-26, 1970.

**************************************************************


SELECT NUMBER OF PROBLEM TYPE:
          1 - POINT SOURCE - GASEOUS
          2 - LINE SOURCE - GASEOUS
?1


AUTOMATIC SEARCH FOR MAXIMUM CONCENTRATION?
          1 - AUTOMATIC
          2 - NOT AUTOMATIC
?1
          INCREMENTAL DISTANCE (METERS)
?10


ENTER WIND VELOCITY AT 10 METERS (M/SEC)
?1
ENTER PHYSICAL HEIGHT OF THE EMISSION SOURCE (M)
?16.56


SELECT FROM THE FOLLOWING CONDITIONS:
          1 - DAY
          2 - NIGHT
?2

CLOUD COVER:
          1 - TOTALLY OVERCAST
          2 - MOSTLY OVERCAST
          3 - MOSTLY CLEAR
?2


DO YOU DESIRE TO CORRECT THE WIND VELOCITY TO THE
```

```
DO YOU DESIRE TO CORRECT FOR BOUYANCY? (1=YES,2=NO)  ?1

INPUT THE FOLLOWING DATA:
STACK EXIT VELOCITY (M/SEC)?7.64
STACK INNER DIAMETER (M)?1.29
ATMOSPHERIC PRESSURE (MILLIBARS)?987
STACK GAS TEMPERATURE (K)?321
AMBIENT AIR TEMPERATURE (K)?294
HEAT EMISSION RATE(KJ/S)?1
SELECT A PLUME RISE FORMULA
         1 - HOLLAND
         2 - BRIGGS
2        3 - MOSES AND CARSON
 ?
?
?2
POTENTIAL TEMP GRADIENT (K/M)?.03
         ELEVATION OF RECEPTOR ABOVE GROUND LEVEL (M)
?0
DOWNWIND DISTANCE OF INTEREST (M)
?1000
CROSSWIND DISTANCE OF INTEREST (M)
?0
ENTER THE GASEOUS EMISSION RATE (GRAMS/SEC)
?15.1
```

P O I N T S O U R C E	
LOCATION - DOWNWIND (METERS) =	2820
- CROSSWIND (METERS) =	0
EMISSION RATE (GRAMS/SEC) =	15.1
STABILITY CLASS =	E
EFFECTIVE EMISSION HEIGHT (METERS) =	66.1
WIND VELOCITY (METERS/SEC) =	1.1
SIG Z (METERS) =	41.27
SIG Y (METERS) =	129.45
PLUME RISE (METERS) =	50
BRIGGS FORMULA USED	

CONCENTRATION (MICROGRAMS/CUBIC METER) = 226.19 Maximum

```
DO YOU DESIRE TO MAKE FURTHER CALCULATIONS WITH GIVEN
ATMOSPHERIC CONDITIONS? (1=YES,2=NO) ?2

STOP  @    2190
RUN


**************************************************************

AIR IS DESIGNED TO UTILIZE GAUSSIAN DISPERSION CONCEPTS
DEVELOPED BY TURNER TO PREDICT DOWNWIND-CROSSWIND-GROUNDLEVEL
POLLUTANT CONCENTRATIONS FROM POINT AND LINE SOURCES.

TURNER, D.B., 'WORKBOOK OF ATMOSPHERIC DISPERSION',
   U.S. PUBLIC HEALTH SERVICE PUBLICAION, 999-AP-26, 1970.

**************************************************************
```

```
SELECT NUMBER OF PROBLEM TYPE:
         1 - POINT SOURCE - GASEOUS
         2 - LINE SOURCE - GASEOUS
?1


AUTOMATIC SEARCH FOR MAXIMUM CONCENTRATION?
         1 - AUTOMATIC
         2 - NOT AUTOMATIC
?2


ENTER WIND VELOCITY AT 10 METERS (M/SEC)
?1
ENTER PHYSICAL HEIGHT OF THE EMISSION SOURCE (M)
?16.56


SELECT FROM THE FOLLOWING CONDITIONS:
         1 - DAY
         2 - NIGHT
?2

CLOUD COVER:
         1 - TOTALLY OVERCAST
         2 - MOSTLY OVERCAST
         3 - MOSTLY CLEAR
?2


DO YOU DESIRE TO CORRECT THE WIND VELOCITY TO THE
EMISSION HEIGHT? (1=YES, 2=NO)  ?1
DO YOU DESIRE TO CORRECT FOR BOUYANCY? (1=YES,2=NO)  ?1

INPUT THE FOLLOWING DATA:
STACK EXIT VELOCITY (M/SEC)?7.64
STACK INNER DIAMETER (M)?1.29
ATMOSPHERIC PRESSURE (MILLIBARS)?987
STACK GAS TEMPERATURE (K)?321
AMBIENT AIR TEMPERATURE (K)?294
HEAT EMISSION RATE(KJ/S)?1
SELECT A PLUME RISE FORMULA
         1 - HOLLAND
         2 - BRIGGS
         3 - MOSES AND CARSON
?2
POTENTIAL TEMP GRADIENT (K/M)?.03
         ELEVATION OF RECEPTOR ABOVE GROUND LEVEL (M)
?0
DOWNWIND DISTANCE OF INTEREST (M)
?1000
CROSSWIND DISTANCE OF INTEREST (M)
?0
ENTER THE GASEOUS EMISSION RATE (GRAMS/SEC)
?15.1
```

P O I N T S O U R C E

LOCATION - DOWNWIND (METERS) =	1000
- CROSSWIND (METERS) =	0
EMISSION RATE (GRAMS/SEC) =	15.1
STABILITY CLASS =	E
EFFECTIVE EMISSION HEIGHT (METERS) =	66.1
WIND VELOCITY (METERS/SEC) =	1.1

SIG Y (METERS) = 51.45
PLUME RISE (METERS) = 50
BRIGGS FORMULA USED

CONCENTRATION (MICROGRAMS/CUBIC METER) = 39.71

DO YOU DESIRE TO MAKE FURTHER CALCULATIONS WITH GIVEN
ATMOSPHERIC CONDITIONS? (1=YES,2=NO) ?1
DOWNWIND DISTANCE OF INTEREST (M)
?500
CROSSWIND DISTANCE OF INTEREST (M)
?0
ENTER THE GASEOUS EMISSION RATE (GRAMS/SEC)
?15.1

P O I N T S O U R C E

LOCATION - DOWNWIND (METERS) = 500
- CROSSWIND (METERS) = 0
EMISSION RATE (GRAMS/SEC) = 15.1
STABILITY CLASS = E
EFFECTIVE EMISSION HEIGHT (METERS) = 66.1
WIND VELOCITY (METERS/SEC) = 1.1
SIG Z (METERS) = 13.37
SIG Y (METERS) = 27.76
PLUME RISE (METERS) = 50
BRIGGS FORMULA USED

CONCENTRATION (MICROGRAMS/CUBIC METER) = .06

DO YOU DESIRE TO MAKE FURTHER CALCULATIONS WITH GIVEN
ATMOSPHERIC CONDITIONS? (1=YES,2=NO) ?1
DOWNWIND DISTANCE OF INTEREST (M)
?1500
CROSSWIND DISTANCE OF INTEREST (M)
?0
ENTER THE GASEOUS EMISSION RATE (GRAMS/SEC)
?15.1

P O I N T S O U R C E

LOCATION - DOWNWIND (METERS) = 1500
- CROSSWIND (METERS) = 0
EMISSION RATE (GRAMS/SEC) = 15.1
STABILITY CLASS = E
EFFECTIVE EMISSION HEIGHT (METERS) = 66.1
WIND VELOCITY (METERS/SEC) = 1.1
SIG Z (METERS) = 28.37
SIG Y (METERS) = 73.81
PLUME RISE (METERS) = 50
BRIGGS FORMULA USED

CONCENTRATION (MICROGRAMS/CUBIC METER) = [illegible]

BEST AVAILABLE COPY

```
DO YOU DESIRE TO MAKE FURTHER CALCULATIONS WITH GIVEN
ATMOSPHERIC CONDITIONS? (1=YES,2=NO) ?1
DOWNWIND DISTANCE OF INTEREST (M)
?2000
CROSSWIND DISTANCE OF INTEREST (M)
?0
ENTER THE GASEOUS EMISSION RATE (GRAMS/SEC)
?15.1
-------------------------------------------------------------
                  P O I N T    S O U R C E
-------------------------------------------------------------
LOCATION - DOWNWIND (METERS) =                          2000
         - CROSSWIND (METERS) =                            0
EMISSION RATE (GRAMS/SEC) =                             15.1
STABILITY CLASS =                                       E
EFFECTIVE EMISSION HEIGHT (METERS) =                    66.1
WIND VELOCITY (METERS/SEC) =                            1.1
SIG Z (METERS) =                                        33.82
SIG Y (METERS) =                                        95.35
PLUME RISE (METERS) =                                   50
BRIGGS FORMULA USED
-------------------------------------------------------------

CONCENTRATION (MICROGRAMS/CUBIC METER) =                200.18
-------------------------------------------------------------


DO YOU DESIRE TO MAKE FURTHER CALCULATIONS WITH GIVEN
ATMOSPHERIC CONDITIONS? (1=YES,2=NO) ?1
DOWNWIND DISTANCE OF INTEREST (M)
?4000
CROSSWIND DISTANCE OF INTEREST (M)
?0
ENTER THE GASEOUS EMISSION RATE (GRAMS/SEC)
?15.1
-------------------------------------------------------------
                  P O I N T    S O U R C E
-------------------------------------------------------------
LOCATION - DOWNWIND (METERS) =                          4000
         - CROSSWIND (METERS) =                            0
EMISSION RATE (GRAMS/SEC) =                             15.1
STABILITY CLASS =                                       E
EFFECTIVE EMISSION HEIGHT (METERS) =                    66.1
WIND VELOCITY (METERS/SEC) =                            1.1
SIG Z (METERS) =                                        49.97
SIG Y (METERS) =                                        176.70
PLUME RISE (METERS) =                                   50
BRIGGS FORMULA USED
-------------------------------------------------------------

CONCENTRATION (MICROGRAMS/CUBIC METER) =                205.69
-------------------------------------------------------------
```

DO YOU DESIRE TO MAKE FURTHER CALCULATIONS WITH GIVEN
ATMOSPHERIC CONDITIONS? (1=YES,2=NO) ?1

DOWNWIND DISTANCE OF INTEREST (M)
?8000
CROSSWIND DISTANCE OF INTEREST (M)
?0
ENTER THE GASEOUS EMISSION RATE (GRAMS/SEC)
?15.1

P O I N T S O U R C E

LOCATION - DOWNWIND (METERS) =	8000
- CROSSWIND (METERS) =	0
EMISSION RATE (GRAMS/SEC) =	15.1
STABILITY CLASS =	E
EFFECTIVE EMISSION HEIGHT (METERS) =	66.1
WIND VELOCITY (METERS/SEC) =	1.1
SIG Z (METERS) =	70.78
SIG Y (METERS) =	327.45
PLUME RISE (METERS) =	50

BRIGGS FORMULA USED

CONCENTRATION (MICROGRAMS/CUBIC METER) = 121.48 ←

DO YOU DESIRE TO MAKE FURTHER CALCULATIONS WITH GIVEN
ATMOSPHERIC CONDITIONS? (1=YES,2=NO) ?1
DOWNWIND DISTANCE OF INTEREST (M)
?10000
CROSSWIND DISTANCE OF INTEREST (M)
?0
ENTER THE GASEOUS EMISSION RATE (GRAMS/SEC)
?15.1

P O I N T S O U R C E

LOCATION - DOWNWIND (METERS) =	10000
- CROSSWIND (METERS) =	0
EMISSION RATE (GRAMS/SEC) =	15.1
STABILITY CLASS =	E
EFFECTIVE EMISSION HEIGHT (METERS) =	66.1
WIND VELOCITY (METERS/SEC) =	1.1
SIG Z (METERS) =	78.52
SIG Y (METERS) =	399.39
PLUME RISE (METERS) =	50

BRIGGS FORMULA USED

CONCENTRATION (MICROGRAMS/CUBIC METER) = 97.42 ←

DO YOU DESIRE TO MAKE FURTHER CALCULATIONS WITH GIVEN
ATMOSPHERIC CONDITIONS? (1=YES,2=NO) ?2

STOP @ 2190
RUN

ANNUAL AMBIENT SURVEILLANCE SUMMARY FOR 1981

PARAMETERS: CO, O_3, SO_2, NO_2

	CARBON MONOXIDE		OZONE			SULFUR DIOXIDE		NITROGEN DIOXIDE
	DOWNTOWN ORLANDO	SHELL	WINTER PARK	SEMINOLE COUNTY		WINTER PARK	DEBARY	WINTER PARK
NUMBER OF SAMPLES	4260	7503	7970	5257	NUMBERS OF SAMPLES	7378	1700	3788
MAXIMUM ONE HOUR AVG.	21 mg/M^3	14 mg/M^3	0.095 ppm	0.104 ppm	MAXIMUM 3 HOUR AVG.	166 $\mu g/M^3$	79 $\mu g/M^3$	
MAXIMUM 8 HOUR AVG.	10 mg/M^3	8 mg/M^3			MAXIMUM 24 HOUR AVG.	70 $\mu g/M^3$	25 $\mu g/M^3$	
					ARITHMETIC MEAN	16 $\mu g/M^3$	9 $\mu g/M^3$	49 $\mu g/M^3$
% CHANGE FROM: 1980	Sampling began in middle of 1980		+22.5%	(NA)	% CHANGE FROM: 1980	(NA)	Sampling began in 1981	(NA)

ANNUAL AMBIENT SURVEILLANCE SUMMARY (UG/M^3) FOR 1981

	PARTICULATE					
	MARINE RESERVE	TICO AIRPORT	MERRITT ISLAND	TITUSVILLE	SANFORD	FIRE STATION
NUMBER OF SAMPLES	*46	52	54	59	45	61
MAXIMUM	184.0	107.6	97.7	63.1	128.6	152.4
MINIMUM	27.3	17.3	16.8	18.6	18.8	28.1
GEOMETRIC MEAN	57.3	37.2	41.5	42.9	42.2	63.1
% CHANGE FROM 1980	+25.8%	-27.0%	+11.0%	+18.8%	+20.9%	+12.7%

	SULFUR DIOXIDE
	TICO AIRPORT
NUMBER OF SAMPLES	50
MAXIMUM	28.2
MINIMUM	0.0
ARITHMETIC MEAN	3.0
% CHANGE FROM 1980	Δ

	DAYTONA BEACH	TAFT	PINE HILLS	ZELLWOOD	DEBARY
NUMBER OF SAMPLES	**	61	53	56	49
MAXIMUM		156.7	139.7	84.7	105.4
MINIMUM		21.8	21.8	18.7	19.4
GEOMETRIC MEAN		49.0	49.2	40.3	37.2
% CHANGE FROM: 1980		+21.0%	+29.8%	+27.9%	Δ

COMMENTS: The significant rise in results from 1980 is due primarily to the severe drought experienced during the first half of 1981.

*January 1 to October 31 only.

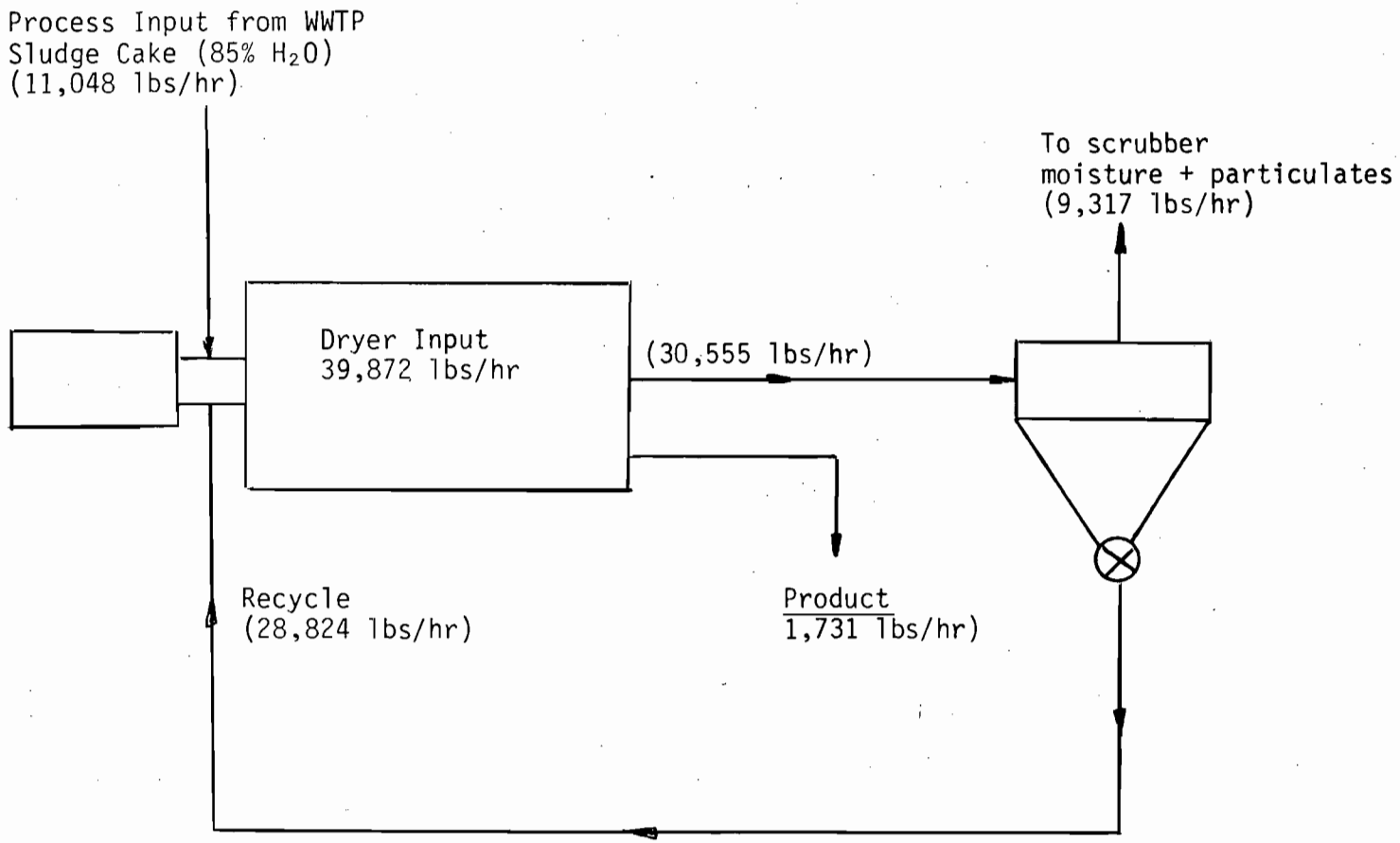
**January 1 to June 30 only.

Δ1980 results were incomplete.

PROCESS WEIGHT DIAGRAMS

PROCESS WEIGHT DIAGRAM

PROCESS WEIGHT



SLUDGE RECOVERY SYSTEM DESCRIPTION

SLUDGE RECOVERY SYSTEM

SCOPE

Work to be performed under this section shall include furnishing and installing all material, equipment, labor and services necessary to provide a complete sludge drying process capable of producing a pasteurized, pelletized, and dry soil conditioner from the waste sludge produced by the wastewater treatment plant.

Work shall include, but not necessarily be limited to, the following components:

Sludge Pumping Facilities;
Polymer Solution Storage and Pumping Facilities;
Mechanical Sludge Dewatering and Sludge Handling System;
Gas Solids Separation System;
Conveyor and Materials Handling and Storage System;
Control System;
Electrical Equipment;
Piping and Valves;
Painting, Signs and Labels:
Supplier(s) Services;
Miscellaneous and Other Items:
General Mechanical and Construction Requirements for Screw Conveyors.

SYSTEM OPERATING CONDITIONS, DESCRIPTION, DESIGN AND PERFORMANCE

The sludge dewatering and drying system shall meet the following operational parameters:

Kind of Sludge:
Prethickened to 2% or more solids;
21% raw primary sludge;
59% waste secondary sludge;
20% phosphorus precipitation sludge with alum.

Dry solids per hour:
2.6 tons (maximum rate).

Dry solids in filter cake:
Daily average of not less than 18%.

SS in presses filtrate (initial dewatering section):
Daily average not over 100 mg/l.

Dry final product:
Daily average of not over 5% moisture content for bagging. 10% moisture for bulk.

Polymer consumption:
6.5 lbs/tons dry solids.

Water consumption:
80 gpm.

Clean Effluent Water consumption:
1100 gpm.

In addition, the system shall have the capability (with required increases or decreases in polymer feeds) to dewater and process aerobically digested sludge separately or in combimation with the above sludge, or undigested waste secondary sludge separately, or undigested raw sludge separately, or sludge in different combinations from that stated above. For the waste secondary sludge or the aerobically digested sludge, or a combination of the two, the system shall be capable of providing a dewatered cake with not less than 18% solids (dry weight basis) and an average filtrate suspended solids of not over 100 mg/l. The finished product shall have a moisture content not exceeding 5% for bagging and 10% moisture content for bulk operations.

SLUDGE PUMPING FACILITIES

Sludge Metering Pumps

There shall be furnished and installed sludge metering pumps as shown. Pumps shall be progressive cavity, positive displacement type with infinitely variable speed control. Each pump shall produce 10-35 gpm at 60' TDH (min.) with 5 HP motor and 6-inch diameter suction and 4-inch diameter discharge lines. The pump shall include electric motor slide rail and fabricated steel base. Control shall be at the Automatic Control panels. The pump shall be equipped with a helical rotor of hard chrome overlay coated tool steel and a stator of Buna N or approved equal. Suction and discharge openings shall be suitable for connection to 125 lb. standard flanges. The pump shall be cradle mounted to permit the suction part to be rotated to any desired angle. Hand holes shall be provided in each side of the pump's suction housing. Pumps shall be equipped with gear-type sealed universal joints. The pumps shall be mounted on a fabricated steel base which will accommodate the electric motor and the required accessories. Pumps shall be suitable for handling sewage sludge from 1% to 10%. Provide one uninstalled spare pump with motor and accessories. Pumps shall be Moyno Type SWG Model 1EOES1, as manufactured by Robbins and Myer, Inc., of Springfield, Ohio, or approved equal.

POLYMER SOLUTION STORAGE AND PUMPING FACILITIES

Polymer Solution Storage Tanks

There shall be furnished and installed, as shown on the plans, two (2) polymer storage tanks. Each tank shall be 15,000 gallon capacity, and shall be suitable fiberglass construction, and enclosed with an access manhole and drain for cleaning purposes. Each tank shall be provided with a 5" flanged nozzle 4" long located at the drain elevation for location of a level instrument and a 6" flange in the top for location of a float switch.

Polymer Solution Metering Pumps

There shall be polymer solution metering pumps furnished and installed as shown on the plans. Each pump shall have a capacity to pump from 0.7 to 7.0 gpm at 40' TDH with a ½ H.P., direct current, variable speed

drive motor. The pump shall be bronze body with stainless steel shaft and neoprene impellers. Each pump shall deliver a continuous flow of polymer solution to each sludge mixing unit at each filter press. Polymer feed rates shall be continuously adjustable by means of infinitely variable speed controls. All functions of the polymer metering pumps shall be controlled and indicated at the automatic control panel. Provide one extra uninstalled spare pump with motor and accessories.

MECHANICAL SLUDGE DEWATERING AND SLUDGE HANDLING SYSTEM

General

The mechanical sludge dewatering and sludge handling system specified in this section shall include all polymer solution mixing and flocculating components, filter belt presses, controllers, and a belt conveyor to receive dewatered sludge cake and transport it to the sludge cake storage bin, all as shown on the plans.

Dewatering Presses

There shall be provided as shown automatic filter belt presses complete with all accessories and controls to reduce the water content of the liquid sludge from maximum influent concentration of 98.0% water to a maximum cake effluent concentration of 82% water. Each press shall have the capacity to receive 2,000 gallons per hour of the liquid sludge at 98.0% water, and reduce the moisture content to 82% water in the quantity of 2,000 lbs per hour of dry solids.

Each press shall be optimized for dewatering by polymers, by employing filter screens with principal openings no smaller than 0.2 mm, and shall avoid floc destruction by gradually and continuously increasing filtration force as the cake dryness increases--including at least three zones of different filtration principle; a gravity zone, a pressure zone, and a shear/pressure zone. The equipment must utilize the basic physics of dewatering--i.e., the drier the cake, the more pressure and shear it will support; and frequent adjustable, small increases in pressure on the cake are required to produce maximum results and maximum adaptability to future changes in sludge characteristics and polymers available.

In order to achieve this process performance requirement, the machine shall include separately and independently adjustable pressure and shear/pressure steps. Also, because similar appearing sludges can have greatly different pressure and shear resistance characteristics, these steps shall be constructed so all can be adjusted as pressure steps, all as shear/pressure steps, or any combination in between. All of these adjustments shall be possible without interrupting sludge dewatering operations. Presses shall be manufactured by the Ralph B. Carter Co., Model 15/31, or Parkson Corp., or Komline-Sanderson or approved equal.

Routine maintenance shall be possible without taking the dewatering systems out of service. In addition, when replacement of the dewatering belt media is required, either belt shall be easily and quickly replaceable,

without requiring removal of machine components, or changes in pressure and shear/pressure adjustments.

All directly wetted parts ahead of the gravity zones shall be of non-corrosive materials; all structural steel members shall be properly prepared by sandblasting and coated with high grade two-part epoxy finish. All motors shall be totally enclosed, forced circulation or non-ventilated. Minimum corrosion protection on all sheet metal parts shall be heavy coat, hot dipped galvanized.

Each press shall be provided with an individual control, monitored through the master control, all as specified in Section 525, Subsection 11 of these specifications.

Sludge Cake Belt Conveyor

One (1) 36-inch wide belt conveyor shall be installed at the location shown on the plans. The conveyor belt is to have a capacity of 42-cubic ft. per minute at 60 ft. per minute belt speed. The conveyor belt is to have two-ply nylon carcass belting with 1/8-inch by 1/32-inch thick, smooth black rubber conveyors of a working tension of 210 lbs. per inch of width. Unit to be designed to have horizontal runs without material transfer points. 2½-inch diameter carbon steel idlers mounted on carbon steel rectangular steel conveyor flange. Pulleys 10-inch diameter and suitably center lagged. Belt support on return run shall be 8-inch diameter wheels mounted on shafting and operating in ball bearing flanged blocks. Adjustable steel belt scraper to be mounted near discharge pulley. Complete drive assembly to operate the belt at 60 ft. per minute to be mounted over discharge end consisting of a motor direct coupled to a worm gear reducer. Out-put shaft of reducer drive shaft of conveyor through chain and sprockets complete with OSHA approved guard.

SLUDGE DRYING AND PELLETIZING SYSTEM

General

The sludge drying systems shall be installed in the location shown on the plans. Each shall consist of a rotary-type dryer and a dual fuel furnace (natural gas and No. 2 fuel oil), complete with controls and accessories.

Sludge Dryers

The sludge dryer shall conform to the following: (1) Evaporation Capacity: 12,000 lbs/ H_2O/hr. Three cylinder with compound showering flights formed with drum shell. Heavy duty chain drive powered from pinion sprocket mounted on simplified counter shaft to monolithic ring sprocket bolted to drum. Outer cylinder insulated. Drum rotates on machined steel running bands. (2) Drum Bases: Fabricated steel with nickel alloy iron rollers carried on Timken roller bearings. Drive base is equipped with counter shaft, drive and idler sprockets, speed reduction unit and double flanged rollers for fixed drum alignment. Idler base is equipped with flat rollers for drum expansion.

Input product shall be a mixture of wet sludge cake and recycled previously dried material. The rate must be set in such a way that a uniform pelletized material is produced without addition of chemicals.

Output product shall be sludge grains of less than 5 percent water content and 4 mm on a maximum diagonal.

Product residence time shall be at least 20 minutes.

Product temperature shall be at least 150^{o} but less than 230^{o}F, upon discharge from the dryer.

The furnace shall be equipped with replaceable abrasion resistant refractory plates.

Dryer shall be Model 105-32, rotary type with multiple-pass, co-current product flow sludge dryer, as manufactured by the Heil Company, of Milwaukee, Wisconsin, or approved equal.

Heat Source

The sludge dryer shall be equipped with directly connected end-fired furnace housing with dual fuel low pressure air atomizing burner and pressure blower. Unit shall be piped for either oil or gas. Dual fuel piping shall be furnished. Piping shall include throttling fuel valves, safety shut-off valves, oil relief valve, pressure gauges, throttling air valve, gas/electric ignition and standard pipe fittings between burner and furnace fuel connection.

Maximum oil consumption is 180 gph. Oil pump and filters furnished. All grades of fuel oil can be utilized; however, heavy grades must be pre-heated.

Maximum natural gas consumption is 28,000 CFH. Natural gas for main fuel line must be supplied to furnace connections at a minimum of 5 PSIG pressure.

Electric/Gas Ignitor is operative on all types of gas at pressures not to exceed 1 psig.

Fuel supply piping to furnace connections, oil tank, oil pre-heater, furnace refractory and gas pressure regulators capable of holding desired pressure through complete firing range. Multiple installations shall have individual regulators. The fuel lines connecting the tank and the pump shall be under 30-inches of cover.

Controls: Temperature: Electronically operated, includes temperature regulator, thermocouple, T/C wire and reversing motor operator for mechanical connection to fuel and air valves.

Safety/safety shut-off valves, fan draft pressure switch, flame failure protection, recording thermometer with Hi-Limit Switch and furnace pyrometer.

Power Requirements: Drip-proof general purpose ball-bearing 3 phase, 60 cycle, 480 volt electric motors furnished standard as follows:

Exhaust	200HP	1800 rpm
Drum Drive	40HP	1800 rpm
Oil Pump	1½HP	1200 rpm
Furnace Blower	10HP	3600 rpm.

GAS SOLIDS SEPARATION SYSTEM

Multiclone*Separators

The smaller pellets and the dust shall be separated from the airstream by cyclone separator. Efficiency shall be at least 86% of particles of 10 microns. The separator core shall be of the same, or equivalent, crucible quality material as that of the interior of the dryer.

Attrition samples and rates as specified for the dryer shall also apply to the separators.

Separator construction and functioning shall be such as to prevent the retention of solids on the walls of the core (less than 20 pounds per year), and prevent any substantial aggregation or deterioration of the dryer output particles. High quality construction materials adequate for the imposed service shall be utilized.

A constant speed (2 hp rated) air lock/debridging mechanism shall be attached between the separator collecting container and the screw conveyor to the recycle material bin.

Blowers-Pellet Removal and Heat Recovery

Product shall be extracted from the dryers and caused to separate in Multiclone* separators under the driving force of non-positive displacement blowers powered by a constant speed motor.

Volumetric air flow shall be at least 32,000 cfm. Decibel level shall be within limits of OSHA standards.

Blower suction shall be connected to the separator: the discharge to the wet scrubber intake. System supplier shall furnish all necessary air intakes, discharges, duct work, expansion-construction devices, dampeners, filters, valves, silencers, and other appurtenances.

The blower motor shall be drip-proof general purpose ball bearing, 3 phase, 60 cycle, 480 volt, 200 hp, and less than 1600 rpm.

Additionally, motors shall meet the requirements of the Section entitled "Electric Motors" of these specifications.

Each blower and motor shall be enclosed in a prefabricated, acoustical, noise reducer enclosure with door, window, and ventilation fan. Preassembled enclosure shall be of the dimensions shown on the plans

*Trade Mark
Joy Mfg. Co.

and as manufactured by the Gal Corporation, of New Brunswick, New Jersey; or Allforce Acoustics, Lord Corporation, of Erie, Pennsylvania, or equal.

Wet Scrubbers

The airstream wet scrubbers shall have two functions: (1) Particulate removal in accordance with the Air Quality Control Standards of the State of Florida, EPA and local regulatory agencies. (2) Odor Control. The off gases shall be scrubbed with clean effluent (reuse) water, by means of spray nozzles fed by a recirculation pump with adequate capacity and pressure. Spray nozzles shall be described to minimize plugging, shall be of an approved corrosion resistant material and be designed for removal from the scrubber without personnel having to enter the scrubber tank. The scrubber tank shall be equipped with inspection or sights ports to inspect the spray nozzle operation. The recirculation pump shall be neoprene lined, or equal, with bearings, seals, gate and check valves of a design suitable for the imposed service. If water seals are used, the contractor/supplier shall provide necessary piping, valves and controls.

The scrubbing water system shall be designed so that either a one-pass operation or a recycle operation can be utilized. Necessary valves, regulators, piping and other items shall be provided to obtain both operational modes for the scrubber-operation. The scrubbing water from each scrubber shall collect in a slurry recycle tank. There will be a constant bleed-off of no more than 80 gpm with a maximum of 5% solids by weight in the discharge water, connected to the filtrate pump drain system. Each slurry recycle tank will be manufactured from suitable fiberglass. Each tank shall have a capacity of at least 250 gallons. The level in each slurry recycle tank shall be controlled automatically by adding make-up water (clean effluent without suspended solids) at a rate equal to the bleed off amount (maximum 80 gpm).

The odor control shall take place by bringing the scrubbed off gases in contact with a 2% $KMnO_4$ solution (maximum) in a packed tower. Detention time in the tower will be at least one second to reach a proper and reliable chemical reaction for an optimum odor removal. The 2% $KMnO_4$ solution will be prepared in batches of 30 gallons in a mixing tank with a mechanical mixer of at least 0.3 hp. The 2% $KMnO_4$ solution will be stored in a storage tank approximately 10' long, 5' wide and 5' depth. Clean effluent without suspended solids shall be used. The 2% solution shall be maintained manually by comparing the color of a test tube with the original start-up solution with the color of the actual solution. No more than one (1) lb. of $KMnO_4$ per day will be needed to be added to maintain the 2% solution by weight. A recycling pump with a capacity of 320 gpm at a pressure of 5 psi maximum shatl pump the $KMnO_4$ solution to the absorber supply line. A pH of 8.2 shall be maintained automatically in the 2% $KMnO_4$ solution tank by addition of NaOH solutions which shall be prepared batchwise, in a 30-gallon plastic tank with a mechanical mixer of at least 0.3 hp. After reaction of $KMnO_4$ with the oxidizing solids, the $KMnO_4$ will change to Manganese Dioxide which acts as a flocculant. The Manganese Dioxide scum on the surface shall be skimmed off automatically at a rate

of 4 gpm maximum. Discharge shall be to the filtrate pump drain system. The level in the $KMnO_4$ solution tank shall be controlled automatically. The tank shall have a 3-inch drain opening in the bottom of the tank for cleaning purposes. The $KMnO_4$ solution tank shall be manufactured from suitable fiberglass. Provide for sufficient clean water make up (4-10 gpm).

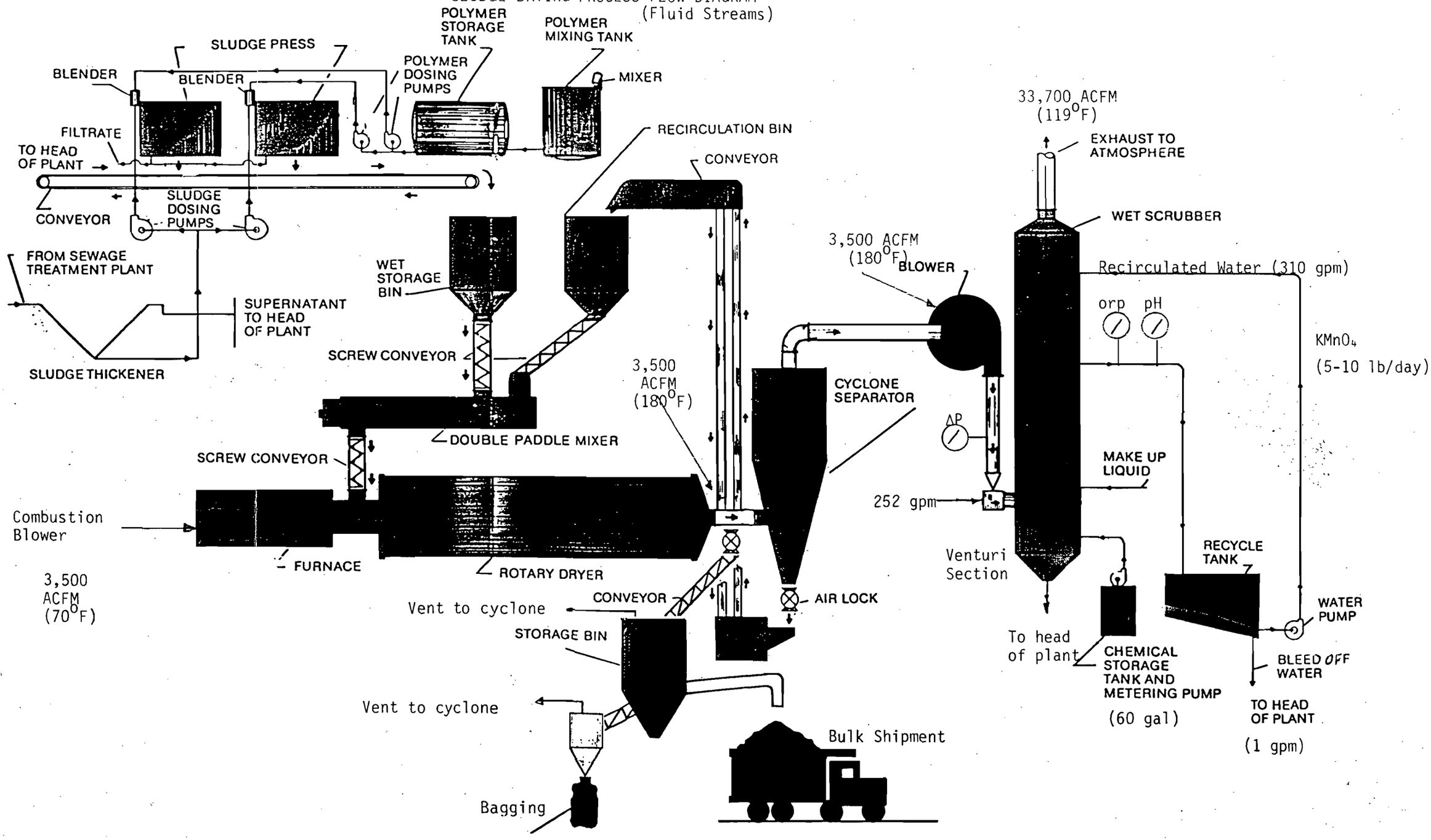
Plume discharge from the stack shall be minimized. The finally discharged off-gases shall be droplet free. The discharge stack shall have two (2) 3-inch test ports with blind flanges, located 90' apart. Ladders meeting OSHA standards shall be provided for access to the ports. In elevation the ports shall be located at a minimum of eight (8) stack diameters up from the top of the wet scrubber and a minimum of two (2) stack diameters down from the top of the stack or elsewhere specified. The tops of the stacks shall be of sufficient height above the roof to provide proper draft and discharge.

The scrubber vessel shall be of suitable fiberglass and of sufficient structural strength, or an approved equal. All components of the above described system shall be of corrosion resistant materials where necessary.

Air Coolers

Air coolers shall be provided to cool the finished product prior to its storage in the Finished Product Storage Bin. Each cooler shall be equipped with a constant speed (3hp) motor to rotate the drum. An air flow of 4,000 cfm shall be provided to return the heated air to the Multiclone. The air intake duct to the cooler shall be equipped with an adjustable damper.

IRON BRIDGE WASTEWATER TREATMENT PLANT
SLUDGE DRYING PROCESS-FLOW DIAGRAM
(Fluid Streams)



AIR POLLUTION CONTROL

SYSTEM DESCRIPTION

BASIC DESCRIPTION OF AIR POLLUTION CONTROL SYSTEM

The system supplied by Ducon for this job consists primarily of a cyclone, horizontal scrubber, and a packed tower. The cyclone first removes heavy particulate from the airstream. The horizontal scrubber removes liquid from the gas stream. The packed tower removes odorous gases which may still be present in the airstream.

The gases from the sewage treatment process are drawn through the system by a fan located between the cyclone and Venturi.

DESIGN DATA

Units - Packed Tower - Size 108 (Ducon)

Cyclone - Size 4-290, Type VM. Model 700/148 (Ducon)

Vertical Horizontal Scrubber - Size 42/250 Type VHO (Ducon)

Inlet Gas Volume - 32,000 ACFM

Inlet Gas Temperature - 280^{O}F.

Inlet Dust Loading to Cyclone - 23.56 grains/ACF

Type of Dust -Pelletized Sewage Sludge

Elevation - Sea Level

Pressure Drops -

Cyclone - 3.0" W.G.

Venturi Throat - 20.0" W.G.

Separator - 2.0" W.G.

Packed After Section - 3.0" W.G.

STACK DATA

Stack Height	54'2"
Velocity	25 fps
Flow Rate ACFM	33,700
Temp.	119^{o}F
Diameter	4'3"
% Moisture	13.4%

OPERATING DESCRIPTION

PRINCIPLE OF OPERATION

The air pollution control equipment in this system is a three-stage system designed to remove any dust and/or odorous gases from the sewage treatment process.

The first major piece of equipment is a cyclone collector. The cyclone is designed to remove any heavy dust loading entering the system. The dust particulates are collected in a dust hopper. The gas then passes through a wetted vertical venturi. The purpose of this venturi is to remove any fine dust particles that may have passed through the cyclone. The next major piece of equipment, a horizontal separator, removes the liquid from the airstream before it passes to the packed tower. The manual wash down sprays in the separator should be turned on occasionlly to clean the lamellars. The purpose of the packed tower is to remove odorous gases from the airstream. The odorous gas flows up the packed tower and passes through the packing. Chemical liquid flows concurrently and reacts with the gas. Mesh type eliminators remove any liquid from the gas stream before it enters the outlet stack. The chemical liquid drains out of the packed tower after reacting with the gas and into a recirculation tank.

When using the packed tower system to remove odorous gases from the process, a pH level between 8 and 9 should be maintained in the chemical recirculation tank. The ORP of the recirculation tank should also be monitored closely and adjusted as needed. Chemical liquid is added to the recirculation tank by a metering pump located on the chemical mixing tank. Sodium hydroxide (caustic/NaOH) or potassium permanganate ($KMnO_4$) is added to chemical mixing tank where it is thoroughly mixed with water. The pH analyzer monitors the amount of caustic in the recycle tank. The ORP analyzer monitors the oxidation

reduction potential of the recycle tank liquid (amount of $KMnO_4$).

This system is designed to be used in more than one way. The odor control part of the system does not need to be operating if there is no evidence of odorous gases in the sewer sludge. In this case the 2" saddle packing in the packed tower can be removed. A barometric seal must also be maintained in the recycle tank.

The horizontal separator is designed with an integral recycle tank to recycle the liquid back up to the venturi inlet. A future recycle pump connection is supplied on the recycle tank. This connection must be closed when not in use. A liquid level control is installed on the separator to control the water level when the integral recycle tank is used.

When potassium permanganate ($KMnO_4$) is used in the packed tower, a cleaning schedule must be followed.

The pages which follow outline a good maintenance schedule which can be followed. The frequency of cleanings can only be determined by the amount of usage.

CLEANING SOLUTIONS FOR REMOVING MANGANESE DIOXIDE DEPOSITS FROM WET SCRUBBING SYSTEMS USING CAIROX

The following solutions remove manganese dioxide deposits. The time required for cleaning a scrubber will depend on the amount of deposits present. The time will vary from 1 - 6 hours. The corrosion rate for steel will be about 0.00002 in/hr.

(1)	Sulfamic Acid	2.5 %
	Hydrogen Peroxide (35%)	0.5 %
	Formaldehyde (37%)	0.25%
	Rodine III Inhibitor	0.1 %
	Water	To make 100%
(2)	Sulfamic Acid	2.5 %
	Glycolic Acid	1.25%
	Formaldehyde (37%)	0.25%
	Rodine III Inhibitor	0.1 %
	Water	To make 100%
(3)	Citric Acid	2.75%
	Formaldehyde	0.50%
	Rodine III Inhibitor	0.1 %
	Water	To make 100%
(4)	Sulfuric Acid (96%)	6.0 %
	Formaldehyde (37%)	0.5 %
	Rodine III Inhibitor	0.1 %
	Water	To make 100%
(5)	Sulfuric Acid (96%)	5.0 %
	Oxalic Acid	2.5 %
	Rodine III Inhibitor	0.1 %
	Water	To make 100%
(6)	Sodium Bisulfite	5.0 %
	Water	To make 100%

START-UP PROCEDURES

The starting of this system is a critical step and will determine how efficiently the system operates. If the system is not started properly, serious problems can arise, and in some cases, cause damage to the system's equipment.

The chemical liquid in the tower should be turned on and flow through the spray piping observed. The recycle tank of the tower should be allowed to fill to its proper operating level and then checked for leaks. The chemical metering pump should be checked and the proper amount of return liquid to the packed tower should be set. All chemical feed lines and fittings must be checked for leaks. Any chemical leakage should be corrected as soon as possible.

The next step would involve the application of water to the venturi. The nozzle pressure should be adjusted to insure complete coverage of the venturi. The nozzle pressure should be adjusted to insure complete coverage of the venturi. Any valves in the water and chemical feed lines should be set to their proper positions.

After the above steps have been completed, the fan can be started. Odorous gases and dust can be allowed to enter the system at the cyclone.

THE DUCON COMPANY, INC.

OPERATING INSTRUCTIONS FOR THE ODOR CONTROL SECTION OF DUCON'S AIR POLLUTION CONTROL EQUIPMENT

Fill the packed tower with the packing material (2" polypropylene saddles) to the required level ((1) one foot below the spray header). Add caustic (NaOH) into the chemical recirculation tank and maintain the pH level between 8 - 9.

The liquid is sprayed onto the packing and flows concurrently to the gases. The gas is absorbed by the liquid due to a chemical reaction. The liquid will drain out the bottom of the packed tower and back to the chemical recirculation tank.

If additional absorbing efficiency is needed potassium permanganate ($KMnO_4$) can also be added to the chemical recirculation system. Add 1/4 percent solution by weight of $KMnO_4$ into the chemical mixing tank. Increase the amount of $KMnO_4$ if greater efficiency is needed.

Important steps should be taken when using $KMnO_4$ as an absorbing liquid. As $KMnO_4$ reacts with the odorous gases manganese dioxide (MnO_2) is produced. The packing in the packed-after-section can eventually become plugged or coated and severely restrict the air flow through the unit.

The MnO_4 must be removed from the system on a regularly scheduled basis. The cleaning schedule will depend on the amount of $KMnO_4$ used. The odor control system should be cleaned at least once every two weeks. The MnO_4 will settle in the recycle tanks during periods of shut-down. The sludge it forms should be drained from the recycle tank before start-ups.

A wash down of the packed-after-section must be done on a regular basis using a solution such as sodium bisulfate, preferably at a pH between 3-5 using a pH buffer such as citric acid.

Maintenance is involved when using $KMnO_4$ in the scrubbing system. Serious problems can occur and cause down time and needless expense in removing the packing and cleaning it outside the scrubber if a cleaning schedule is not actively followed.

SEQUENCE OF OPERATION FOR ODOR CONTROL SYSTEM

Note: If odor control system is not used, the wetted venturi must still be used.

The first step is to turn on the service water to the venturi. Adjust the flow meter to read 232 GPM at 20 PSIG. Turn the main power switch (SS-1) to the ON position. A red light (LT-1) will glow indicating the main power is on. Push the system start button (PB-2) to start the system. The system stop button (PB-1) shuts the system down. After the system start button has been pushed, the packed tower pump motor will start. Lights (LT-2 and LT-3) will glow to indicate that the packed tower pump is motor is operating. If no flow is indicated in the pump line, the pump will be shut off. Push the reset button (PB-3) to restart the pump after proper flow to the pump has been restored.

Turn the pH controller and ORP indicator switches to the ON position. The ORP indicator has no high or low set points and alarms. The pH controller does have high and low alarm set points. At a high pH, the chemical metering pump will be shut off. At a low pH the chemical metering pump will be started. At a low-low pH, an alarm condition will exist. The alarm horn will sound. A light (LT-3) indicates that the chemical metering pump is operating. The metering pump can also be operated manually by turning the 3 position metering pump switch to the manual set point.

The chemical mixing process can now be started. Press the mixing tank makeup water start button (PB-7). This will alllow fresh water to enter the tank. Press the stop button (PB-6)

to stop the makeup water. The chemical mixing tank operates with a 3 point level control. When a high level is reached in the recycle tank, the chemical transfer pump cannot be started. The makeup water is also shut off. Liquid can only be transferred from the mixing tank when the chemical liquid is at or below medium level in the tank. Press stop button (PB-4) to stop the chemical transfer pump. When the chemical liquid level drops below the low level set point, the alarm will be sounded. A light (LT-10) will glow when the alarm has been acknowledged. Press the alarm acknowledge button (PB-8) to silence the alarm. The liquid level in the mixing tank must be set at or below the medium level for proper operation. After the proper level has been obtained the agitator motor should be turned on (SS-5) for a short time to allow proper mixing of the chemical liquid. A light (LT-11) will indicate that the agitator motor is on. The agitator motor must be turned on and off manually.

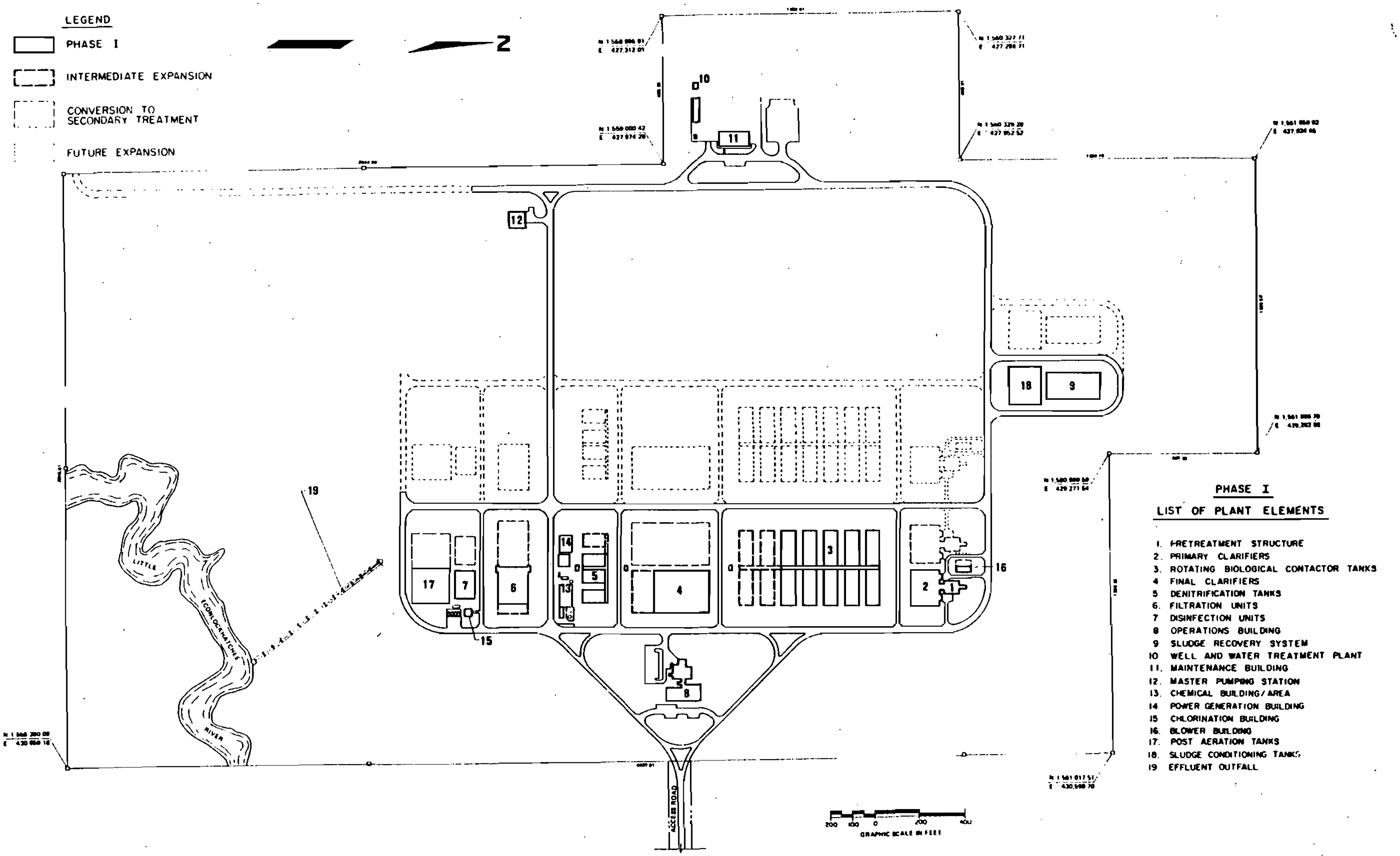
The bubbler level indicator in the packed tower recycle tank monitors the liquid level in the tank. A constant PSI air supply must be maintained to the bubbler level control. If the air supply is less than 20 PSI, a red light (LT-4) will glow indicating a low air supply. The level control will not operate. When the level in the recycle tank drops below the operating level, the packed tower makeup water solenoid will be activated for a certain amount of time. When the level in the recycle tank drops below the low level, the packed tower low liquid relay will be activated and an alarm condition will exist. The alarm horn will sound. The horn

can be extinguished by pressing the alarm acknowledge button (PB-8). The alarm acknowledge light (LT-10) will glow until the alarm condition is corrected by adding more makeup water to the packed tower recycle tank.

SITE PLAN AND

LOCATION MAPS

IRON BRIDGE REGIONAL WATER POLLUTION CONTROL PLANT



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2	11 28 78	REVISIONS PER ADDENDUM Nº 1	[illegible]	DWP
1	6/16/77	GENERAL REVISIONS	DKP	DWB

APPROVED FOR DAWKINS & ASSOCIATES INC.

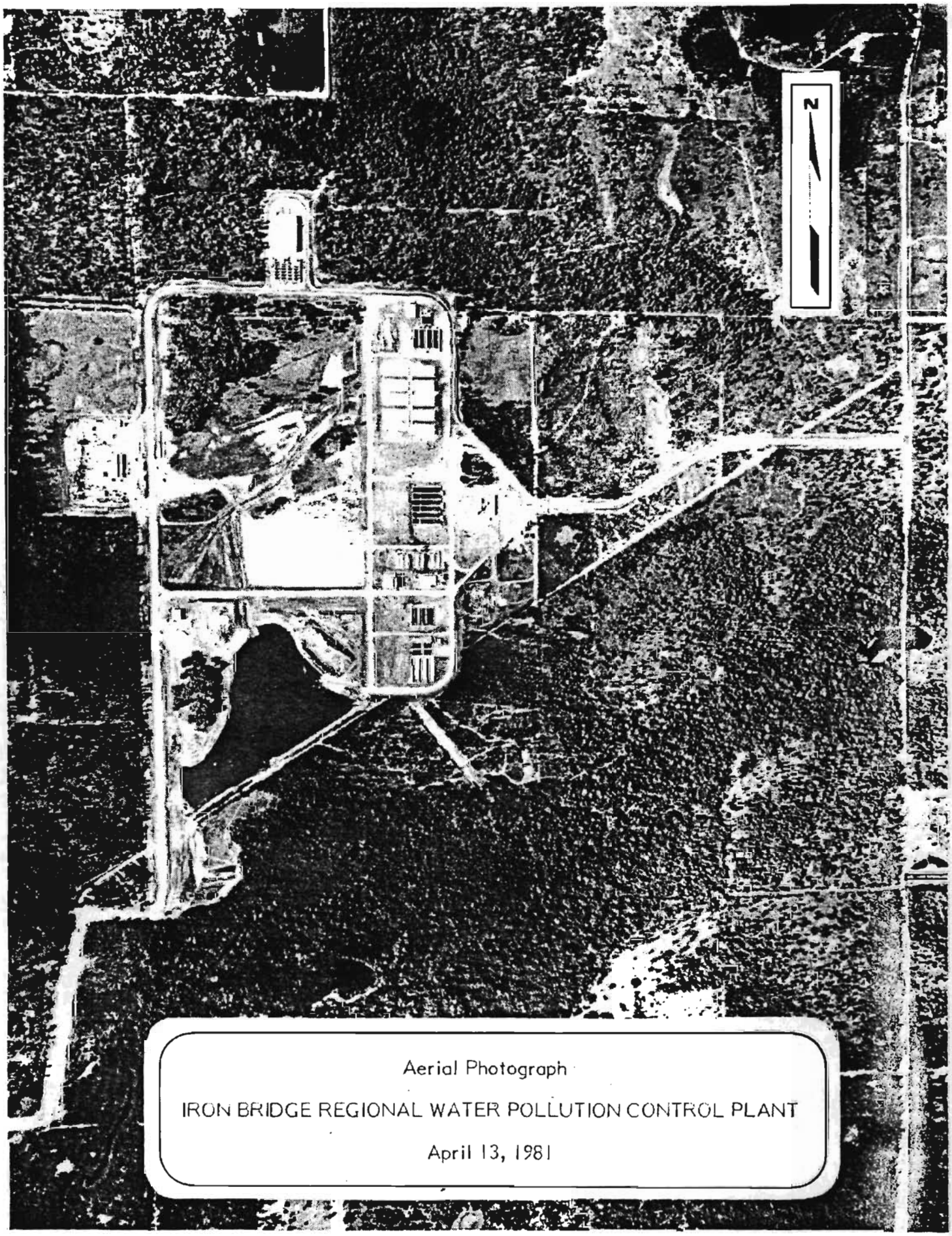
REG. PROF. ENGR. FLORIDA 5304

A&A DAWKINS & ASSOCIATES, INC.
CONSULTING ENGINEERS
ORLANDO, FLORIDA

MUNICIPAL SEWER UTILITY
CITY OF ORLANDO, FLORIDA
PUBLIC WORKS DIVISION
EASTERLY WATER POLLUTION CONTROL FACILITIES

SITE PLAN

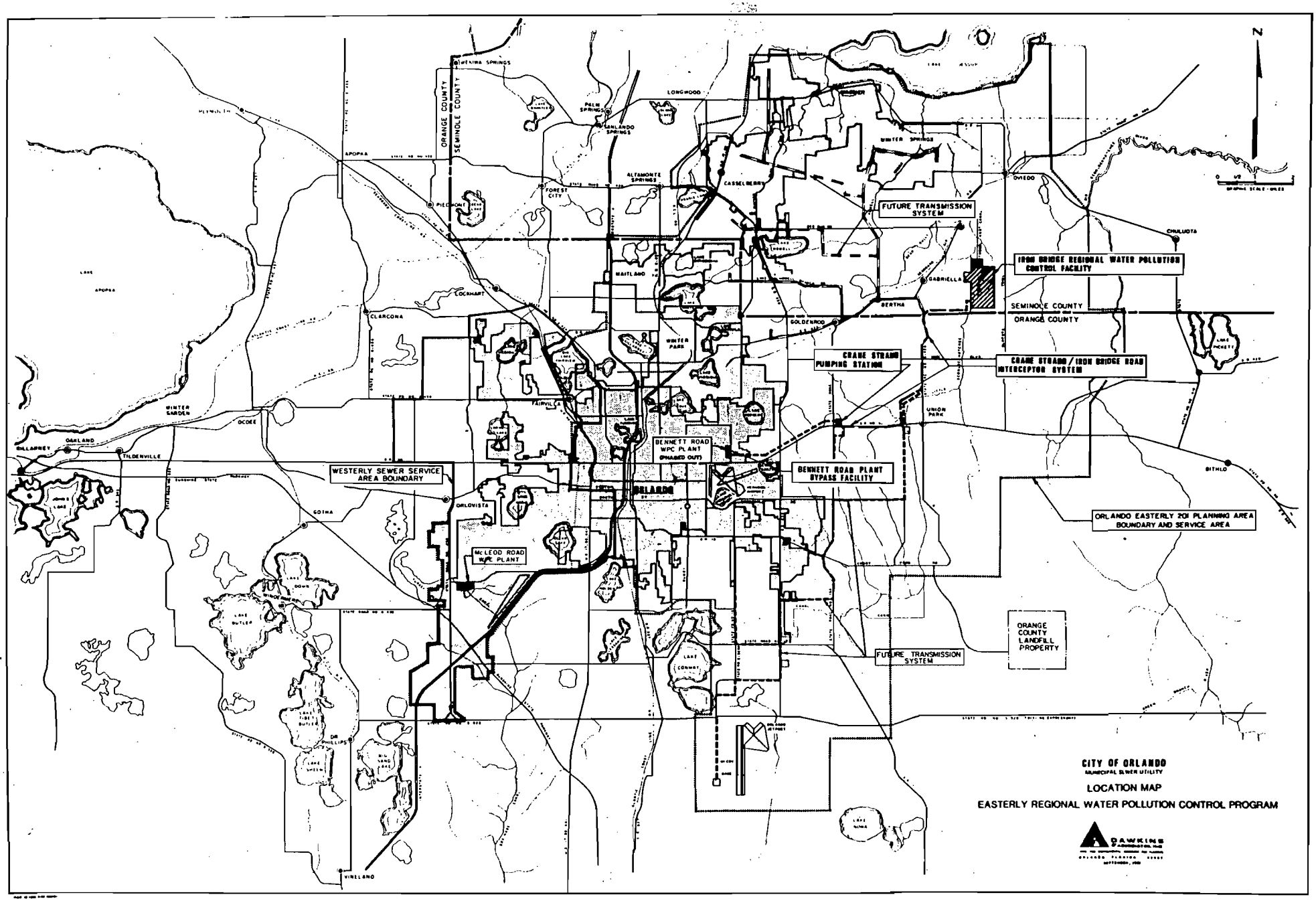
DATE DEC 10, 1976
SCALE 1" = 200'
PROJECT 076 011
SHEET AG-5



Aerial Photograph

IRON BRIDGE REGIONAL WATER POLLUTION CONTROL PLANT

April 13, 1981

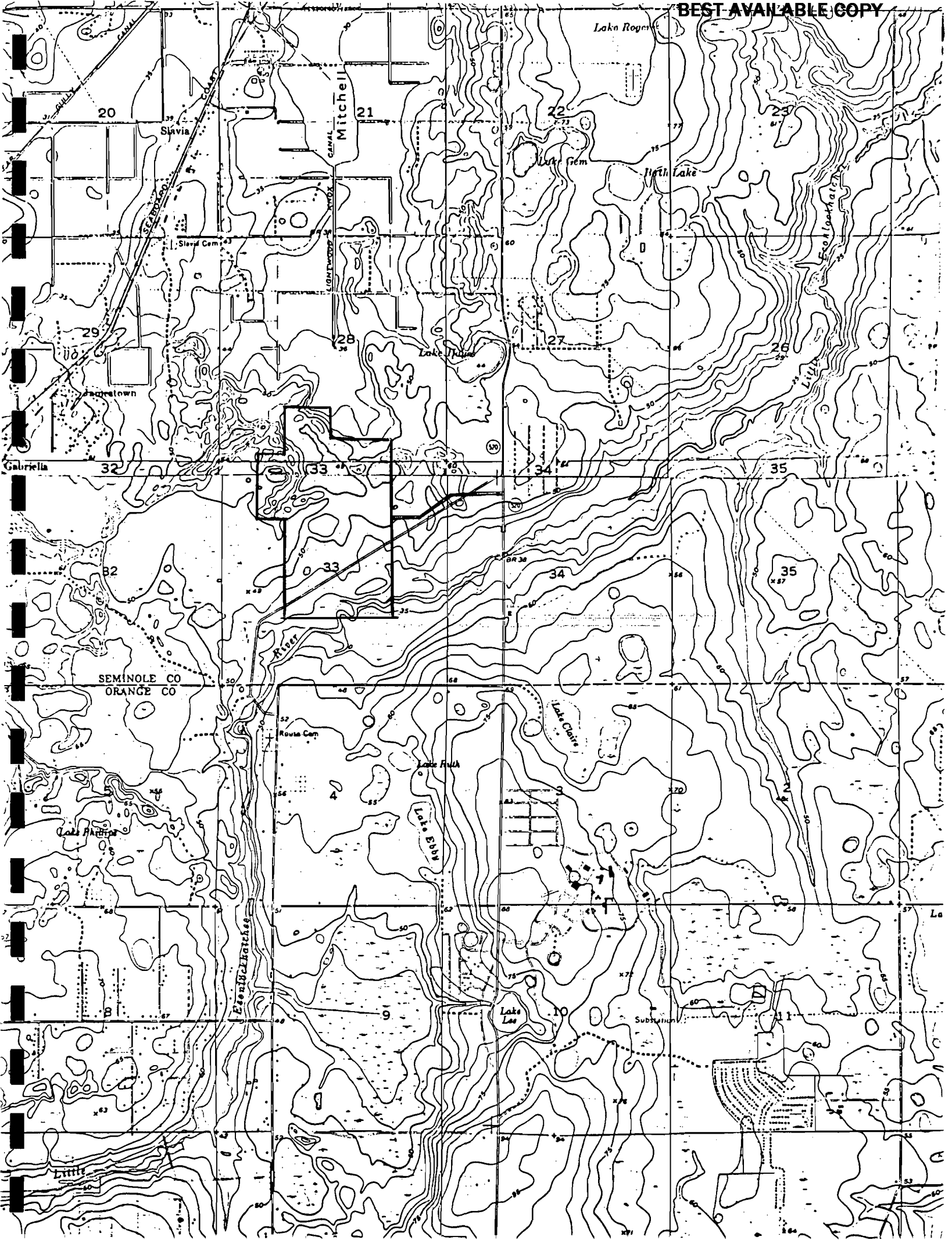


CITY OF ORLANDO
MUNICIPAL SEWER UTILITY

LOCATION MAP

EASTERLY REGIONAL WATER POLLUTION CONTROL PROGRAM

DAWKINS



AIR CONSTRUCTION PERMIT APPLICATION FOR IRON BRIDGE SLUDGE DRYER, WEST

July 26, 1982

CROSS/TESSITORE & ASSOCIATES, P.A.

REGISTERED PROFESSIONAL ENGINEERS

ENVIRONMENTAL ENGINEERS

1611 E. HILLCREST STREET
ORLANDO, FLORIDA 32803
305/898-6140

CHECK # 126323

CITY OF ORLANDO

ORLANDO, FLORIDA

VOUCHER NO. 126323

NOT VALID AFTER 60 DAYS

BEST AVAILABLE COPY

[redacted] 631

DATE		
MONTH	DAY	YEAR
09	20	83

PAY THE SUM OF $100DOLLARS AND 00CENTS

PAY EXACTLY

DOLLARS	CENTS
$100.00	

TO THE ORDER OF FDER ST JOHNS RIVER DISTRICT

Barnett Bank 201 SOUTH ORANGE AVENUE ORLANDO, FLORIDA 32801

Bill Frederick

G. Michael Miller DIRECTOR OF FINANCE

[redacted] [redacted]

CHECK # 126322

CITY OF ORLANDO

ORLANDO, FLORIDA

VOUCHER NO. 126322

NOT VALID AFTER 60 DAYS

[redacted] 631

DATE		
MONTH	DAY	YEAR
09	20	83

PAY THE SUM OF $100DOLLARS AND 00CENTS

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DOLLARS	CENTS
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Bill Frederick

G. Michael Miller DIRECTOR OF FINANCE

[redacted] [redacted]

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

№ 33699

RECEIPT FOR APPLICATION FEES AND MISCELLANEOUS REVENUE

Received from City of Orlando Date [illegible]

Address [illegible] Dollars $ [illegible]

Applicant Name & Address [illegible]

Source of Revenue

Revenue Code [illegible] Application Number AC 51-[illegible]

By [illegible]

PERMIT APPLICATION

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
BAQM

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Sludge Drying Facility [x] New[1] [ ] Existing[1]

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

COMPANY NAME: City of Orlando COUNTY: Seminole

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) West Line with cyclone + Venturi scrubber + odor contactor

SOURCE LOCATION: Street Iron Bridge City Oviedo

UTM: East 478250 North 3166500

Latitude 28 ° 37 ' 20 "N Longitude 81 ° 13 ' 10 "W

APPLICANT NAME AND TITLE: City of Orlando

APPLICANT ADDRESS: P. O. Box 1418, Oviedo, Florida 32765

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of The City of Orlando (Florida)

I certify that the statements made in this application for a construction 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: _____

Robert C. Haven, Director of Public Works
Name and Title (Please Type)

Date: 8/17/82 Telephone No. (305) 849-2266

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 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.

(Affix Seal)

FRANK L. CROSS, JR. CERTIFICATE No. 7916 STATE OF FLORIDA REGISTERED ENGINEER

Signed: _____

Frank L. Cross, Jr., P.E.
Name (Please Type)

Cross/Tessitore & Associates, P.A.
Company Name (Please Type)

1611 E. Hillcrest St., Orlando FL 32803
Mailing Address (Please Type)

Florida Registration No. 7916 Date: _____ Telephone No. (305) 898-6140

[1]See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

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.

This is an air pollution control system to clean the air from a sewage sludge dryer at the Iron Bridge Wastewater Treatment Plant. The system consists of cyclone(s) followed by a Venturi scrubber for particulate removal and a packed column using $KMnO_4$ for odor removal. This project will result in full compliance with the FDER air pollution control regulations.

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

Start of Construction July 1980 Completion of Construction March 1982

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.)

Ducts	$ 25,000.00	
Fan	50,000.00	
Scrubber	250,000.00	Total $350,000.00
Stack	25,000.00	

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

N/A

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? ____ Yes __x__ No

F. Normal equipment operating time: hrs/day 16 ; days/wk 7 ; wks/yr 52 ; if power plant, hrs/yr N/A ;

if seasonal, describe: N/A

G. 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? N/A
   b. If yes, has "Lowest Achievable Emission Rate" been applied? N/A
   c. If yes, list non-attainment pollutants.
      N/A
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII. Yes
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

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

Page 2a

Additional Information

Section II:G.

2. Yes, because it is a new major source in an attainment area.

3. Yes, because it is a new source with the potential for emitting over 250 TPY of pollutants (NO_x).

4. No, because this type of source is not on the list of NSPS industries.

5. No--from lead analysis of performance test filter the lead emission values are under NESHAPS, 1200 lbs/yr.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

No 65126

RECEIPT FOR APPLICATION FEES AND MISCELLANEOUS REVENUE

Received from City of Orlando Date Aug 20, 1982

Address PO Box 1418, Orlando, 32765 Dollars $ 1,000.00

Applicant Name & Address Same

Source of Revenue W. line W/cyclone & scrubber

Revenue Code 0101 Ck# 102369 Application Number AC59-59312

By Judy Cevelin

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

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

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Conditioned Sewage Sludge	particulates	14% solids	39,872	input to dryer

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

1. Total Process Input Rate (lbs/hr): 39,872

2. Product Weight (lbs/hr): 1,731 (see process weight diagram)

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1]		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Visible Emissions	--	--	N/A	N/A	--	--	
Particulates	20	174	process weight	22.95	1994	5806	Stack
CO	Neg	Neg	N/A	N/A	Neg	Neg	Emission
Sulfur Dioxide	3	14	N/A	N/A	3	14	Sketch
NO_x	120	348	N/A	N/A	120	348	
HC	30	87	N/A	N/A	30	87	

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5])
Cyclone & Scrubber System	Particulate	99%	3%<3μ (into scrubber)	*
	SO_2	zero	86%>10μ (from dryer)	EPA AP-42

*Assumes 99% from air pollution control system manufacturer.

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 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)

[5] If Applicable

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
No. 2 oil	(105 gal/ton)	136.5 gal/hr	18.72
	92 gal/hr		

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: 0.36 Percent Ash: 0.01

Density: 7.162 lbs/gal Typical Percent Nitrogen: 0.012

Heat Capacity: 19,400 BTU/lb 137,158 BTU/gal

Other Fuel Contaminants (which may cause air pollution): N/A

F. If applicable, indicate the percent of fuel used for space heating. Annual Average N/A Maximum

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

Solid waste and liquid wastes go back into the wastewater treatment plant.

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

Stack Height: 54'2" ft. Stack Diameter: 4'3" ft.

Gas Flow Rate: 33,700 ACFM Gas Exit Temperature: 119 °F.

Water Vapor Content: 13.4 % Velocity: 25 FPS

stack test

SECTION IV: INCINERATOR INFORMATION

N/A

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.)
Lbs/hr Incinerated							

Description of Waste

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

Approximate Number of Hours of Operation per day days/week

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 Diameter _____ 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.):

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight – show derivation.
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, 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 8½" 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 8½" 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 8½" 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. An application fee of $20, unless exempted by Section 17-4.05(3), F.A.C. 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

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
[ ] Yes [X] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) [ ] Yes [X] No

Contaminant	Rate or Concentration

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

Contaminant	Rate or Concentration
Particulates	20 lbs/hr
SO_x	3.
NO_x	120
CO	Neg
HC	30

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

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:
5. Useful Life:
6. Operating Costs:
7. Energy:
8. Maintenance Cost:
9. Emissions:

Contaminant	Rate or Concentration

*Explain method of determining D 3 above.

*Fee of $1,000.00 enclosed based on potential emissions of 1994 lbs/hr

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: Venturi scrubber followed by contact chamber

b. Operating Principles: Impaction in Venturi for particulates followed by chemical absorption in contact chamber for odors.

c. Efficiency*: 99% d. Capital Cost: $350,000.00

e. Useful Life: 10 years f. Operating Cost: $20,000.00/yr

g. Energy*: 40 KWH h. Maintenance Cost: $1,500.00/yr

i. Availability of construction materials and process chemicals:
Readily available.

j. Applicability to manufacturing processes: Compatible with sludge drying and wwtp practices.

k. Ability to construct with control device, install in available space, and operate within proposed levels:
No problems anticipated.

2.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy**: h. Maintenance Costs:

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:

*Explain method of determining efficiency.

**Energy to be reported in units of electrical power – KWH design rate.

3.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Life: f. Operating Cost:

g. Energy: h. Maintenance Cost:

*Explain method of determining efficiency above.

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*:

d. Capital Cost:

e. Life:

f. Operating Cost:

g. Energy:

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: Venturi scrubber with contact chamber
2. Efficiency*: 99%
3. Capital Cost: $350,000.00
4. Life: 10 years
5. Operating Cost: $20,000.00
6. Energy: 40 KWH
7. Maintenance Cost: $1,500.00
8. Manufacturer: Ducon
9. Other locations where employed on similar processes:

a.

(1) Company: City of Largo, Florida - WWTP

(2) Mailing Address: City Hall

(3) City: Largo (4) State: Florida

(5) Environmental Manager: Larry Bragg

(6) Telephone No.: 813/584-8671 Ext. 207

*Explain method of determining efficiency above.

(7) Emissions*:

Contaminant	Rate or Concentration
Particulates	efficiency 99%

(8) Process Rate*: 23084 lbs/hr

b.

(1) Company: ESP (Contractor)(Polycon scrubber)

(2) Mailing Address: P.O. Drawer 1137

(3) City: Dunedin (4) State: Florida 33528

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

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

10. Reason for selection and description of systems:

The system is designed to control particulates and odors. The Venturi scrubber could be replaced with a baghouse or electrostatic precipitator for particulate removal efficiency but neither unit is compatible with the dryer because of problems with resistivity moisture and temperature. Also, the odor control system (contact chamber) could be substituted with an incinerator, but it is too energy intensive.

*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

A. Company Monitored Data

1. FDER no sites 1 TSP 1 ( ) SO^{2*} 1 Wind spd/dir

Period of monitoring ___/___/___ (month day year) to ___/___/___ (month day year)

Other data recorded N/A

Attach all data or statistical summaries to this application.

2. Instrumentation, Field and Laboratory

a) Was instrumentation EPA referenced or its equivalent? X 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 ___/___/___ (month day year) to ___/___/___ (month day year) Default conditions

2. Surface data obtained from (location) N/A

3. Upper air (mixing height) data obtained from (location) N/A

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

C. Computer Models Used

1. PTMTP 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.
Copy of computer run attached.

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 on point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.
Only one source.

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

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

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.

This system is to recover and sell a waste product (sewage sludge).
The potential air pollution impact on the community is odor and this is being controlled by a chemical contact chamber.

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.

CALCULATIONS

ITEM 1 Total Process Input Rate and Product Weight

Sludge cake = 11,048 lb/hr @ 14.88% dry solids

Recycle = 28,824 lb/hr

Sludge Dryer Feed = 39,874 lb/hr = 19.94 T/hr

(See Process Weight Flow Diagram)

ITEM 3 Potential Emissions (uncontrolled)

AP-42 Table 2.5-1 "Emission Factors for Sewage Sludge Incinerators"

Pollutant	Uncontrolled Emissions Factor (lb/ton)
Particulate	100
CO	Negligible
NO_x	6
HC	1.5

Potential Emission Calculations

Sludge Feed Rate = 19.94 T/hr

Particulate Emissions = $(100) \times (19.94) \times (1b) \frac{hrs}{day} \times (7) \frac{days}{wk} \times (52) \frac{wks}{yr} \times (\frac{1}{2000}) \frac{T}{lbs}$

= 5806.5 T/yr

SO_2 From fuel analysis %S = 0.36%

Emissions = $(92) \frac{gal}{hr} \times (7.16) \frac{lb}{gal} \times (0.0036) \times 2 \times (16) \frac{hrs}{day} \times (7) \frac{days}{wk} \times (52) \frac{wks}{yr} \times (\frac{1}{2000}) \frac{T}{lbs}$ = 13.8 T/yr

$\underline{NO_x}$ Emissions = (6) $\frac{lbs}{T}$ x (19.94) $\frac{T}{hr}$ x (16) $\frac{hrs}{day}$

x (7) $\frac{days}{week}$ x (52) $\frac{weeks}{yr}$ x $(\frac{1}{2000})$ $\frac{T}{lbs}$

= 348.4 T/yr

$\underline{HC}$ Emissions = (1.5) $\frac{lbs}{T}$ x (19.94) $\frac{T}{hr}$ x (16) $\frac{hrs}{day}$

x (7) $\frac{days}{wk}$ x (52) $\frac{wks}{yr}$ x $(\frac{1}{2000})$ $\frac{T}{lbs}$

= 87.1 T/yr

ITEM 2 Controlled Emissions

Control System = Cyclone and Venturri Scrubber

Particulate Control Efficiency is estimated at approximately 99%

Pollutant	Uncontrolled Emissions (t/yr)	Control Efficiency (%)	Controlled Emission (t/yr)
Particulate	5806.5	0.99	58.1
SO_2	13.8	0.00	13.8
NO_x	348.4	0.00	348.4
CO	Negligible	0.00	Negligible
HC	87.1	0.00	87.1

ITEM 4 See attached Air Pollution Control System Design Data

ITEM 5 Control Efficiency Derivation

Based on manufacturers data, a particulate control efficiency of 99% was assumed.

AIR QUALITY ANALYSIS

Iron Bridge Sludge Dryer Air Quality Impact

Maximum Particulate Emissions = 20 lbs/hr

Maximum NO_x Emissions = 120 lbs/hr

Maximum Ground Level Impact*

Pollutant	Max GLC (3 min)	Max GLC (24 hr)
TSP	38 ($\mu g/m^3$)	13.7 ($\mu g/m^3$)
NO_x	227 ($\mu g/m^3$)	82 ($\mu g/m^3$)

Existing Ground Level Background**

	24 hr	Annual
TSP	128.6 (maximum)	42.2 ($\mu g/m^3$)
NO_x	NA	49 ($\mu g/m^3$)

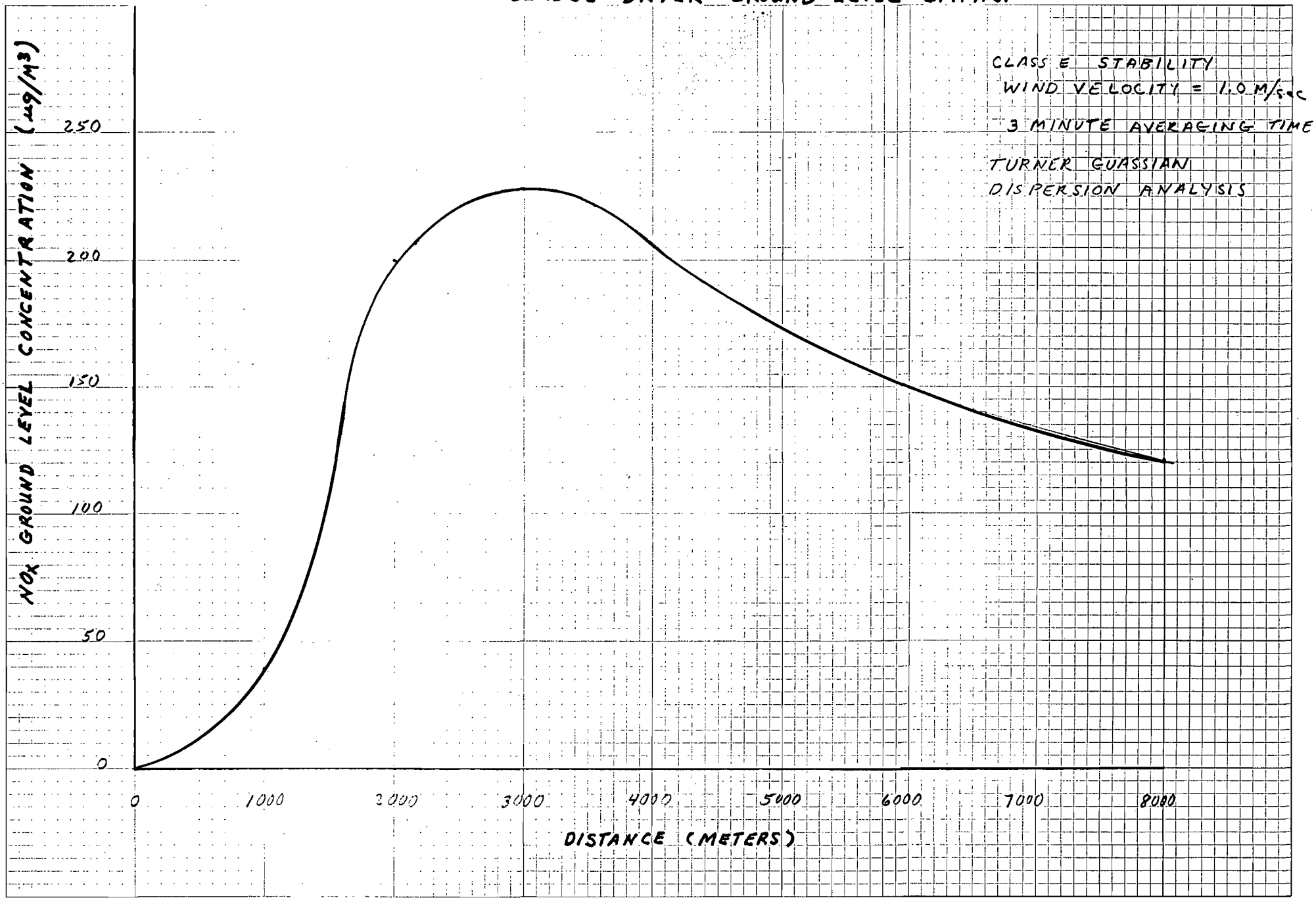
Expected Maximum Ground Level Concentration

	24 hr	Annual
TSP	142.3 ($\mu g/m^3$)	60 $\mu g/m^3$
NO_x	NA	100 $\mu g/m^3$

* See attached computer run and plot

**See attached DER data

SLUDGE DRYER GROUND LEVEL IMPACT



```
SIG Y (METERS) =                                          728.92
PLUME RISE (METERS) =                                     171
BRIGGS FORMULA USED
```

CONCENTRATION (MICROGRAMS/CUBIC METER) = 11.63

DO YOU DESIRE TO MAKE FURTHER CALCULATIONS WITH GIVEN
ATMOSPHERIC CONDITIONS? (1=YES,2=NO) ?2

STOP @ 2190
RUN

****

AIR IS DESIGNED TO UTILIZE GAUSSIAN DISPERSION CONCEPTS
DEVELOPED BY TURNER TO PREDICT DOWNWIND-CROSSWIND-GROUNDLEVEL
POLLUTANT CONCENTRATIONS FROM POINT AND LINE SOURCES.

TURNER, D.B., 'WORKBOOK OF ATMOSPHERIC DISPERSION',
U.S. PUBLIC HEALTH SERVICE PUBLICAION, 999-AP-26, 1970.

****

SELECT NUMBER OF PROBLEM TYPE:
1 - POINT SOURCE - GASEOUS
2 - LINE SOURCE - GASEOUS
?1

AUTOMATIC SEARCH FOR MAXIMUM CONCENTRATION?
1 - AUTOMATIC
2 - NOT AUTOMATIC
?1
INCREMENTAL DISTANCE (METERS)
?10

ENTER WIND VELOCITY AT 10 METERS (M/SEC)
?1
ENTER PHYSICAL HEIGHT OF THE EMISSION SOURCE (M)
?16.56

SELECT FROM THE FOLLOWING CONDITIONS:
1 - DAY
2 - NIGHT
?2

CLOUD COVER:
1 - TOTALLY OVERCAST
2 - MOSTLY OVERCAST
3 - MOSTLY CLEAR
?2

DO YOU DESIRE TO CORRECT THE WIND VELOCITY TO THE

```
DO YOU DESIRE TO CORRECT FOR BOUYANCY? (1=YES,2=NO)  ?1

INPUT THE FOLLOWING DATA:
STACK EXIT VELOCITY (M/SEC)?7.64
STACK INNER DIAMETER (M)?1.29
ATMOSPHERIC PRESSURE (MILLIBARS)?987
STACK GAS TEMPERATURE (K)?321
AMBIENT AIR TEMPERATURE (K)?294
HEAT EMISSION RATE(KJ/S)?1
SELECT A PLUME RISE FORMULA
          1 - HOLLAND
          2 - BRIGGS
2         3 - MOSES AND CARSON
 ?
?
?2
POTENTIAL TEMP GRADIENT (K/M)?.03
          ELEVATION OF RECEPTOR ABOVE GROUND LEVEL (M)
?0
DOWNWIND DISTANCE OF INTEREST (M)
?1000
CROSSWIND DISTANCE OF INTEREST (M)
?0
ENTER THE GASEOUS EMISSION RATE (GRAMS/SEC)
?15.1
-------------------------------------------------------------
                  P O I N T    S O U R C E
-------------------------------------------------------------
LOCATION - DOWNWIND (METERS) =                        2820
         - CROSSWIND (METERS) =                       0
EMISSION RATE (GRAMS/SEC) =                           15.1
STABILITY CLASS =                                     E
EFFECTIVE EMISSION HEIGHT (METERS) =                  66.1
WIND VELOCITY (METERS/SEC) =                          1.1
SIG Z (METERS) =                                      41.27
SIG Y (METERS) =                                     129.45
PLUME RISE (METERS) =                                 50
BRIGGS FORMULA USED
-------------------------------------------------------------

CONCENTRATION (MICROGRAMS/CUBIC METER) =              226.19     Maximum

-------------------------------------------------------------



DO YOU DESIRE TO MAKE FURTHER CALCULATIONS WITH GIVEN
ATMOSPHERIC CONDITIONS? (1=YES,2=NO) ?2

STOP  @   2190
RUN


**************************************************************

AIR IS DESIGNED TO UTILIZE GAUSSIAN DISPERSION CONCEPTS
DEVELOPED BY TURNER TO PREDICT DOWNWIND-CROSSWIND-GROUNDLEVEL
POLLUTANT CONCENTRATIONS FROM POINT AND LINE SOURCES.

TURNER, D.B., 'WORKBOOK OF ATMOSPHERIC DISPERSION',
   U.S. PUBLIC HEALTH SERVICE PUBLICAION, 999-AP-26, 1970.

**************************************************************
```

```
SELECT NUMBER OF PROBLEM TYPE:
         1 - POINT SOURCE - GASEOUS
         2 - LINE SOURCE - GASEOUS
?1


AUTOMATIC SEARCH FOR MAXIMUM CONCENTRATION?
         1 - AUTOMATIC
         2 - NOT AUTOMATIC
?2


ENTER WIND VELOCITY AT 10 METERS (M/SEC)
?1
ENTER PHYSICAL HEIGHT OF THE EMISSION SOURCE (M)
?16.56


SELECT FROM THE FOLLOWING CONDITIONS:
         1 - DAY
         2 - NIGHT
?2

CLOUD COVER:
         1 - TOTALLY OVERCAST
         2 - MOSTLY OVERCAST
         3 - MOSTLY CLEAR
?2


DO YOU DESIRE TO CORRECT THE WIND VELOCITY TO THE
EMISSION HEIGHT? (1=YES, 2=NO)  ?1
DO YOU DESIRE TO CORRECT FOR BOUYANCY? (1=YES,2=NO)  ?1

INPUT THE FOLLOWING DATA:
STACK EXIT VELOCITY (M/SEC)?7.64
STACK INNER DIAMETER (M)?1.29
ATMOSPHERIC PRESSURE (MILLIBARS)?987
STACK GAS TEMPERATURE (K)?321
AMBIENT AIR TEMPERATURE (K)?294
HEAT EMISSION RATE(KJ/S)?1
SELECT A PLUME RISE FORMULA
         1 - HOLLAND
         2 - BRIGGS
         3 - MOSES AND CARSON
?2
POTENTIAL TEMP GRADIENT (K/M)?.03
         ELEVATION OF RECEPTOR ABOVE GROUND LEVEL (M)
?0
DOWNWIND DISTANCE OF INTEREST (M)
?1000
CROSSWIND DISTANCE OF INTEREST (M)
?0
ENTER THE GASEOUS EMISSION RATE (GRAMS/SEC)
?15.1
```

P O I N T S O U R C E

LOCATION - DOWNWIND (METERS) =	1000
- CROSSWIND (METERS) =	0
EMISSION RATE (GRAMS/SEC) =	15.1
STABILITY CLASS =	E
EFFECTIVE EMISSION HEIGHT (METERS) =	66.1
WIND VELOCITY (METERS/SEC) =	1.1

SIG Y (METERS) = 51.45
PLUME RISE (METERS) = 50
BRIGGS FORMULA USED

CONCENTRATION (MICROGRAMS/CUBIC METER) = 39.71

DO YOU DESIRE TO MAKE FURTHER CALCULATIONS WITH GIVEN
ATMOSPHERIC CONDITIONS? (1=YES,2=NO) ?1
DOWNWIND DISTANCE OF INTEREST (M)
?500
CROSSWIND DISTANCE OF INTEREST (M)
?0
ENTER THE GASEOUS EMISSION RATE (GRAMS/SEC)
?15.1

P O I N T S O U R C E

LOCATION - DOWNWIND (METERS) = 500
- CROSSWIND (METERS) = 0
EMISSION RATE (GRAMS/SEC) = 15.1
STABILITY CLASS = E
EFFECTIVE EMISSION HEIGHT (METERS) = 66.1
WIND VELOCITY (METERS/SEC) = 1.1
SIG Z (METERS) = 13.37
SIG Y (METERS) = 27.76
PLUME RISE (METERS) = 50
BRIGGS FORMULA USED

CONCENTRATION (MICROGRAMS/CUBIC METER) = .06

DO YOU DESIRE TO MAKE FURTHER CALCULATIONS WITH GIVEN
ATMOSPHERIC CONDITIONS? (1=YES,2=NO) ?1
DOWNWIND DISTANCE OF INTEREST (M)
?1500
CROSSWIND DISTANCE OF INTEREST (M)
?0
ENTER THE GASEOUS EMISSION RATE (GRAMS/SEC)
?15.1

P O I N T S O U R C E

LOCATION - DOWNWIND (METERS) = 1500
- CROSSWIND (METERS) = 0
EMISSION RATE (GRAMS/SEC) = 15.1
STABILITY CLASS = E
EFFECTIVE EMISSION HEIGHT (METERS) = 66.1
WIND VELOCITY (METERS/SEC) = 1.1
SIG Z (METERS) = 28.37
SIG Y (METERS) = 73.81
PLUME RISE (METERS) = 50
BRIGGS FORMULA USED

CONCENTRATION (MICROGRAMS/CUBIC METER) =

BEST AVAILABLE COPY

```
DO YOU DESIRE TO MAKE FURTHER CALCULATIONS WITH GIVEN
ATMOSPHERIC CONDITIONS? (1=YES,2=NO) ?1
DOWNWIND DISTANCE OF INTEREST (M)
?2000
CROSSWIND DISTANCE OF INTEREST (M)
?0
ENTER THE GASEOUS EMISSION RATE (GRAMS/SEC)
?15.1
```

P O I N T S O U R C E	
LOCATION - DOWNWIND (METERS) =	2000
- CROSSWIND (METERS) =	0
EMISSION RATE (GRAMS/SEC) =	15.1
STABILITY CLASS =	E
EFFECTIVE EMISSION HEIGHT (METERS) =	66.1
WIND VELOCITY (METERS/SEC) =	1.1
SIG Z (METERS) =	33.82
SIG Y (METERS) =	95.35
PLUME RISE (METERS) =	50
BRIGGS FORMULA USED	

CONCENTRATION (MICROGRAMS/CUBIC METER) = 200.18

```
DO YOU DESIRE TO MAKE FURTHER CALCULATIONS WITH GIVEN
ATMOSPHERIC CONDITIONS? (1=YES,2=NO) ?1
DOWNWIND DISTANCE OF INTEREST (M)
?4000
CROSSWIND DISTANCE OF INTEREST (M)
?0
ENTER THE GASEOUS EMISSION RATE (GRAMS/SEC)
?15.1
```

P O I N T S O U R C E	
LOCATION - DOWNWIND (METERS) =	4000
- CROSSWIND (METERS) =	0
EMISSION RATE (GRAMS/SEC) =	15.1
STABILITY CLASS =	E
EFFECTIVE EMISSION HEIGHT (METERS) =	66.1
WIND VELOCITY (METERS/SEC) =	1.1
SIG Z (METERS) =	49.97
SIG Y (METERS) =	176.70
PLUME RISE (METERS) =	50
BRIGGS FORMULA USED	

CONCENTRATION (MICROGRAMS/CUBIC METER) = 205.69

MAXIMUM HEIGHT (1=YES, 2=NO) ?1

DO YOU DESIRE TO MAKE FURTHER CALCULATIONS WITH GIVEN
ATMOSPHERIC CONDITIONS? (1=YES,2=NO) ?1
DOWNWIND DISTANCE OF INTEREST (M)
?8000
CROSSWIND DISTANCE OF INTEREST (M)
?0
ENTER THE GASEOUS EMISSION RATE (GRAMS/SEC)
?15.1

P O I N T S O U R C E

LOCATION - DOWNWIND (METERS) =	8000
- CROSSWIND (METERS) =	0
EMISSION RATE (GRAMS/SEC) =	15.1
STABILITY CLASS =	E
EFFECTIVE EMISSION HEIGHT (METERS) =	66.1
WIND VELOCITY (METERS/SEC) =	1.1
SIG Z (METERS) =	70.78
SIG Y (METERS) =	327.45
PLUME RISE (METERS) =	50

BRIGGS FORMULA USED

CONCENTRATION (MICROGRAMS/CUBIC METER) = 121.48 ←

DO YOU DESIRE TO MAKE FURTHER CALCULATIONS WITH GIVEN
ATMOSPHERIC CONDITIONS? (1=YES,2=NO) ?1
DOWNWIND DISTANCE OF INTEREST (M)
?10000
CROSSWIND DISTANCE OF INTEREST (M)
?0
ENTER THE GASEOUS EMISSION RATE (GRAMS/SEC)
?15.1

P O I N T S O U R C E

LOCATION - DOWNWIND (METERS) =	10000
- CROSSWIND (METERS) =	0
EMISSION RATE (GRAMS/SEC) =	15.1
STABILITY CLASS =	E
EFFECTIVE EMISSION HEIGHT (METERS) =	66.1
WIND VELOCITY (METERS/SEC) =	1.1
SIG Z (METERS) =	78.52
SIG Y (METERS) =	399.39
PLUME RISE (METERS) =	50

BRIGGS FORMULA USED

CONCENTRATION (MICROGRAMS/CUBIC METER) = 97.42 ←

DO YOU DESIRE TO MAKE FURTHER CALCULATIONS WITH GIVEN
ATMOSPHERIC CONDITIONS? (1=YES,2=NO) ?2

STOP @ 2190
RUN

ANNUAL AMBIENT SURVEILLANCE SUMMARY FOR 1981

PARAMETERS: CO, O_3, SO_2, NO_2

	CARBON MONOXIDE		OZONE			SULFUR DIOXIDE		NITROGEN DIOXIDE
	DOWNTOWN ORLANDO	SHELL	WINTER PARK	SEMINOLE COUNTY		WINTER PARK	DEBARY	WINTER PARK
NUMBER OF SAMPLES	4260	7503	7970	5257	NUMBERS OF SAMPLES	7378	1700	3788
MAXIMUM ONE HOUR AVG.	21 mg/M^3	14 mg/M^3	0.095 ppm	0.104 ppm	MAXIMUM 3 HOUR AVG.	166 $\mu g/M^3$	79 $\mu g/M^3$	
MAXIMUM 8 HOUR AVG.	10 mg/M^3	8 mg/M^3			MAXIMUM 24 HOUR AVG.	70 $\mu g/M^3$	25 $\mu g/M^3$	
					ARITHMETIC MEAN	16 $\mu g/M^3$	9 $\mu g/M^3$	49 $\mu g/M^3$
% CHANGE FROM: 1980	Sampling began in middle of 1980		+22.5%	(NA)	% CHANGE FROM: 1980	(NA)	Sampling began in 1981	(NA)

ANNUAL AMBIENT SURVEILLANCE SUMMARY (UG/M^3) FOR 1981

	PARTICULATE					
	MARINE RESERVE	TICO AIRPORT	MERRITT ISLAND	TITUSVILLE	SANFORD	FIRE STATION
NUMBER OF SAMPLES	*46	52	54	59	45	61
MAXIMUM	184.0	107.6	97.7	63.1	128.6	152:4
MINIMUM	27.3	17.3	16.8	18.6	18.8	28.1
GEOMETRIC MEAN	57.3	37.2	41.5	42.9	42.2	63.1
% CHANGE FROM 1980	+25.8%	-27.0%	+11.0%	+18.8%	+20.9%	+12.7%

	SULFUR DIOXIDE
	TICO AIRPORT
NUMBER OF SAMPLES	50
MAXIMUM	28.2
MINIMUM	0.0
ARITHMETIC MEAN	3.0
% CHANGE FROM 1980	Δ

	DAYTONA BEACH	TAFT	PINE HILLS	ZELLWOOD	DEBARY
NUMBER OF SAMPLES	**	61	53	56	49
MAXIMUM		156.7	139.7	84.7	105.4
MINIMUM		21.8	21.8	18.7	19.4
GEOMETRIC MEAN		49.0	49.2	40.3	37.2
% CHANGE FROM: 1980		+21.0%	+29.8%	+27.9%	Δ

COMMENTS: The significant rise in results from 1980 is due primarily to the severe drought experienced during the first half of 1981.

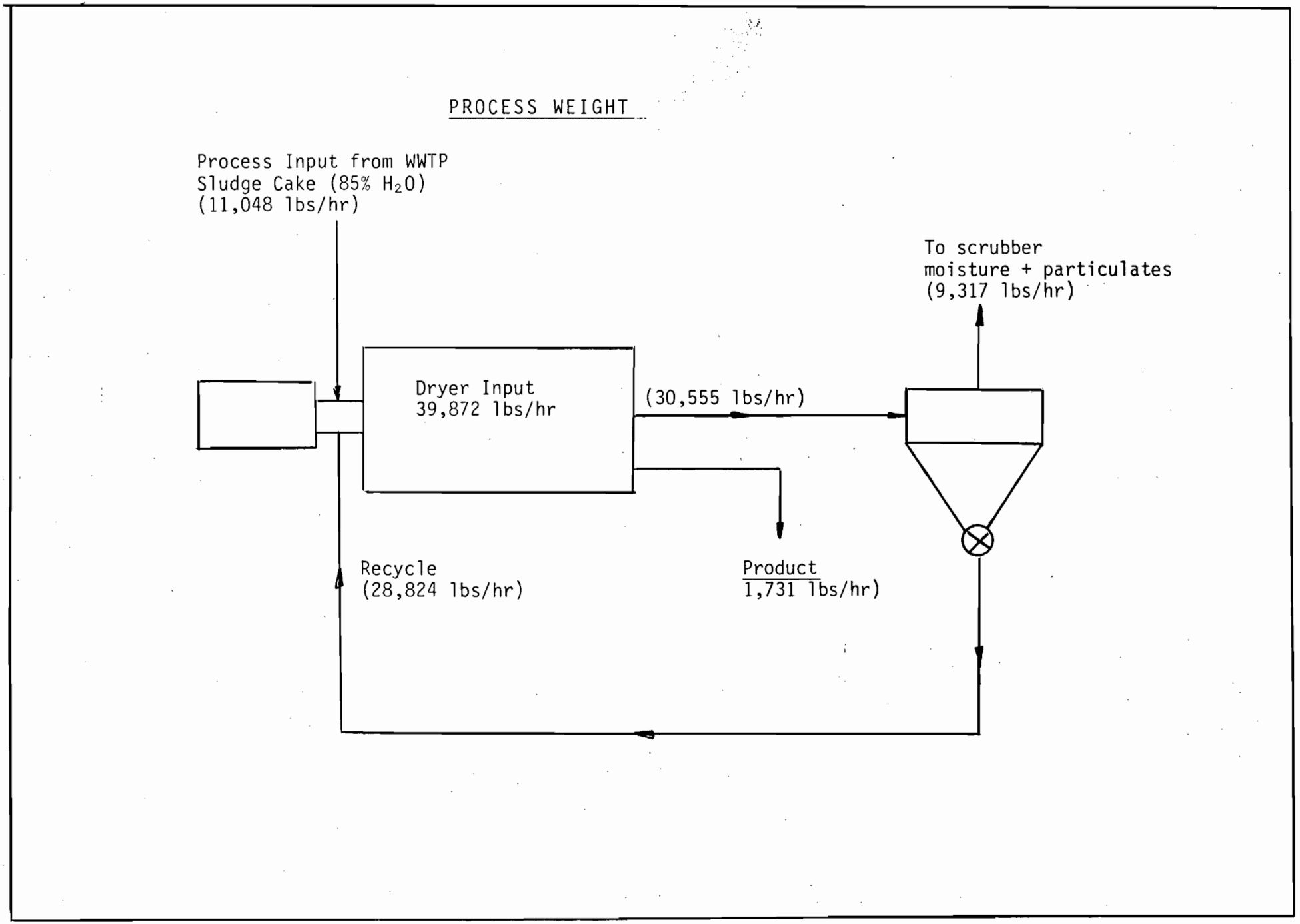
*January 1 to October 31 only.

**January 1 to June 30 only.

Δ1980 results were incomplete.

PROCESS WEIGHT DIAGRAMS

PROCESS WEIGHT DIAGRAM



SLUDGE RECOVERY SYSTEM DESCRIPTION

SLUDGE RECOVERY SYSTEM

SCOPE

Work to be performed under this section shall include furnishing and installing all material, equipment, labor and services necessary to provide a complete sludge drying process capable of producing a pasteurized, pelletized, and dry soil conditioner from the waste sludge produced by the wastewater treatment plant.

Work shall include, but not necessarily be limited to, the following components:

Sludge Pumping Facilities;
Polymer Solution Storage and Pumping Facilities;
Mechanical Sludge Dewatering and Sludge Handling System;
Gas Solids Separation System;
Conveyor and Materials Handling and Storage System;
Control System;
Electrical Equipment;
Piping and Valves;
Painting, Signs and Labels:
Supplier(s) Services;
Miscellaneous and Other Items:
General Mechanical and Construction Requirements for Screw Conveyors.

SYSTEM OPERATING CONDITIONS, DESCRIPTION, DESIGN AND PERFORMANCE

The sludge dewatering and drying system shall meet the following operational parameters:

Kind of Sludge:
Prethickened to 2% or more solids;
21% raw primary sludge;
59% waste secondary sludge;
20% phosphorus precipitation sludge with alum.

Dry solids per hour:
2.6 tons (maximum rate).

Dry solids in filter cake:
Daily average of not less than 18%.

SS in presses filtrate (initial dewatering section):
Daily average not over 100 mg/l.

Dry final product:
Daily average of not over 5% moisture content for bagging. 10% moisture for bulk.

Polymer consumption:
6.5 lbs/tons dry solids.

Water consumption:
80 gpm.

Clean Effluent Water consumption:
1100 gpm.

In addition, the system shall have the capability (with required increases or decreases in polymer feeds) to dewater and process aerobically digested sludge separately or in combimation with the above sludge, or undigested waste secondary sludge separately, or undigested raw sludge separately, or sludge in different combinations from that stated above. For the waste secondary sludge or the aerobically digested sludge, or a combination of the two, the system shall be capable of providing a dewatered cake with not less than 18% solids (dry weight basis) and an average filtrate suspended solids of not over 100 mg/l. The finished product shall have a moisture content not exceeding 5% for bagging and 10% moisture content for bulk operations.

SLUDGE PUMPING FACILITIES

Sludge Metering Pumps

There shall be furnished and installed sludge metering pumps as shown. Pumps shall be progressive cavity, positive displacement type with infinitely variable speed control. Each pump shall produce 10-35 gpm at 60' TDH (min.) with 5 HP motor and 6-inch diameter suction and 4-inch diameter discharge lines. The pump shall include electric motor slide rail and fabricated steel base. Control shall be at the Automatic Control panels. The pump shall be equipped with a helical rotor of hard chrome overlay coated tool steel and a stator of Buna N or approved equal. Suction and discharge openings shall be suitable for connection to 125 lb. standard flanges. The pump shall be cradle mounted to permit the suction part to be rotated to any desired angle. Hand holes shall be provided in each side of the pump's suction housing. Pumps shall be equipped with gear-type sealed universal joints. The pumps shall be mounted on a fabricated steel base which will accommodate the electric motor and the required accessories. Pumps shall be suitable for handling sewage sludge from 1% to 10%. Provide one uninstalled spare pump with motor and accessories. Pumps shall be Moyno Type SWG Model 1EOES1, as manufactured by Robbins and Myer, Inc., of Springfield, Ohio, or approved equal.

POLYMER SOLUTION STORAGE AND PUMPING FACILITIES

Polymer Solution Storage Tanks

There shall be furnished and installed, as shown on the plans, two (2) polymer storage tanks. Each tank shall be 15,000 gallon capacity, and shall be suitable fiberglass construction, and enclosed with an access manhole and drain for cleaning purposes. Each tank shall be provided with a 5" flanged nozzle 4" long located at the drain elevation for location of a level instrument and a 6" flange in the top for location of a float switch.

Polymer Solution Metering Pumps

There shall be polymer solution metering pumps furnished and installed as shown on the plans. Each pump shall have a capacity to pump from 0.7 to 7.0 gpm at 40' TDH with a ½ H.P., direct current, variable speed

drive motor. The pump shall be bronze body with stainless steel shaft and neoprene impellers. Each pump shall deliver a continuous flow of polymer solution to each sludge mixing unit at each filter press. Polymer feed rates shall be continuously adjustable by means of infinitely variable speed controls. All functions of the polymer metering pumps shall be controlled and indicated at the automatic control panel. Provide one extra uninstalled spare pump with motor and accessories.

MECHANICAL SLUDGE DEWATERING AND SLUDGE HANDLING SYSTEM

General

The mechanical sludge dewatering and sludge handling system specified in this section shall include all polymer solution mixing and flocculating components, filter belt presses, controllers, and a belt conveyor to receive dewatered sludge cake and transport it to the sludge cake storage bin, all as shown on the plans.

Dewatering Presses

There shall be provided as shown automatic filter belt presses complete with all accessories and controls to reduce the water content of the liquid sludge from maximum influent concentration of 98.0% water to a maximum cake effluent concentration of 82% water. Each press shall have the capacity to receive 2,000 gallons per hour of the liquid sludge at 98.0% water, and reduce the moisture content to 82% water in the quantity of 2,000 lbs per hour of dry solids.

Each press shall be optimized for dewatering by polymers, by employing filter screens with principal openings no smaller than 0.2 mm, and shall avoid floc destruction by gradually and continuously increasing filtration force as the cake dryness increases--including at least three zones of different filtration principle; a gravity zone, a pressure zone, and a shear/pressure zone. The equipment must utilize the basic physics of dewatering--i.e., the drier the cake, the more pressure and shear it will support; and frequent adjustable, small increases in pressure on the cake are required to produce maximum results and maximum adaptability to future changes in sludge characteristics and polymers available.

In order to achieve this process performance requirement, the machine shall include separately and independently adjustable pressure and shear/pressure steps. Also, because similar appearing sludges can have greatly different pressure and shear resistance characteristics, these steps shall be constructed so all can be adjusted as pressure steps, all as shear/pressure steps, or any combination in between. All of these adjustments shall be possible without interrupting sludge dewatering operations. Presses shall be manufactured by the Ralph B. Carter Co., Model 15/31, or Parkson Corp., or Komline-Sanderson or approved equal.

Routine maintenance shall be possible without taking the dewatering systems out of service. In addition, when replacement of the dewatering belt media is required, either belt shall be easily and quickly replaceable,

without requiring removal of machine components, or changes in pressure and shear/pressure adjustments.

All directly wetted parts ahead of the gravity zones shall be of non-corrosive materials; all structural steel members shall be properly prepared by sandblasting and coated with high grade two-part epoxy finish. All motors shall be totally enclosed, forced circulation or non-ventilated. Minimum corrosion protection on all sheet metal parts shall be heavy coat, hot dipped galvanized.

Each press shall be provided with an individual control, monitored through the master control, all as specified in Section 525, Subsection 11 of these specifications.

Sludge Cake Belt Conveyor

One (1) 36-inch wide belt conveyor shall be installed at the location shown on the plans. The conveyor belt is to have a capacity of 42-cubic ft. per minute at 60 ft. per minute belt speed. The conveyor belt is to have two-ply nylon carcass belting with 1/8-inch by 1/32-inch thick, smooth black rubber conveyors of a working tension of 210 lbs. per inch of width. Unit to be designed to have horizontal runs without material transfer points. 2½-inch diameter carbon steel idlers mounted on carbon steel rectangular steel conveyor flange. Pulleys 10-inch diameter and suitably center lagged. Belt support on return run shall be 8-inch diameter wheels mounted on shafting and operating in ball bearing flanged blocks. Adjustable steel belt scraper to be mounted near discharge pulley. Complete drive assembly to operate the belt at 60 ft. per minute to be mounted over discharge end consisting of a motor direct coupled to a worm gear reducer. Out-put shaft of reducer drive shaft of conveyor through chain and sprockets complete with OSHA approved guard.

SLUDGE DRYING AND PELLETIZING SYSTEM

General

The sludge drying systems shall be installed in the location shown on the plans. Each shall consist of a rotary-type dryer and a dual fuel furnace (natural gas and No. 2 fuel oil), complete with controls and accessories.

Sludge Dryers

The sludge dryer shall conform to the following: (1) Evaporation Capacity: 12,000 lbs/ H_2O/hr. Three cylinder with compound showering flights formed with drum shell. Heavy duty chain drive powered from pinion sprocket mounted on simplified counter shaft to monolithic ring sprocket bolted to drum. Outer cylinder insulated. Drum rotates on machined steel running bands. (2) Drum Bases: Fabricated steel with nickel alloy iron rollers carried on Timken roller bearings. Drive base is equipped with counter shaft, drive and idler sprockets, speed reduction unit and double flanged rollers for fixed drum alignment. Idler base is equipped with flat rollers for drum expansion.

Input product shall be a mixture of wet sludge cake and recycled previously dried material. The rate must be set in such a way that a uniform pelletized material is produced without addition of chemicals.

Output product shall be sludge grains of less than 5 percent water content and 4 mm on a maximum diagonal.

Product residence time shall be at least 20 minutes.

Product temperature shall be at least 150^{o} but less than 230^{o}F, upon discharge from the dryer.

The furnace shall be equipped with replaceable abrasion resistant refractory plates.

Dryer shall be Model 105-32, rotary type with multiple-pass, co-current product flow sludge dryer, as manufactured by the Heil Company, of Milwaukee, Wisconsin, or approved equal.

Heat Source

The sludge dryer shall be equipped with directly connected end-fired furnace housing with dual fuel low pressure air atomizing burner and pressure blower. Unit shall be piped for either oil or gas. Dual fuel piping shall be furnished. Piping shall include throttling fuel valves, safety shut-off valves, oil relief valve, pressure gauges, throttling air valve, gas/electric ignition and standard pipe fittings between burner and furnace fuel connection.

Maximum oil consumption is 180 gph. Oil pump and filters furnished. All grades of fuel oil can be utilized; however, heavy grades must be pre-heated.

Maximum natural gas consumption is 28,000 CFH. Natural gas for main fuel line must be supplied to furnace connections at a minimum of 5 PSIG pressure.

Electric/Gas Ignitor is operative on all types of gas at pressures not to exceed 1 psig.

Fuel supply piping to furnace connections, oil tank, oil pre-heater, furnace refractory and gas pressure regulators capable of holding desired pressure through complete firing range. Multiple installations shall have individual regulators. The fuel lines connecting the tank and the pump shall be under 30-inches of cover.

Controls: Temperature: Electronically operated, includes temperature regulator, thermocouple, T/C wire and reversing motor operator for mechanical connection to fuel and air valves.

Safety/safety shut-off valves, fan draft pressure switch, flame failure protection, recording thermometer with Hi-Limit Switch and furnace pyrometer.

Power Requirements: Drip-proof general purpose ball-bearing 3 phase, 60 cycle, 480 volt electric motors furnished standard as follows:

Exhaust	200HP	1800 rpm
Drum Drive	40HP	1800 rpm
Oil Pump	1½HP	1200 rpm
Furnace Blower	10HP	3600 rpm.

GAS SOLIDS SEPARATION SYSTEM

Multiclone*Separators

The smaller pellets and the dust shall be separated from the airstream by cyclone separator. Efficiency shall be at least 86% of particles of 10 microns. The separator core shall be of the same, or equivalent, crucible quality material as that of the interior of the dryer.

Attrition samples and rates as specified for the dryer shall also apply to the separators.

Separator construction and functioning shall be such as to prevent the retention of solids on the walls of the core (less than 20 pounds per year), and prevent any substantial aggregation or deterioration of the dryer output particles. High quality construction materials adequate for the imposed service shall be utilized.

A constant speed (2 hp rated) air lock/debridging mechanism shall be attached between the separator collecting container and the screw conveyor to the recycle material bin.

Blowers-Pellet Removal and Heat Recovery

Product shall be extracted from the dryers and caused to separate in Multiclone* separators under the driving force of non-positive displacement blowers powered by a constant speed motor.

Volumetric air flow shall be at least 32,000 cfm. Decibel level shall be within limits of OSHA standards.

Blower suction shall be connected to the separator: the discharge to the wet scrubber intake. System supplier shall furnish all necessary air intakes, discharges, duct work, expansion-construction devices, dampeners, filters, valves, silencers, and other appurtenances.

The blower motor shall be drip-proof general purpose ball bearing, 3 phase, 60 cycle, 480 volt, 200 hp, and less than 1600 rpm.

Additionally, motors shall meet the requirements of the Section entitled "Electric Motors" of these specifications.

Each blower and motor shall be enclosed in a prefabricated, acoustical, noise reducer enclosure with door, window, and ventilation fan. Preassembled enclosure shall be of the dimensions shown on the plans

*Trade Mark
Joy Mfg. Co.

and as manufactured by the Gal Corporation, of New Brunswick, New Jersey; or Allforce Acoustics, Lord Corporation, of Erie, Pennsylvania, or equal.

Wet Scrubbers

The airstream wet scrubbers shall have two functions: (1) Particulate removal in accordance with the Air Quality Control Standards of the State of Florida, EPA and local regulatory agencies. (2) Odor Control. The off gases shall be scrubbed with clean effluent (reuse) water, by means of spray nozzles fed by a recirculation pump with adequate capacity and pressure. Spray nozzles shall be described to minimize plugging, shall be of an approved corrosion resistant material and be designed for removal from the scrubber without personnel having to enter the scrubber tank. The scrubber tank shall be equipped with inspection or sights ports to inspect the spray nozzle operation. The recirculation pump shall be neoprene lined, or equal, with bearings, seals, gate and check valves of a design suitable for the imposed service. If water seals are used, the contractor/supplier shall provide necessary piping, valves and controls.

The scrubbing water system shall be designed so that either a one-pass operation or a recycle operation can be utilized. Necessary valves, regulators, piping and other items shall be provided to obtain both operational modes for the scrubber-operation. The scrubbing water from each scrubber shall collect in a slurry recycle tank. There will be a constant bleed-off of no more than 80 gpm with a maximum of 5% solids by weight in the discharge water, connected to the filtrate pump drain system. Each slurry recycle tank will be manufactured from suitable fiberglass. Each tank shall have a capacity of at least 250 gallons. The level in each slurry recycle tank shall be controlled automatically by adding make-up water (clean effluent without suspended solids) at a rate equal to the bleed off amount (maximum 80 gpm).

The odor control shall take place by bringing the scrubbed off gases in contact with a 2% $KMnO_4$ solution (maximum) in a packed tower. Detention time in the tower will be at least one second to reach a proper and reliable chemical reaction for an optimum odor removal. The 2% $KMnO_4$ solution will be prepared in batches of 30 gallons in a mixing tank with a mechanical mixer of at least 0.3 hp. The 2% $KMnO_4$ solution will be stored in a storage tank approximately 10' long, 5' wide and 5' depth. Clean effluent without suspended solids shall be used. The 2% solution shall be maintained manually by comparing the color of a test tube with the original start-up solution with the color of the actual solution. No more than one (1) lb. of $KMnO_4$ per day will be needed to be added to maintain the 2% solution by weight. A recycling pump with a capacity of 320 gpm at a pressure of 5 psi maximum shatl pump the $KMnO_4$ solution to the absorber supply line. A pH of 8.2 shall be maintained automatically in the 2% $KMnO_4$ solution tank by addition of NaOH solutions which shall be prepared batchwise, in a 30-gallon plastic tank with a mechanical mixer of at least 0.3 hp. After reaction of $KMnO_4$ with the oxidizing solids, the $KMnO_4$ will change to Manganese Dioxide which acts as a flocculant. The Manganese Dioxide scum on the surface shall be skimmed off automatically at a rate

of 4 gpm maximum. Discharge shall be to the filtrate pump drain system. The level in the $KMnO_4$ solution tank shall be controlled automatically. The tank shall have a 3-inch drain opening in the bottom of the tank for cleaning purposes. The $KMnO_4$ solution tank shall be manufactured from suitable fiberglass. Provide for sufficient clean water make up (4-10 gpm).

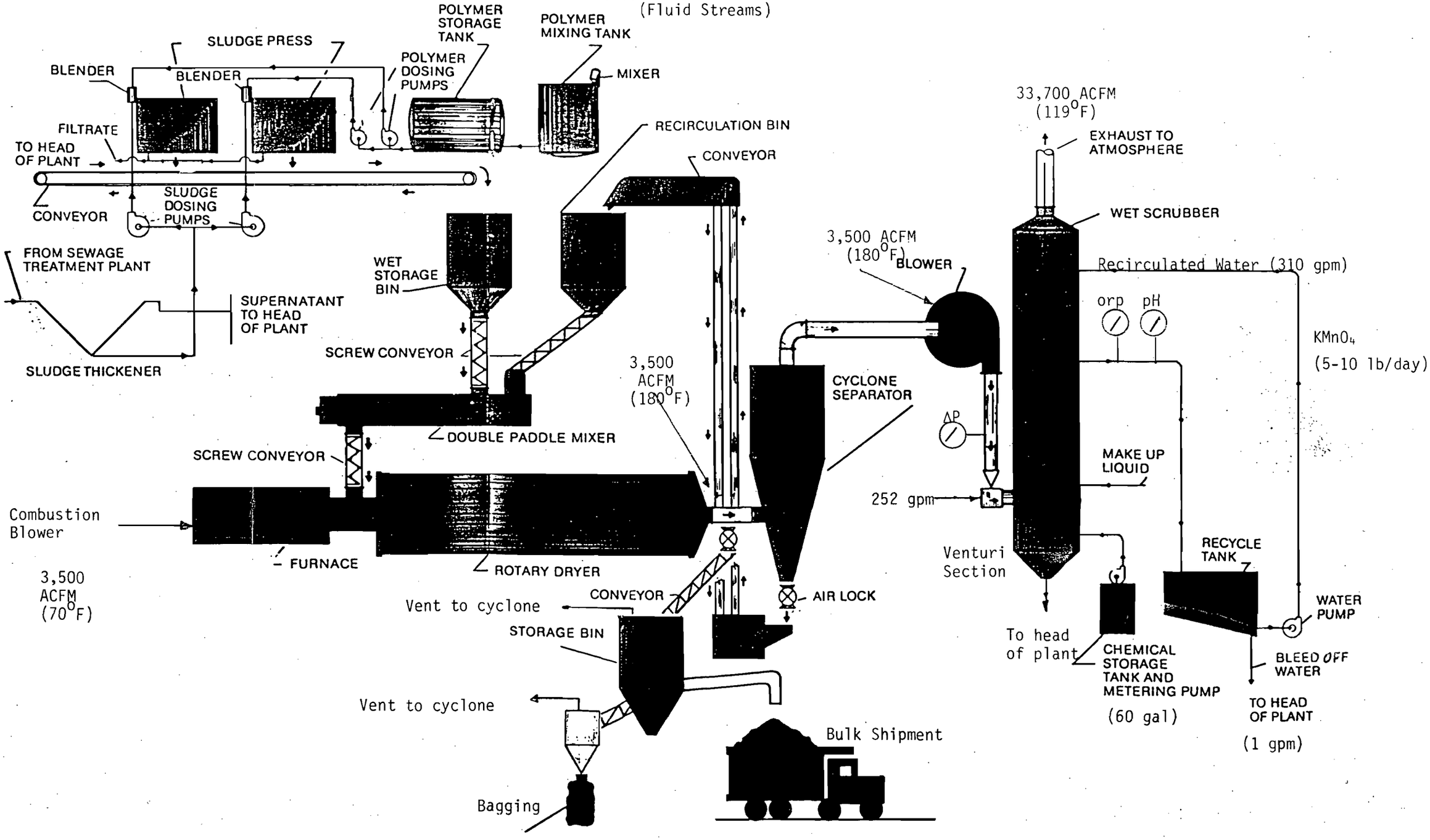
Plume discharge from the stack shall be minimized. The finally discharged off-gases shall be droplet free. The discharge stack shall have two (2) 3-inch test ports with blind flanges, located 90' apart. Ladders meeting OSHA standards shall be provided for access to the ports. In elevation the ports shall be located at a minimum of eight (8) stack diameters up from the top of the wet scrubber and a minimum of two (2) stack diameters down from the top of the stack or elsewhere specified. The tops of the stacks shall be of sufficient height above the roof to provide proper draft and discharge.

The scrubber vessel shall be of suitable fiberglass and of sufficient structural strength, or an approved equal. All components of the above described system shall be of corrosion resistant materials where necessary.

Air Coolers

Air coolers shall be provided to cool the finished product prior to its storage in the Finished Product Storage Bin. Each cooler shall be equipped with a constant speed (3hp) motor to rotate the drum. An air flow of 4,000 cfm shall be provided to return the heated air to the Multiclone. The air intake duct to the cooler shall be equipped with an adjustable damper.

IRON BRIDGE WASTEWATER TREATMENT PLANT
SLUDGE DRYING PROCESS-FLOW DIAGRAM
(Fluid Streams)



AIR POLLUTION CONTROL

SYSTEM DESCRIPTION

BASIC DESCRIPTION OF AIR POLLUTION CONTROL SYSTEM

The system supplied by Ducon for this job consists primarily of a cyclone, horizontal scrubber, and a packed tower. The cyclone first removes heavy particulate from the airstream. The horizontal scrubber removes liquid from the gas stream. The packed tower removes odorous gases which may still be present in the airstream.

The gases from the sewage treatment process are drawn through the system by a fan located between the cyclone and Venturi.

DESIGN DATA

Units - Packed Tower - Size 108 (Ducon)

Cyclone - Size 4-290, Type VM. Model 700/148 (Ducon)

Vertical Horizontal Scrubber - Size 42/250 Type VHO (Ducon)

Inlet Gas Volume - 32,000 ACFM

Inlet Gas Temperature - 280^{o}F.

Inlet Dust Loading to Cyclone - 23.56 grains/ACF

Type of Dust -Pelletized Sewage Sludge

Elevation - Sea Level

Pressure Drops -

Cyclone - 3.0" W.G.

Venturi Throat - 20.0" W.G.

Separator - 2.0" W.G.

Packed After Section - 3.0" W.G.

STACK DATA

Stack Height	54'2"
Velocity	25 fps
Flow Rate ACFM	33,700
Temp.	119^{O}F
Diameter	4'3"
% Moisture	13.4%

OPERATING DESCRIPTION

PRINCIPLE OF OPERATION

The air pollution control equipment in this system is a three-stage system designed to remove any dust and/or odorous gases from the sewage treatment process.

The first major piece of equipment is a cyclone collector. The cyclone is designed to remove any heavy dust loading entering the system. The dust particulates are collected in a dust hopper. The gas then passes through a wetted vertical venturi. The purpose of this venturi is to remove any fine dust particles that may have passed through the cyclone. The next major piece of equipment, a horizontal separator, removes the liquid from the airstream before it passes to the packed tower. The manual wash down sprays in the separator should be turned on occasionlly to clean the lamellars. The purpose of the packed tower is to remove odorous gases from the airstream. The odorous gas flows up the packed tower and passes through the packing. Chemical liquid flows concurrently and reacts with the gas. Mesh type eliminators remove any liquid from the gas stream before it enters the outlet stack. The chemical liquid drains out of the packed tower after reacting with the gas and into a recirculation tank.

When using the packed tower system to remove odorous gases from the process, a pH level between 8 and 9 should be maintained in the chemical recir . lation tank. The ORP of the recirculation tank should also be monitored closely and adjusted as needed. Chemical liquid is added to the recirculation tank by a metering pump located on the chemical mixing tank. Sodium hydroxide (caustic/NaOH) or potassium permanganate ($KMnO_4$) is added to chemical mixing tank where it is thoroughly mixed with water. The pH analyzer monitors the amount of caustic in the recycle tank. The ORP analyzer monitors the oxidation

reduction potential of the recycle tank liquid (amount of $KMnO_4$).

This system is designed to be used in more than one way. The odor control part of the system does not need to be operating if there is no evidence of odorous gases in the sewer sludge. In this case the 2" saddle packing in the packed tower can be removed. A barometric seal must also be maintained in the recycle tank.

The horizontal separator is designed with an integral recycle tank to recycle the liquid back up to the venturi inlet. A future recycle pump connection is supplied on the recycle tank. This connection must be closed when not in use. A liquid level control is installed on the separator to control the water level when the integral recycle tank is used.

When potassium permanganate ($KMnO_4$) is used in the packed tower, a cleaning schedule must be followed.

The pages which follow outline a good maintenance schedule which can be followed. The frequency of cleanings can only be determined by the amount of usage.

CLEANING SOLUTIONS FOR REMOVING MANGANESE DIOXIDE DEPOSITS FROM WET SCRUBBING SYSTEMS USING CAIROX®

The following solutions remove manganese dioxide deposits. The time required for cleaning a scrubber will depend on the amount of deposits present. The time will vary from 1 - 6 hours. The corrosion rate for steel will be about 0.00002 in/hr.

(1)	Sulfamic Acid	2.5 %
	Hydrogen Peroxide (35%)	0.5 %
	Formaldehyde (37%)	0.25%
	Rodine III Inhibitor	0.1 %
	Water	To make 100%
(2)	Sulfamic Acid	2.5 %
	Glycolic Acid	1.25%
	Formaldehyde (37%)	0.25%
	Rodine III Inhibitor	0.1 %
	Water	To make 100%
(3)	Citric Acid	2.75%
	Formaldehyde	0.50%
	Rodine III Inhibitor	0.1 %
	Water	To make 100%
(4)	Sulfuric Acid (96%)	6.0 %
	Formaldehyde (37%)	0.5 %
	Rodine III Inhibitor	0.1 %
	Water	To make 100%
(5)	Sulfuric Acid (96%)	5.0 %
	Oxalic Acid	2.5 %
	Rodine III Inhibitor	0.1 %
	Water	To make 100%
(6)	Sodium Bisulfite	5.0 %
	Water	To make 100%

THE DUCON COMPANY, INC.

OPERATING INSTRUCTIONS FOR THE ODOR CONTROL SECTION OF DUCON'S AIR POLLUTION CONTROL EQUIPMENT

Fill the packed tower with the packing material (2" polypropylene saddles) to the required level ((1) one foot below the spray header). Add caustic (NaOH) into the chemical recirculation tank and maintain the pH level between 8 - 9.

The liquid is sprayed onto the packing and flows concurrently to the gases. The gas is absorbed by the liquid due to a chemical reaction. The liquid will drain out the bottom of the packed tower and back to the chemical recirculation tank.

If additional absorbing efficiency is needed potassium permanganate ($KMnO_4$) can also be added to the chemical recirculation system. Add 1/4 percent solution by weight of $KMnO_4$ into the chemical mixing tank. Increase the amount of $KMnO_4$ if greater efficiency is needed.

Important steps should be taken when using $KMnO_4$ as an absorbing liquid. As $KMnO_4$ reacts with the odorous gases manganese dioxide (MnO_2) is produced. The packing in the packed-after-section can eventually become plugged or coated and severely restrict the air flow through the unit.

The MnO_4 must be removed from the system on a regularly scheduled basis. The cleaning schedule will depend on the amount of $KMnO_4$ used. The odor control system should be cleaned at least once every two weeks. The MnO_4 will settle in the recycle tanks during periods of shut-down. The sludge it forms should be drained from the recycle tank before start-ups.

A wash down of the packed-after-section must be done on a regular basis using a solution such as sodium bisulfate, preferably at a pH between 3-5 using a pH buffer such as citric acid.

Maintenance is involved when using $KMnO_4$ in the scrubbing system. Serious problems can occur and cause down time and needless expense in removing the packing and cleaning it outside the scrubber if a cleaning schedule is not actively followed.

START-UP PROCEDURES

The starting of this system is a critical step and will determine how efficiently the system operates. If the system is not started properly, serious problems can arise, and in some cases, cause damage to the system's equipment.

The chemical liquid in the tower should be turned on and flow through the spray piping observed. The recycle tank of the tower should be allowed to fill to its proper operating level and then checked for leaks. The chemical metering pump should be checked and the proper amount of return liquid to the packed tower should be set. All chemical feed lines and fittings must be checked for leaks. Any chemical leakage should be corrected as soon as possible.

The next step would involve the application of water to the venturi. The nozzle pressure should be adjusted to insure complete coverage of the venturi. The nozzle pressure should be adjusted to insure complete coverage of the venturi. Any valves in the water and chemical feed lines should be set to their proper positions.

After the above steps have been completed, the fan can be started. Odorous gases and dust can be allowed to enter the system at the cyclone.

SEQUENCE OF OPERATION FOR ODOR CONTROL SYSTEM

Note: If odor control system is not used, the wetted venturi must still be used.

The first step is to turn on the service water to the venturi. Adjust the flow meter to read 232 GPM at 20 PSIG. Turn the main power switch (SS-1) to the ON position. A red light (LT-1) will glow indicating the main power is on. Push the system start button (PB-2) to start the system. The system stop button (PB-1) shuts the system down. After the system start button has been pushed, the packed tower pump motor will start. Lights (LT-2 and LT-3) will glow to indicate that the packed tower pump is motor is operating. If no flow is indicated in the pump line, the pump will be shut off. Push the reset button (PB-3) to restart the pump after proper flow to the pump has been restored.

Turn the pH controller and ORP indicator switches to the ON position. The ORP indicator has no high or low set points and alarms. The pH controller does have high and low alarm set points. At a high pH, the chemical metering pump will be shut off. At a low pH the chemical metering pump will be started. At a low-low pH, an alarm condition will exist. The alarm horn will sound. A light (LT-3) indicates that the chemical metering pump is operating. The metering pump can also be operated manually by turning the 3 position metering pump switch to the manual set point.

The chemical mixing process can now be started. Press the mixing tank makeup water start button (PB-7). This will alllow fresh water to enter the tank. Press the stop button (PB-6)

to stop the makeup water. The chemical mixing tank operates with a 3 point level control. When a high level is reached in the recycle tank, the chemical transfer pump cannot be started. The makeup water is also shut off. Liquid can only be transferred from the mixing tank when the chemical liquid is at or below medium level in the tank. Press stop button (PB-4) to stop the chemical transfer pump. When the chemical liquid level drops below the low level set point, the alarm will be sounded. A light (LT-10) will glow when the alarm has been acknowledged. Press the alarm acknowledge button (PB-8) to silence the alarm. The liquid level in the mixing tank must be set at or below the medium level for proper operation. After the proper level has been obtained the agitator motor should be turned on (SS-5) for a short time to allow proper mixing of the chemical liquid. A light (LT-11) will indicate that the agitator motor is on. The agitator motor must be turned on and off manually.

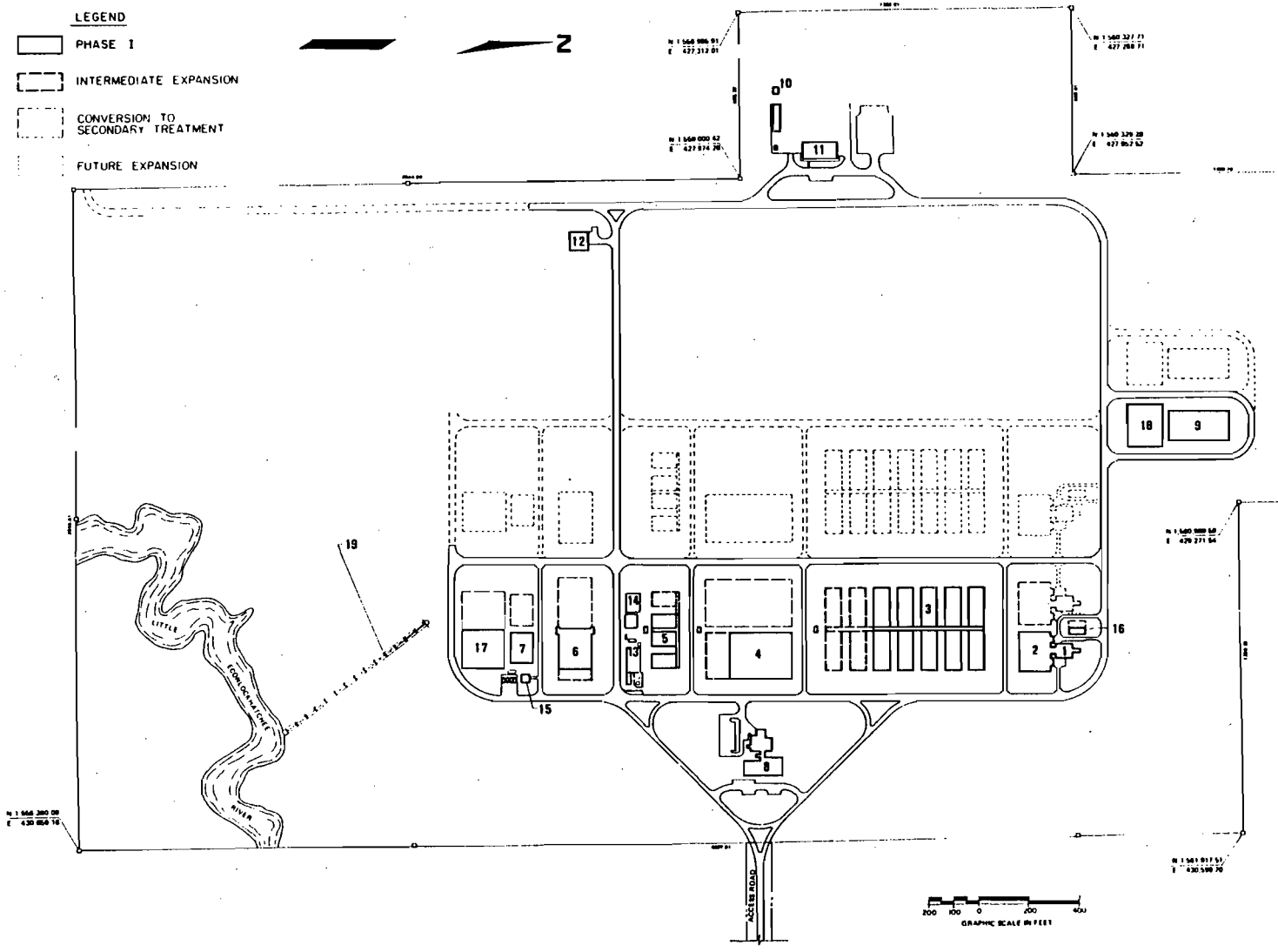
The bubbler level indicator in the packed tower recycle tank monitors the liquid level in the tank. A constant PSI air supply must be maintained to the bubbler level control. If the air supply is less than 20 PSI, a red light (LT-4) will glow indicating a low air supply. The level control will not operate. When the level in the recycle tank drops below the operating level, the packed tower makeup water solenoid will be activated for a certain amount of time. When the level in the recycle tank drops below the low level, the packed tower low liquid relay will be activated and an alarm condition will exist. The alarm horn will sound. The horn

can be extinguished by pressing the alarm acknowledge button (PB-8). The alarm acknowledge light (LT-10) will glow until the alarm condition is corrected by adding more makeup water to the packed tower recycle tank.

SITE PLAN AND

LOCATION MAPS

IRON BRIDGE REGIONAL WATER POLLUTION CONTROL PLANT



PHASE I

LIST OF PLANT ELEMENTS

1. PRETREATMENT STRUCTURE
2. PRIMARY CLARIFIERS
3. ROTATING BIOLOGICAL CONTACTOR TANKS
4. FINAL CLARIFIERS
5. DENITRIFICATION TANKS
6. FILTRATION UNITS
7. DISINFECTION UNITS
8. OPERATIONS BUILDING
9. SLUDGE RECOVERY SYSTEM
10. WELL AND WATER TREATMENT PLANT
11. MAINTENANCE BUILDING
12. MASTER PUMPING STATION
13. CHEMICAL BUILDING/AREA
14. POWER GENERATION BUILDING
15. CHLORINATION BUILDING
16. BLOWER BUILDING
17. POST AERATION TANKS
18. SLUDGE CONDITIONING TANKS
19. EFFLUENT OUTFALL

3	10-15-76	REVISED FENCING PER CHANGE ORDER # 2	WJS	DWR	
2	11-28-75	REVISIONS PER ADDENDUM #1	dhg	DWR	
1	6-11-75	GENERAL REVISIONS	DRD	DWR	
NO.	DATE	REVISION	BY	APPD	

DESIGNED — LWD
DRAWN — ARG
CHECKED — LWD
PROJECT ENGINEER 21534

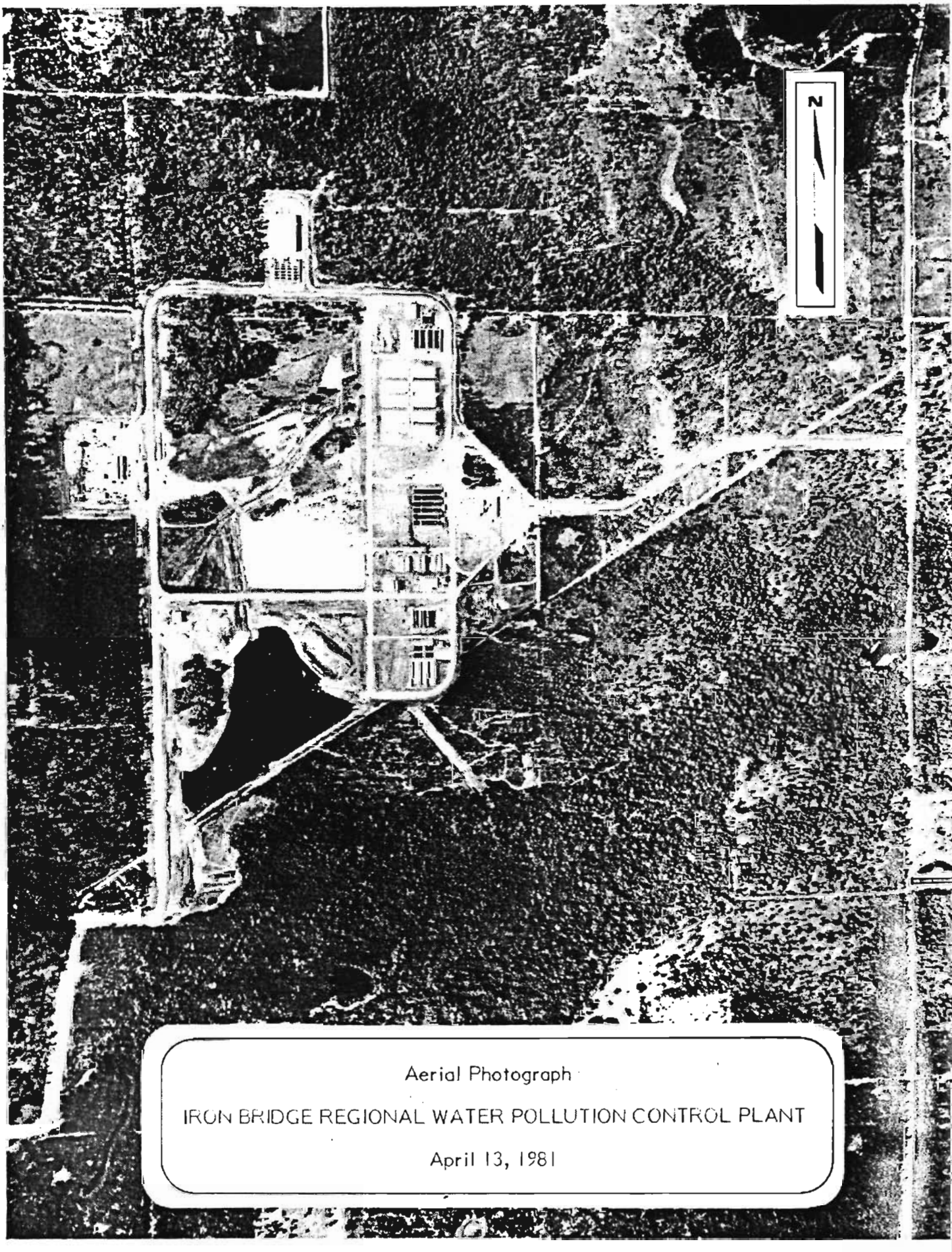
APPROVED FOR DAWKINS & ASSOCIATES INC.
REG. PROF. ENGR. FLORIDA 5204
DATE 12/15/75

DAWKINS & ASSOCIATES, INC.
CONSULTING ENGINEERS
ORLANDO, FLORIDA

MUNICIPAL SEWER UTILITY
CITY OF ORLANDO, FLORIDA
PUBLIC WORKS DIVISION
EASTERLY WATER POLLUTION CONTROL FACILITIES

SITE PLAN

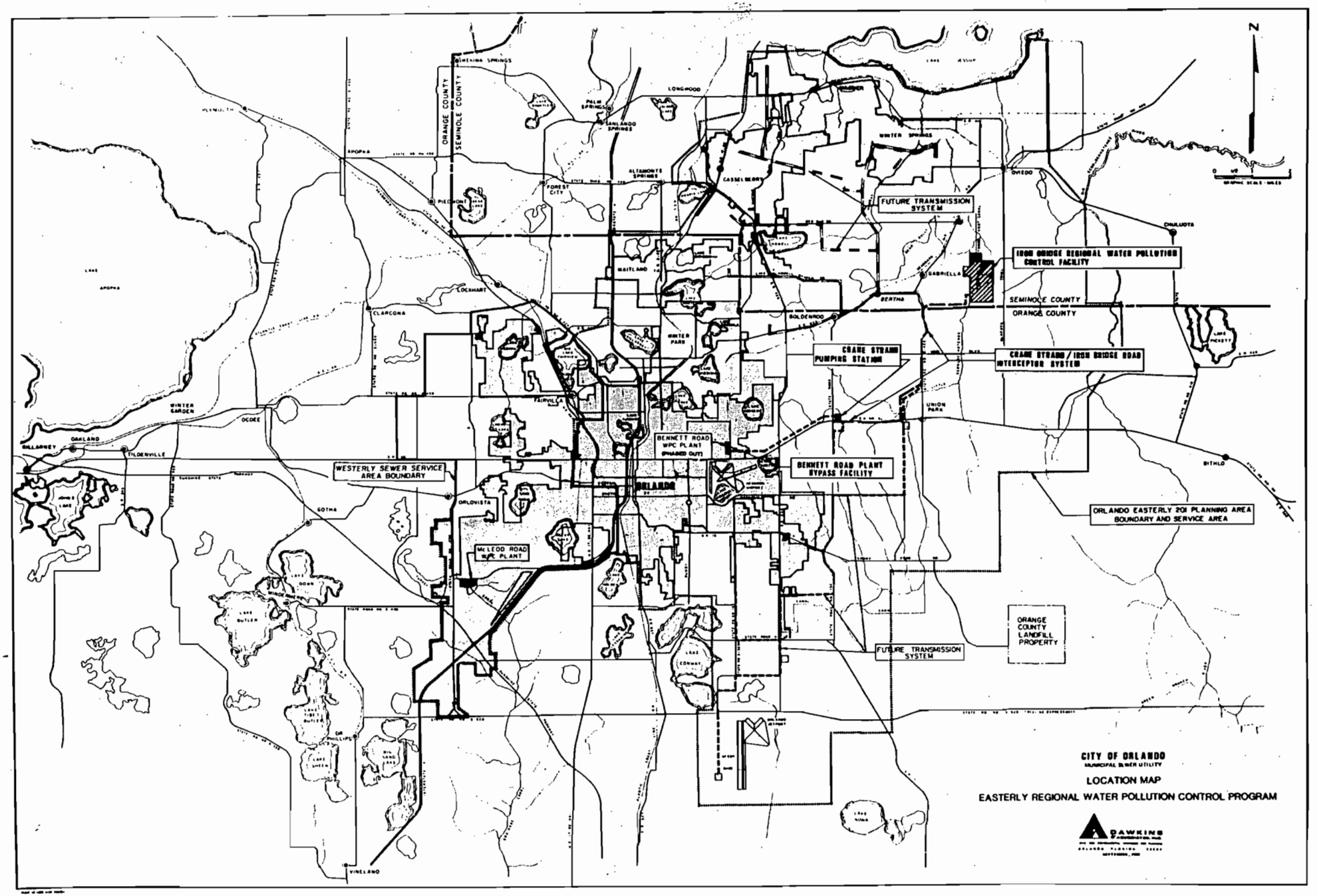
DATE: DEC. 10, 1975
SCALE: 1" = 200'
CORPS PROJECT: 075-811
SHEET: AG-5



Aerial Photograph

IRON BRIDGE REGIONAL WATER POLLUTION CONTROL PLANT

April 13, 1981

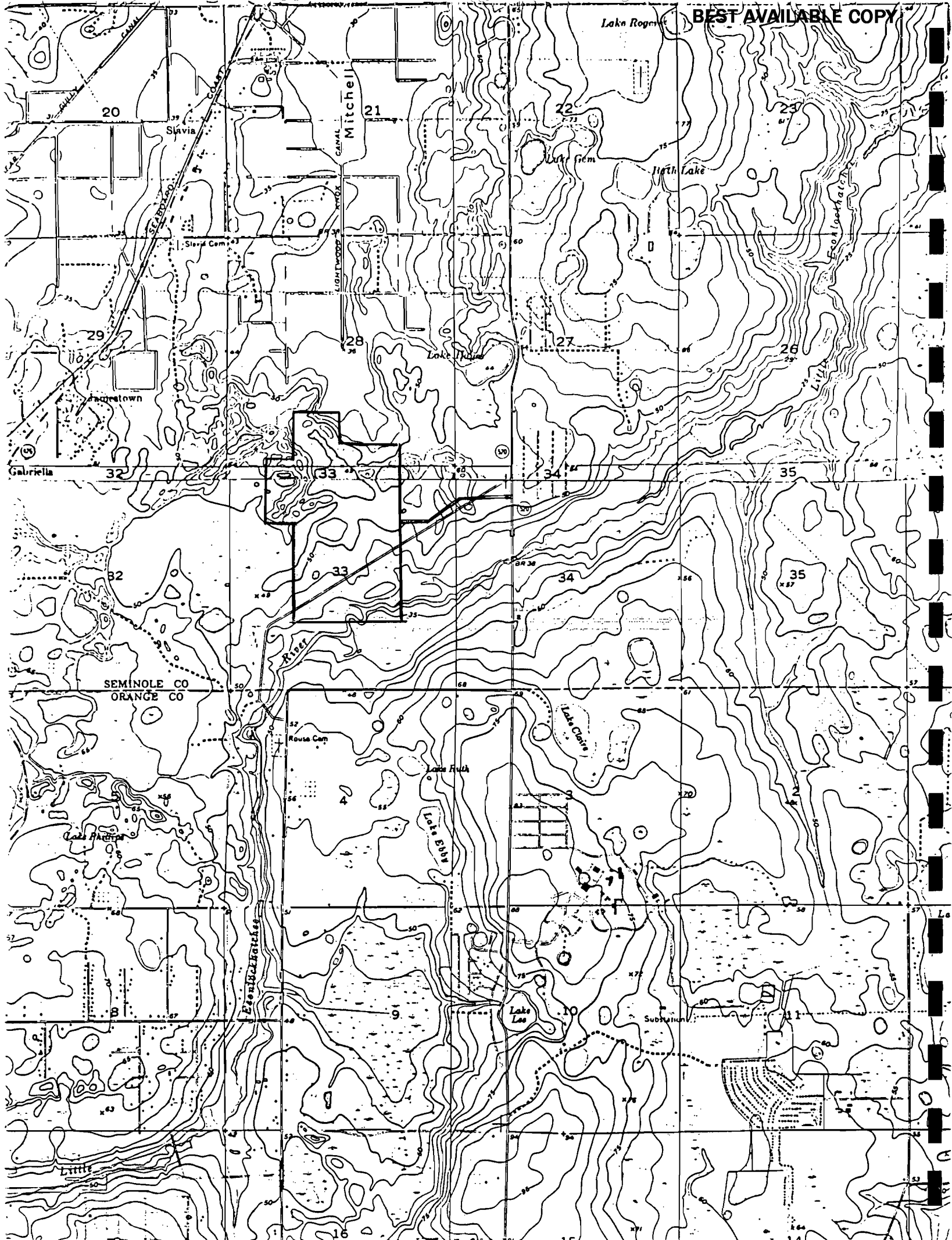


CITY OF ORLANDO
MUNICIPAL SEWER UTILITY

LOCATION MAP

EASTERLY REGIONAL WATER POLLUTION CONTROL PROGRAM

DAWKINS



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DER PERMIT APPLICATION TRACKING SYSTEM MASTER RECORD

FILE#00000005931 2 COE# DER PROCESSOR:BROOK Thomas DER OFFICE:DH
FILE NAME:ORLANDO, CITY OF DATE FIRST REC: 08/20/82 APPLICATION TYPE:AC
APPL NAME:ORLANDO/IRON BRIDGE ROAD APPL PHONE:(305)849-2266 PROJECT COUNTY:59
ADDR:P. O. BOX 1448 CITY:OVIEDO ST:FLZIP:32765
AGNT NAME:CROSS/TESSITORE & ASSOC. AGNT PHONE:(305)898-6140
ADDR:1611 EAST HILLCREST STREET CITY:ORLANDO ST:FLZIP:32803

ADDITIONAL INFO REQ: / / / / / / REC: / / / / / /
APPL COMPLETE DATE: / / COMMENTS NEC:Y DATE REQ: / / DATE REC: / /
LETTER OF INTENT NEC:Y DATE WHEN INTENT ISSUED: / / WAIVER DATE: / /

HEARING REQUEST DATES: / / / / / /
HEARING WITHDRAWN/DENIED/ORDER -- DATES: / / / / / /
HEARING ORDER OR FINAL ACTION DUE DATE: / / MANUAL TRACKING DESIRED:N
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FEE PD DATE#2: / / $ RECEIPT# REFUND DATE: / / REFUND $
APPL:ACTIVE/INACTIVE/DENIED/WITHDRAWN/TRANSFERRED/EXEMPT/ISSUED:AC DATE:08/20/82
REMARKS:SLUDGE DRYING FACILITY; W. LINE W/CYCLONE & VENTURI SCRUBBER & ODOR CONTACTOR;

Receipt had to be written @ applicants' request.....

DER PERMIT APPLICATION TRACKING SYSTEM MASTER RECORD

FILE#00000000059313 COE# DER PROCESSOR:THOMAS DER OFFICE:TLH
FILE NAME:ORLANDO, CITY OF DATE FIRST REC: 08/20/82 APPLICATION TYPE:AC
APPL NAME:ORLANDO/IRON BRIDGE ROAD APPL PHONE:(305)849-2266 PROJECT COUNTY:59
ADDR:P. O. BOX 1418 CITY:OVIEDO ST:FLZIP:32765
AGNT NAME:CROSS/TESSITORE & ASSOC. AGNT PHONE:(305)898-6140
ADDR:1611 EAST HILLCREST STREET CITY:ORLANDO ST:FLZIP:32803

ADDITIONAL INFO REQ: / / / / / / REC: / / / / / /
APPL COMPLETE DATE: / / COMMENTS NEC:Y DATE REQ: / / DATE REC: / /
LETTER OF INTENT NEC:Y DATE WHEN INTENT ISSUED: / / WAIVER DATE: / /

HEARING REQUEST DATES: / / / / / /
HEARING WITHDRAWN/DENIED/ORDER -- DATES: / / / / / /
HEARING ORDER OR FINAL ACTION DUE DATE: / / MANUAL TRACKING DESIRED:N
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APPL:ACTIVE/INACTIVE/DENIED/WITHDRAWN/TRANSFERRED/EXEMPT/ISSUED:AC DATE:08/20/82
REMARKS:SLUDGE DRYING FACILITY; E. LINE W/CYCLONE & VENTURI SCRUBBER & ODOR CONTACTOR:

Receipt had to be written @ applicant's request- - -

DER

AUG 23 1982

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